Designing for Adaptable Learning

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Acknowledgements

Writing and finishing this dissertation has indeed been a journey of its own. I never thought that writing a thesis of this magnitude would go hand in hand with a rather overwhelming experience of joy, pain, and wisdom. During the course of this journey, I have had the opportunity to work with enormously talented and intelligent people. These people include all of my colleagues as well as fellow researchers. I would however like to thank certain people who have had a significant part in encouraging and inspiring my research. I would thus first like to thank all of my colleagues at University West, with a special regards to Lennarth Bernhardsson for his provocative way of initiating various ways of reflection and thinking in general. I would also like to thank Lennarth’s son, Patrik, for his expertise and support in updating me with knowledge about state-of-the-art technologies, relevant for my research. I would like to send a special thanks to my supervisors Lars Svensson and Thomas Winman for their constant support, encouragement, and patience. Without these two individuals, I would most probably not have had the chance to write this thesis under such fortunate premises. Thank you Lars and Thomas!

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The research in this thesis emphasizes the endeavor of designing for adaptable learning. Designing for adaptable learning is understood as an overall response to designing for integration work. Designing for integration work is thus classified as a special case of designing for adaptable learning. Integration work in this research is understood as a professional practice that aims to improve and support the integration process of newly arrived immigrants (referred to as newcomers) in society. As professional practitioners of integration work, integration workers face daily challenges that are wicked by nature. In order to understand and problematize these challenges, the empirical work of this research was organized and performed within a case of digitalizing the civic orientation program in Sweden. The civic orientation program is a special case of integration work in Sweden, where integration workers organize and provide civic orientation to newcomers in Sweden. Different groups of newcomers are subsequently participating in a required 60 hours of civic orientation and are provided sessions through their native language. The integration workers are responsible for organizing and performing civic orientation through a dynamic process of dialogues, exercises, and more. Integration work as a practice, however, does not incorporate a standardized knowledge base, which provides integration workers a unified way of organizing and performing civic orientation. Instead, different counties and municipalities in Sweden organize and perform civic orientation in various ways. Furthermore, due to the extreme heterogeneity among newcomers as participants in civic orientation, the integration workers are forced to adapt. In turn, the integration workers themselves are heterogeneous due to their different roles, areas of responsibilities, and more essentially, worldviews. In order to understand and problematize the aspects of designing for integration work, an explorative approach was adopted through three consecutive cycles of Action Design Research. The cycles were performed from 2013 until completion of this thesis. The thesis was subsequently governed through three research questions: (1) How to design for integration work? (2) What makes designing for integration work significant? (3) Why do design for integration work? The research questions were addressed and answered through a body of produced knowledge that captures and provides the essential contributions of the thesis. The contributions of the thesis highlight different aspects of designing for integration work, as a special case of designing for adaptable learning. Thus, the contributions are presented and discussed with an explicit bearing toward designing for adaptable learning, as the general class of problems and solutions of this research. The contributions are consequently provided through: (1) an ensemble artifact that is termed a digital platform for civic orientation; (2) an Information Systems Design Theory for adaptable e-learning; (3) a design research methodology that incorporates work-integrated learning; (4) the meta-design of an open learning platform that supports the social integration of newcomers in society; and (5) a philosophical concept that problematizes and conceptualizes the essence of presence in e-learning. Ultimately, the research contributes to the research domains of information systems and work-integrated learning, by providing findings that problematize core aspects of designing for adaptable learning. Furthermore, the thesis extensively discusses the findings of this research by emphasizing a philosophical perspective toward core aspects of the research contributions. Finally, the thesis concludes with a set of limitations of the current research and a brief discussion about potential endeavours of future research.
APPENDED PUBLICATIONS


The first author was the main contributor to the text, and was also responsible for data collection and analysis. The literature study, theorizing of a design theory, as well as articulation of the main contribution was a solo effort by the first author, while creative discussions and problematization of adaptable e-learning were executed collectively.


The first author was the main contributor to the text, and was also responsible for data collection and analysis, as well as organizing and conducting a literature study and articulating the features of PADRE. However, the very idea of PADRE was conceived and proposed by the second author of the paper, through a rather interesting encounter and conversation that took place at the airport in Dublin, Ireland, after a conference.


The first author was the main contributor to the text. An extensive literature study was however performed collectively between the authors, while the idea of incorporating Habermas’s philosophy to articulate a meta-artifact was the idea of the first author.


The first author was the main contributor to the text. The idea of introducing Digital Dasein and conceptualizing it as the essence of presence in e-learning, was also the main contribution of the first author. The first author was also responsible for organizing and conducting a literature study on the subject of presence. The second author contributed his own life experiences and anecdotes that enriched the phenomenological accounts of the paper, while elaborative discussions of Dasein were done collectively.
OTHER SELECTED PUBLICATIONS


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1 OVERVIEW

This is a thesis within the discipline of Information Systems (IS) (also known as ‘Informatics’) with a particular knowledge interest for Work-Integrated Learning (WiL), Design Science Research (DSR), and philosophy. The title of the thesis is Designing for Adaptable Learning because the design outcomes of this research are incorporated through research and a body of knowledge that support adaptable learning. With designing for, I am subsequently referring to the process of designing various kinds of humanly created things, also known as artifacts. Consequently, by adopting the DSR terminology (as explicated by Walls et al., 1992; March & Smith, 1995; Gregor & Hevner, 2013; Iivari, 2015), I frame and use the term artifacts as a broader range of outputs that include instantiated artifacts (e.g. prototypes) and meta-artifacts (e.g. concepts, theories, principles, or methodologies). In addition to artifacts, other elements of designing for include WiL-oriented elements such as pedagogies, workplace training sessions, work processes, etc. Finally, I also include philosophical foundations and rationale as interrelated elements of informing and supporting the design process. Altogether, these constituting aspects of designing for set to incorporate adaptable learning.

One aspect of the thesis concerns the notion of design. Based on knowledge and experience acquired from this research, I understand and address design as a non-linear and not always rational human endeavor and process, which both individually or collectively is tinged by activities and phenomena such as planning, creativity, sense-making, and prototyping. Additionally, I consider design as the end result of a design process, such as an artifact (e.g. instantiated prototype). However, because the thesis is a product of research, I also consider design as an object of research, and will thus also position the design part of this thesis as an object of study within the paradigm of DSR in IS. Consequently, I will use a subset of DSR, the Action Design Research (ADR) methodology (Sein et al., 2011), to frame and conduct the empirical work of this research. More knowledge about design and DSR in IS will be provided in sections 1.1.2, and 3.4.

Another aspect of the thesis concerns the domain of WiL. At its core, WiL emphasizes a range of approaches and strategies that integrate theory with the practice of work within a designed education curriculum (Patrick et al., 2008). However, as a research domain WiL is not solely constrained to research on the topics of education and work. Rather, WiL focuses on the relations between humans, learning, knowledge, and work in general. Additionally, as a domain, WiL includes issues related to how approaches and methods can be used to integrate learning processes with work to bridge different contexts and professions within communities of practice. From such a perspective, WiL is a domain that is closely related to the research domain of Workplace Learning (WPL), because historically, WPL comprises WiL in the sense of a knowledge enterprise that shares common research interests and problems concerning the interplay between humans, learning, knowledge, and work. Hence, for the thesis, I target WiL as a knowledge domain that provides relevant concepts, theories, and terminology, which help to frame and understand the WiL outcomes of this research. In other words, every time I refer to WiL in the thesis, I am also including interrelated knowledge and phenomena of WPL (or vice versa, from WPL to WiL).

More knowledge about WiL and WPL will be provided in sections 1.1.1, and 3.2.

A third aspect of this thesis concerns a philosophical rationale that consists of an eclectic foundation of pragmatic and phenomenological accounts. More specifically, the rationale is constituted by the philosophical ideas of Jürgen Habermas and the existential phenomenology of Martin Heidegger. Both philosophers’ ideas and thoughts have, historically within the IS discipline, been rigorously acknowledged through prior research (explicated further in Chapter 3). I will thus incorporate a combination of both philosophers’ ideas and thoughts, to develop theoretical contributions that problematize and inform different aspects of designing for adaptable learning. More knowledge about the relation of philosophy and this research will be provided in sections 5, 6, and 7.

As with other pragmatically inflected IS research that emphasizes design as a study object (e.g. Hevner et al., 2004; Ågerfalk, 2010; Sjöström, 2010; Sein et al., 2011; Iivari, 2015), and that consists of empirically executed research activities within an empirical context (e.g. organizational setting), the thesis incorporates
research activities that are grounded and executed within an empirical context. The empirical context of the thesis is, as briefly mentioned above, framed within the case of digitalizing the so-called civic orientation program. The case was launched in December 2013 and ended in December 2015. Starting from this period of time until now, three cycles of ADR were executed. After the case was finished, additional work was conducted to undertake reflection, abstraction, and formalization of insights gained from the ADR cycles. Figure 1 exhibits a brief overview of the three ADR cycles and their essentials.

Figure 1. ADR cycles

A brief and general summary of each ADR cycle is explained as follows:

1. **Cycle 1**: initiated this research through a tentative problem understanding of the empirical setting, the characteristics of the civic orientation program, the underlying motives of digitalizing the program, significant challenges and issues, and other interrelated phenomena that concern the specific task of digitalizing the civic orientation program. Based on the tentative problem understanding, an alpha prototype was built, introduced, and evaluated. Subsequently, knowledge from the design phase was extracted into design implications through early theorizing. The theorizing process was incorporated through supportive knowledge about E-Learning in general, with a particular focus on the phenomenon of Presence in E-Learning. Here, Martin Heidegger’s Phenomenology was used to conceptualize Digital Dasein as a theoretical contribution of the first cycle. Chapter 3 will introduce some of the concepts and theories (e.g. E-Learning, Presence) that were used during Cycle 1, while Chapter 5 will elaborate and contextualize the concepts, theories, and outcomes (e.g. Digital Dasein).

2. **Cycle 2**: initiated by incorporating the learning outcomes from the previous cycle to reframe the problem and to build, introduce, and evaluate a beta prototype, which addresses Heterogeneity as an essentially significant phenomenon of this research. In turn, Workplace Learning literature was adopted to understand WiL phenomena of integration work as a practice, as well as problematizing the implications of digitalizing the civic orientation program. Generalizable outcomes were formalized into theoretical contributions that inform the design of Adaptable E-Learning, as well as PADRE as a methodological contribution. Chapter 2 will motivate Heterogeneity as a locally significant phenomenon of digitalizing the civic orientation program, while Chapters 6, 7, and 9 will continuously abstract, discuss, and problematize the phenomenon as an essential one, which motivates a call and need for Adaptable Learning. Furthermore, Chapter 3 will discuss Workplace Learning and Chapter 6 in particular will elaborate Adaptable E-Learning and PADRE.
3. **Cycle 3**: initiated through previous considerations (from Cycle 2) of organizing training material and implementing workplace training sessions to incorporate the objectives of digitizing the civic orientation program. It was also during this cycle that informing knowledge (e.g. Jurgen Habermas’ pragmatism and typology of social actions) was adopted to theorize outcomes (e.g. *Kernel Philosophy*) that discuss and problematize *Adaptable Learning* from various perspectives. Chapter 7 will introduce Habermas’ pragmatism and typology of social actions as a sufficient source of inspiration for this research’s design endeavours. Furthermore, Chapter 7 will introduce *Kernel Philosophy* and *Adaptable Learning*, while Chapter 9 will discuss and elaborate them further.

The concept of *Adaptable Learning* is not considered, introduced or used as a pre-defined notion or prerequisite of the thesis. Nor is it confused with other interrelated notions such as *adaptive learning* (see Tyre & Hippel, 1997; Aroyo et al., 2006 for specific information) or *Adaptive Learning Technologies* (see Brusilovsky, 2003; Gaudioso & Boticario, 2006), because the latter two notions have a demarcated focus on technologies and systems that are *Adaptive for E-Learning* in particular, whereas *adaptable learning* will be significantly illuminated throughout the findings of the thesis, as a response to understanding the aspects and phenomena of designing for integration work. The concept of *Adaptable Learning* is thus an essential part of this research and will initially be introduced in Cycle 2 through the contribution of *Adaptable E-Learning* and further elaborated in Cycle 3, whereas it will be discussed in Chapter 9 as a response toward aspects of designing for integration work, including phenomena such as *Heterogeneity or Presence*. In turn, aspects of integration work as professional practice will be problematized within the context of digitizing the civic orientation program, which is addressed as a special case of integration work as a phenomenon.

Chapter 3 in particular, through prior relevant research, will emphasize and introduce concepts that influence the theoretical perspectives of this research, while Chapter 4 will motivate ADR as a research methodology, and Chapters 5, 6, and 7 will explicate the ADR cycles and their outcomes in detail. It is crucial however for the sake of clarity to mention that I generally distinguish the theoretical perspectives of this thesis into three different type of theories: (1) kernel theories; (2) analytical theories; and (3) theoretical contributions. For instance, as shown in Figure 1, *E-Learning and Presence* (located above the first cycle) are considered kernel theories and analytical theories, whereas *Digital Darwin* is considered a theoretical contribution. Additionally, I will define and describe the nature of each type of theory, as well as their role and purpose for this research, within the frame of each ADR cycle in Chapters 5, 6, and 7, rather than providing an independent and traditional theory chapter. Finally, the outcomes of each ADR cycle will be framed into four selected research papers (presented in Chapter 8), as well as meta-contributions that were abstracted and extracted throughout each ADR cycle.

With respect to the fundamental overview of the thesis so far, I will now outline the background of this research by introducing digitalization and its relevance to integration work, the study of civic orientation and WiL, and design-oriented IS research. Based on the research background, I will then outline the research problem, purpose, and question(s). Finally, I will conclude this chapter through a structural description of the thesis.

1.1 **BACKGROUND**

During the past three decades, societies have undergone a rapid transformation where capital and labor-based societies have shifted into information societies (Burton-Jones, 2001; Castells, 2005) that focus on the development of a knowledge economy (Powell & Snellman, 2004; Rooney et al., 2005). Such societal transition emphasizes the importance of information availability, knowledge development, education, people with heterogeneous backgrounds (e.g. culture, education), novel ideas for technological prosperity, as well as the rapid emergence, design, production, and use of Information Technologies (IT) that aim to support and improve the quality of human life.

The latter part (rapid emergence, design, production, and use of IT) has been regarded as part of the so-called *digitalization era* (Colbert et al., 2016), where societies in general have undergone a radical change towards nurturing a distribution and use of IT at various level of society (e.g. public sector, private sector). Here, digitalization refers to a complex social process and shall thus not be confused with *digitization*
because, strictly speaking, *digitalization* only refers to the process of converting information into digital form (as for instance explicated by Anderson & Maxwell, 2004; Vogelsang, 2010), whereas the process of *digitalization* includes additional aspects other than the aspect of converting analogue information into digital form. Such aspects concern the design, introduction, implementation, evaluation, and consumption of IT; the process of sense-making and learning new IT for various contexts (e.g. public sphere, workplaces, schools); design of pedagogies that sufficiently support the use of IT; activities that enable and intertwine knowledge development and learning as a constitutive part of designing IT and pedagogies; and other interrelated elements of IT that shape and influence human beings’ quality of life in the contemporary world (as for instance explicated by Castells, 2005; Gere, 2008; Colbert et al., 2016).

In turn, the concept of IT concerns technologies that store, study, retrieve, transmit, manipulate, distribute, and mediate data or information, in a certain context (e.g. workplace). IT artifacts as such include computers, smartphones, tablets, networks, the Internet, databases, software, hardware, e-commerce, and more (as for instance explicated by Webster & Robbins, 1986; Allen & Morton, 1994; Chandler & Munday, 2012). Consequently, the use of IT artifacts has increased societies’ capacity to transform different sectors such as education, training, employment, and access to life-sustaining resources for all members of society. However, despite the positive implications of introducing and using IT, digitalization has also generated implications that force workplaces to adapt to rapid changes of a constantly increasing and shifting landscape of technology development.

Such implications include a wide range of general challenges (described further by Colbert et al., 2016) such as the changing nature of occupations; the new world of labor supply; the changing boundaries of private and professional life; emerging work practices in the digital enterprise; unavoidable pressure among employees to develop new skills and competencies in order to carry out their daily work; and a continuous need to transform professional roles and practices. Workplaces are thus reinforced to respond with strategies and approaches that strengthen their so-called *digital workforce* (Kraiger & Ford, 2006), and which help them adapt to rapid and challenging implications of digitalization. This has also become the case for nations, regions, workplaces (e.g. municipalities) and practitioners that work with integration work in Western European countries and societies (Dahlström, 2007; Goodman, 2012; Eastmond, 2011).

Integration work in particular includes work-related facets such as support of inclusion through pedagogical approaches that incorporate immigrants’ participation in various areas of society (e.g. education, labor), and processes that promote the possibility for immigrants to engage civically in their everyday life (Vesterlind, 2016). According to Castles & Miller (2009), integration work has historically proven to be a challenging and constantly changing welfare domain. This challenge is situated and evident in the requirements which local governments and authorities (e.g. municipalities) need to deal with, in terms of issues related to asylum, refugees, settlements, social integration, and civic orientation. Additionally, integration work as a professional practice has gone through a transition of organizing activities, methods, and procedures, for conducting work that supports immigrants in their process of integration (Kettl, 2010; Reish & Jani, 2012). Such transitions indicate that integration work is developing into a new domain of practice and knowledge base that incorporates new pedagogical approaches and technologies (Vesterlind, 2016). Due to the contemporary wave of increased immigration in Western countries, the need of incorporating integration work activities through supportive IT has become an emerging topic for many European countries (e.g. Germany, Sweden).

In Sweden, the civic orientation program is, according to SFS (2010:1138), considered a special case of integration work that has been forced to adapt and respond to the increasing inflow of newcomers through the following factors: (1) changing practices including pedagogical approaches, organizational knowledge, and working conditions; (2) the potential need of digitalizing the program by adopting and introducing supportive IT that facilitates the program and makes it available for a larger throughput of newcomers in Sweden. However, due to the lack of prior research about civic orientation in general, it is difficult to know how the civic orientation program contributes to integration work in detail. This has to do with the fact that civic orientation is a rather new phenomenon (program established in 2010) that has not yet (to an extensive level) been scrutinized through research. Because the research case of this thesis...
concerns the digitalization of the civic orientation program, more knowledge is needed about fundamental issues concerning civic orientation as a phenomenon, practice, program, how it contributes to integration work in general, and how digitalizing the program can advance and improve the program. This will be depicted in detail in Chapter 2, while in the next section, I will give a brief introduction to the study of the civic orientation program and work-integrated learning.

1.1.1 The Study of the Civic Orientation Program and Work-Integrated Learning

Essentially, the civic orientation program is a 60-hour-long, nationally regulated integration program (SFS 2010:1138) in which both standardized and non-standardized content and form are used to support newcomers’ integration into Swedish society. The program is provided through the newcomers’ native language and presented through activities that consist of informing lectures and dialogic form of pedagogies, which newcomers participate in. The main objective of the program is to orient newcomers into a learning discourse where they develop knowledge about social phenomena such as human rights and fundamental democratic values in Sweden; laws and regulations; norms and values; individual rights and obligations in general; and how Swedish society is organized and affects everyday life on a practical level. In summary, the civic orientation program facilitates the integration of newcomers into work and into the daily life of Swedish society, which is executed through extensive access to information about Swedish society and by establishing a basis for dialogue, reflection, and further knowledge acquisition in the society.

A general issue of facilitating and providing 60 hours of civic orientation concerns the problematic phenomenon of heterogeneity among the practitioners (hereafter referred to as integration workers) and participants (hereafter referred to as newcomers) of the civic orientation program. In her dissertation, Vesterlind (2016) problematizes the phenomenon of heterogeneity as follows:

What knowledge that is actually presumed to provide civic orientation seems to be a rather multifaceted issue. Although the participants in the programs generally come from the same country, speak the same language, and are newly arrived immigrants, they are unique with respect to education, interests, experiences, age, religion, etc. These differences mean that the individual possibilities, expectations, and need for information will vary. For example, people from rural areas and people with low levels of education will have different needs for information compared to people from urban areas and those with higher education… This heterogeneity implies that civic orientation becomes a rather complex activity to deal with as the information will have to be made available and intelligible by the integration workers to each individual. It is reasonable to assume that people working with civic orientation know how to bridge between different needs, interests, values, and interpretations. This bridging work will most surely have consequences for immigrants’ possibilities to understand, participate, and influence different arenas in society (p. 4).

It is clear that Vesterlind (2016) emphasizes the phenomenon of heterogeneity as a present and challenging one for the context of organizing and implementing civic orientation. Due to the heterogeneous nature of the integration workers involved in the civic orientation program, there is a need for providing solutions (pedagogical and technological), which are made available and intelligible to each participant (newcomer). The newcomers have different possibilities, expectations, knowledge base, education, abilities for learning, and need for information. In turn, the integration workers need to address the heterogeneous needs of the newcomers, while they themselves are also heterogeneous due to different education, professional roles, areas of responsibilities, background, culture, knowledge base, etc. (Vesterlind, 2016). The heterogeneity of both integration workers and newcomers thus makes integration work as a professional practice a rather complex and wicked one, which needs to be problematized further.

Arguably, attributes of heterogeneity (e.g. gender, age, culture, etc.) are constitutive elements of a human being’s worldview. Subsequently, the term worldview is used to address human beings’ contemplation of the world, their attitude, interpretation, or view of life, and the set of beliefs, feelings, conceptions, ideas about fundamental aspects of reality that ground and influence human beings’ perceiving, thinking, knowing, doing, and being in general (Naugle, 2002). Problematizing the phenomenon of heterogeneity would thus
require a further understanding about how to bridge and support different worldviews of human beings with the worldview of society. However, *heterogeneity* is, at this stage, identified as one of the complex phenomena of integration work as a professional practice, while there might potentially be other problematic and relevant phenomena attached to integration work as a professional practice. Hence, further general knowledge about civic orientation as a program and integration work as a professional practice is needed (this will be depicted in Chapter 2).

In order to gain more knowledge about integration work as a professional practice, it is reasonable to inquire how relevant research problematizes issues concerning humans, knowledge, learning, and work. I will thus scrutinize this issue further by turning to the knowledge domain of WiL, as a domain that provides relevant knowledge (e.g. Matthews, 1999; Billett, 2001, 2004; Illeris, 2003; Engeström, 2004) and has an explicit focus on the relations between humans, knowledge, learning, and work in general. For this research, WiL can for instance provide knowledge to problematize integration work as a professional practice and what the essential challenges of working with integration work are. Furthermore, WiL as a knowledge domain will be considered a reasonable domain that provides a wide range of knowledge perspectives that help to problematize the implications of digitalizing the civic orientation program. This thesis, however, is essentially a thesis within the discipline of IS, whereas questions concerning WiL cover aspects concerning the relations between humans, knowledge, learning, and work. Therefore, more knowledge is needed about other aspects concerning the digitalization of the civic orientation program such as design, intervention, and evaluation of efficient and sufficient IT artifacts, which aim to support and improve the integration work. Traditionally, such aspects have generally been problematized and studied through subsequent design-oriented IS research.

### 1.1.2 Design-Oriented Information Systems Research

Over the last four decades, the IS discipline has produced a large body of literature that shows an increasing interest in design-oriented IS research (e.g. Nygaard, 1975, 1979; Mumford, 1983; Flensburg, 1986; Ehn, 1988; Takeda et al., 1990; Greenbaum & Kyng, 1991; Nunamaker et al., 1991; Walls et al., 1992 Sommerville et al., 1992; Hevner et al., 2004; Gregor & Jones, 2007; Sein et al., 2011). The discipline of IS is arguably inherently design-oriented and design-productive in its nature. Nichaves (2007, p. 99) for instance, states that:

*design oriented research can be somewhat regarded as the dominant, but implicit research perspective.*

Others (e.g. Hevner et al., 2004; Hevner 2007; Iivari, 2007; March & Storey, 2008) have described design as fundamental to the IS discipline, emphasizing the importance of Design Science Research (DSR) as an equally important paradigm as behavioral research in the IS discipline. Due to the outcomes of past and present ontological and epistemological assumptions in design-oriented IS research (Mumford, 1983; Kraft & Bansler, 1994; Iivari et al., 1998; Iivari, 2007; Carlsson, 2007; Purao et al., 2008), it has been suggested that there are mainly two schools of design-oriented IS research:

1. **Design Science Research in IS:** a paradigm of the IS discipline that relies heavily on a pragmatic IS research philosophy (Ågerfalk, 2010; Sjöström, 2010). DSR in IS is an approach that focuses on exploring the epistemology and methodology of developing knowledge through design of novel or innovative artifacts (software, hardware, processes, methods), and analysis of the use and/or performance of such artifacts along with reflection and abstraction of theories and principles, which help to improve and understand the behavior of aspects of IS research. Today, there are methodologies (e.g. Peffers et al., 2008; Sein et al., 2011), process models (e.g. Vaishnavi & Kuechler, 2007), and theory development approaches (e.g. Walls et al., 1992; Gregor & Jones, 2007) for organizing, conducting, and promoting DSR in the IS discipline. DSR has been applied in various areas of research, including e-government, design of smart cities and homes, e-health, digital innovation, etc.

2. **Socio-Technical Research in IS:** an approach that has its roots in England’s Tavistock Institute and which has inspired Scandinavian countries to develop and provide methods, theories, and processes for actively involving stakeholders in design activities. Socio-technical IS research helps
to ensure that the design outcomes (e.g. prototype) meet human needs, and that the end product (e.g. IT software) is sufficiently suitable for its context of use (Bjerknes et al., 1987; Ehn, 1988; Eason, 2001; Sommerville & Dewsbury, 2007). Specific design approaches that incorporate the socio-technical philosophy in IS research include: Mumford’s ETHICS (1983, 1995), the Participatory Design (PD) approach (Greenbaum & Kyng, 1991; Kensing, 2003), and the emphatic and contextual design approach (Beyer & Holtzblatt, 1997). Furthermore, there are specific systems design and development methods, which incorporate elements of the socio-technical approach concerning user participation and user involvement. These methods advocate an agile approach such as extreme programming (XP), Dynamic Systems Development Method (DSDM), and Scrum (see Abrahamsson et al., 2002 for a review and analysis of these methods).

Despite philosophical distinctions among the different schools (where DSR is considered to incorporate a purely pragmatic philosophy, and where the socio-technical approach combines different philosophies), their differences complement each other in terms of producing research outcomes that focus on the design as the study of phenomenon. In the case of DSR, the importance of addressing and solving real-world problems through design, implementation, evaluation, and use of digital technologies is highlighted, whereas the socio-technical school highlights issues concerning the design process and use of the end artifact. However, both schools stress the importance of producing a body of knowledge that can be shared (or used) by a community of IS researchers. Subsequently, both schools address design of artifacts (e.g. design models, methodologies, design principles, frameworks, instantiations) as a common component in the research process, by attempting to ask and answer two fundamental questions: (1) How can design of artifacts contribute to the academic body of knowledge? and (2) How can academic knowledge support the design of artifacts in order to improve and support the life of human beings?

Questions such as the above are also relevant for the discourse of digitalizing the civic orientation program, because a central part of digitalization in general concerns the design, intervention, and evaluation of artifacts. Such questions also enable a bridging between the aspect of solving specific problems and the aspect of addressing a general research purpose. However, at this stage of the thesis, no extensive or explicit information has yet been provided about why the civic orientation program shall be digitalized, what kind of artifacts that shall be designed, for what reason or objectives, etc. This issue is therefore open for further exploration and inquiry, and will thus be a constitutive part of the thesis’ research purpose, objectives, problem, and questions.

1.2 Research Purpose, Objectives, Problem, and Questions

In light of the outlined background so far, it has been indicated that the practical relevance of the thesis lies in the interest of digitalizing the civic orientation program with a focus on: (1) designing, intervening, and evaluating efficient and sufficient IT artifacts that support and improve the civic orientation program, by making it easily available online for a large throughput of participants; and (2) designing approaches and methods that incorporate work-integrated learning and thus problematize and improve the professional practice of integration work. Additionally, the background initially identified the phenomenon of heterogeneity as an essentially complex and significant aspect of integration work as a professional practice. Both the integration workers and newcomers are heavily heterogeneous with respect to their worldviews, making the phenomenon of heterogeneity a crucial aspect of digitalizing the civic orientation program. This will be the subject of further inquiry. Furthermore, the background indicated that more knowledge is needed, about integration work as a professional practice and civic orientation as a phenomenon and program.

The task of incorporating digitalization through design-oriented IS research, was depicted as a duality of adopting academic knowledge that incorporates the design of efficient and sufficient artifacts, and the contribution of knowledge to the discipline of IS through design of subsequent artifacts. Design is thus a central pillar of digitalizing the civic orientation program, because digitalization concerns the design, intervention, and evaluation of sufficient artifacts. However, designing for the civic orientation program in particular, is only a special case of designing for integration work in general. Therefore, the design
endeavors of this research aim generally to design solutions that support integration work as a professional practice. Here, I distinguish integration work as a professional practice rather than a phenomenon, because as a phenomenon, integration work comprises a multitude of aspects that fall outside the scope of this research endeavor. In other words, this research demarcates the focus on integration work as a professional practice, rather than a phenomenon. When needed, I will explicitly address integration work as a phenomenon, but otherwise, I am referring to it as a professional practice.

Design is also, as depicted in the introduction of the thesis, addressed as the study object which enables this research to enter the empirical context through an explorative approach. By explorative, I mean a scientific inquiry that pertains to or is concerned with research of phenomena and problems, through exploration. Nevertheless, one of the essential traits of design-oriented IS research (as explicated by for instance Iivari, 2007; Sein et al., 2011) is to allow emergence of researchable problems through continuous and iterative problem formulations, which allow the researcher to cast specific problems into a class of problems. Therefore, in order to uphold an explorative approach that allows emergence of research problems coupled with designing for integration work as a professional practice, the thesis incorporates the following research purpose:

- To understand and problematize the aspects of designing for integration work.

Subsequently, the research purpose is analyzed into two distinct, yet interrelated, research objectives (both objectives will be incorporated through the particular case of digitalizing the civic orientation program). The objectives are proposed as tentative guidelines that incorporate the explorative entry point of this research. The objectives are as follows:

- Designing for integration work: the design of artifacts for integration work as a professional practice. Here, design as a process is seen as intertwined with intervention activities of digitalizing the civic orientation program. This objective is thus dual in the sense that it focuses on incorporating WiL to problematize and understand the significant challenges which the integration workers face in their work, and utilize that knowledge to design sufficient artifacts for integration work.

- Implications of designing for integration work is a part of the evaluation process and focuses on the changes, challenges, and problems of digitalizing the civic orientation program. Here, the objective is thus to identify the implications from the perspective of what bearing they have on integration work as a professional practice, and to problematize and extract the implications into significant researchable phenomena of designing for integration work (such as heterogeneity).

It is given that the empirical context of this research is situated within the case of digitalizing the civic orientation program. However, I distinguish the empirical context from the research context, because the former (empirical context) refers to the context in which practical activities for instance of design are bridged with research activities (e.g. data collection), while the latter (research context) refers to the explicit domains of research to which the thesis contributes a body of knowledge. The research context of the thesis is thus constituted by mainly two interrelated domains (shown in Figure 2):

- The domain of WiL concerns the relations between humans, knowledge, learning, and work. This research aims consequently to adopt WiL-related knowledge that helps problematize and understand integration work as a professional practice, the challenges which integration workers cope with in their daily work, learning implications of digitalizing the civic orientation program, etc.

- The domain of IS concerns design-oriented IS research through design, intervention, and evaluation of efficient and sufficient artifacts, which affect human life. This research aims consequently to adopt knowledge that enables this research to bridge specific objectives of digitalizing the civic orientation program, with production of a rigorous body of knowledge that is informed through an underlying design science.
The research problem is placed within the intersection of the two interrelated domains shown in Figure 2, because it concerns both domains. Subsequently, the research problem, at this stage of the thesis, is addressed as an open-ended problem available for further emergence through exploration. In other words, it is reasonably unjustifiable to provide a satisfiable articulation of what the research problem is per se, because so far in the thesis, this research has not been confirming a final understanding about the significant research problem. However, the current problem awareness is based on a tentative understanding of heterogeneity and worldviews (of human beings and society) as interrelated and complex components of the current problem awareness. More knowledge is needed, however, in order to enrich the problem awareness with mature insights through sufficient research. Therefore, in line with the explorative nature of design-oriented IS research, the research problem will be consequently identified, formulated, and re-formulated, throughout the process of shaping and re-shaping a continuous problem awareness throughout this research. This will be governed through the following research question:

- **How to design for integration work?**

The nature of the research question resonates with the explorative nature of the research purpose in the sense that it seeks to problematize and understand the aspects of designing for integration work. Subsequently, the research question seeks to gain knowledge about the process of designing for integration work, opening up and seeking for knowledge about other potentially interrelated aspects as well. Such aspects concern more than just the practical knowledge of how to design for integration work, and focus on researchable phenomena of designing for integration work. Hence, in order to govern, explore, identify, and problematize such potential aspects, two additional questions are formulated as follows:

- **What makes designing for integration work significant?**
- **Why to design for integration work?**

Together, all three questions will govern the rest of this research by producing knowledge that addresses and answers each question from perspectives that bridge the empirical work of the thesis with the abstraction and production of theoretical contributions.

### 1.3 Structure of the Thesis

The body of the thesis is structured into the following 10 chapters:

- **Chapter 1** includes an introduction and research background, and sets the aim, context, problem, and researchable question of this thesis
- **Chapter 2** presents the empirical setting concerning the civic orientation program and the digitalization of civic orientation
- **Chapter 3** outlines related research
- **Chapter 4** describes and justifies the research strategy including the overarching research approach and subsequent methods
- **Chapter 5** presents the first Action Design Research cycle
• Chapter 6 presents the second Action Design Research cycle
• Chapter 7 presents the third Action Design Research cycle
• Chapter 8 presents the constitutive research papers of the thesis
• Chapter 9 provides an extensive discussion of the essential findings of this research
• Chapter 10 provides the concluding remarks of this thesis and emphasizes its limitations as well as further research
2 The Study of Civic Orientation

The information in this chapter is based on my own empirical experiences of digitalizing the civic orientation program, as well as previous work related to civic orientation and integration work. The overall purpose is to use this information and present an overarching picture of civic orientation as a phenomenon and program. Subsequently, detailed information about the case of digitalizing the civic orientation program will be presented. More specifically, one objective of this chapter is to frame and illuminate civic orientation as a phenomenon and program. Another objective is to explicate the integration workers of civic orientation, and their professional practice together with their roles and areas of responsibilities. A third and final objective is to present the underlying motives, objectives, and presupposed implications of digitalizing the civic orientation program. I will outline the history of the emergence of civic orientation as a phenomenon below.

2.1 The Emergence of Civic Orientation as a Phenomenon

In a proposition from 1997 (Prop. 1997/98:16), the Swedish government proposed that the societal program ‘Swedish for Immigrants’ (SFI) – which essentially teaches immigrants the Swedish language – should provide knowledge and basic information about social life and the law in Sweden. The proposition assumes that:

*in order to successfully participate in the society, the immigrants need to understand the unspoken norms and social codes that govern human interaction in everyday life (Prop. 1997/98:16, p. 84).*

In addition to SFI, the proposition declares that civic orientation as a program includes supporting immigrants’ interaction with a wide range of social institutions and associations (e.g. the labor market). Furthermore, it is particularly emphasized that the civic orientation program should be adjusted and coordinated in relation to individual needs and the particular environment in which the individual’s knowledge will be needed (e.g. working environment, educational environment, local community).

However, in the early 21st century, a general understanding was declared (SOU 2003:75), stating a lack of unified definition concerning the necessary information (content and form), which immigrants need to adopt in order to support their integration in the society. An additional issue concerned the fact that the supply and content of immigrants’ introduction program (SFI) varies greatly among the governing municipalities of Sweden. Furthermore, the Swedish government wanted to split the specific language-training program and isolate it from the part of SFI that concerned civic information. Thus, in 2002, a special committee (also known as ‘SFI-utredningen’) examined how the SFI program could be renewed and organized in a way that ensures every immigrant the opportunity to be included in the language training (Dir. 2002:105). At last, in 2007, SFI curricula were changed, and the objectives of civic information were removed. However, that same year, a report from the Integration Board (titled ‘Ett förlop är’) presented data that showed how less than half of the 90% of the newcomers that participated in SFI, had any contact with the Swedish labor market at all. As a response to this problem, in 2009, the Ministry of Integration and Gender Equality advocated to change the title of the ‘civic information program’ to the ‘civic orientation program’ instead.

2.2 Introducing the Civic Orientation Program

The entry point to the civic orientation program derives from the ambition of building a national standard that supports Swedish municipalities in providing civic orientation for newcomers. The change from civic information to civic orientation was meant to ensure a high-quality service, which works towards a national supporting standard (SOU 2010:16). Specific directives for civic orientation thus became explicit requirements as of December 2010 (SFS. 2010:1138). As a consequence of these requirements, one requirement maintained that high quality of providing the civic orientation program not only concerns mastering the subject, but also involves mastering pedagogical skills, the nature of the target group (e.g. background of newcomers), as well as good language skills (both Swedish and the native language of the
newcomers). Additionally, to assure the quality of the program at a national level, requirements focused on the importance of special educational efforts and a practice of civic orientation. However, due to the previous scope of the SFI program, necessary knowledge and expertise (e.g. pedagogical skills) for conducting the teaching part of civic orientation was not something that the SFI teachers mastered. Nor were there any specific regulations that required the teachers of civic orientation to have a higher educational background or training. These issues, along with others, concern the aspects of working with civic orientation.

2.3 Working with the Civic Orientation Program

The integration center in Gothenburg is the original place in Sweden that was responsible for organizing, promoting, and distributing the civic orientation program. They function as the nexus for coordinating and connecting other Swedish municipalities to support the program in Sweden. Other municipalities in Sweden, however, are obligated to provide 60 hours of civic orientation for newcomers, but they are not (in any sense) responsible for changing or developing the structure or content of the civic orientation program. Instead, their function is to enable the civic orientation program for newcomers that are located in various cities and regions of Sweden, making it possible for more newcomers to learn explicit knowledge about society. Thus, the integration center of Gothenburg is the primary place for hiring individuals as integration workers that are responsible of working with civic orientation.

Working with civic orientation at the integration center concerns aspects such as producing content (e.g. text, pictures), distributing content (e.g. slides), scheduling 60 hours of civic orientation, and providing civic orientation. In order to organize and conduct activities that support these aspects, the integration center hires a wide range of integration workers, who are responsible for covering different roles and areas of responsibility that govern and support the civic orientation program. The integration workers are individuals with a heterogeneous worldview in terms of their background, education, working experience, nationalities, cultural values, knowledge interests, norms, values, personal beliefs, and so forth. Furthermore, the integration center hires some of the integration workers on a full-time basis, while others are hired on a part-time basis to organize and provide 60 hours of civic orientation through classroom teaching. Below I describe the integration workers of civic orientation, by explicating their roles and areas of responsibilities in more detail:

- **Content producers**: individuals that are hired by the Swedish authorities, and the integration center in Gothenburg, to collaborate and produce standardized and non-standardized content. The standardized content is produced and distributed (both digitally and physically) as a book with the title ‘Om Sverige’ (translated to English as ‘About Sweden’). The individuals responsible for producing the book are hired by Swedish authorities (Länstyrelsen i Västra Götaland) to design the book (e.g. layout, text font) and to produce, implement, and use standardized content (e.g. text, images), which is first and foremost used by the integration center of Gothenburg, and secondarily used by other Swedish municipalities that buy the material from the integration center to enable and provide 60 hours of civic orientation in other cities of Sweden. The non-standardized content, however, is produced by content producers that are hired on a full-time basis by the integration center to produce additional content to the standardized book. The non-standardized content is implemented through for instance digital slides (e.g. PowerPoint slides) and used by the tutors that are responsible for providing newcomers 60 hours of civic orientation.

- **Coordinators**: individuals that are hired on a full-time basis by the integration center to coordinate organizational activities such as coordinating 60 hours of civic orientation, coordinating integration workers to different groups of newcomers (from different countries), coordinating workplace excursions with newcomers and tutors (e.g. visiting different companies).

- **Tutors**: individuals that are hired on a part-time basis by the integration center to provide newcomers 60 hours of civic orientation, through the newcomers’ native language. The tutors have regular jobs not specifically related to integration work and not all of them have a formal pedagogical education. But they all have the general task of providing newcomers civic orientation, which in itself is a task that involves pedagogical methods and skills. This issue
implies that the integration workers share different knowledge domains (e.g. educational background, previous professions), which they use to conduct their work as tutors. Furthermore, the tutors are themselves immigrants that have immigrated to Sweden, meaning that they all have heterogeneous worldviews, which they utilize to bridge between the newcomers’ worldviews and the worldview of society.

The tutors are the group of integration workers who are ultimately responsible for providing newcomers 60 hours of civic orientation. They are also the ones who meet and interact the most with different groups of newcomers. Additionally, they are responsible for using supportive technologies, such as digital slides, to mediate content of civic orientation in a sufficient way. Consequently, content of civic orientation is provided through a certain structure, which is stipulated at a national level (SFS 2010:1138) to reinforce pre-defined themes of civic orientation as a phenomenon. These themes are a crucial process of providing civic orientation and are explicated in the next section.

2.4 Providing Civic Orientation Content

Content of civic orientation is, since the introduction of regulations in 2010 (SFS 2010:1138), provided through specific themes and dialogic meaning and sense making, by tutors. The idea of establishing a process of dialogues and reflection among the newcomers, deviates from traditional classroom teaching and instead moves forward to a new kind of practice that emphasizes orientation. Thus, the objectives of providing civic orientation content to newcomers are that they shall learn fundamental knowledge about Swedish society (e.g. democratic values, laws and regulations). But in order for the newcomers to learn the content, tutors are expected to mediate specific content through dialogue. And in order to ensure equal service and quality of providing civic orientation, standardization efforts (SOU 2010:16) have been developed and proposed as a consistent solution, which are incorporated through the following eight pre-defined themes of civic orientation content (SFS 2010:1138):

- Arriving in Sweden
- Living in Sweden
- Supporting yourself and developing in Sweden
- The individual's rights and obligations
- Starting a family and living with children in Sweden
- Having an influence in Sweden
- Looking after your health in Sweden
- Ageing in Sweden

As an additional support to structure and distribute the pre-defined themes, a schedule, reference text, and digital slides are developed as supportive technologies for the tutors to use during their scheduled sessions of civic orientation. The distributed content serve as a base of knowledge for the newcomers to be oriented in, in order for them to become more familiar with each and every theme. The distribution of the content, due to present ways of distributing the content (e.g. book, slides), is limited. For instance, the content is not digitally available and possible to use across different groups or occasions. Nor is the content coordinated between the tutors because the tutors have other primary occupations, meaning that most of them understand and convey the content differently. Thus, there is no unifying consensus in the ways of coordinating and/or distributing the content among tutors and across their different sessions.

Another aspect of providing 60 hours of civic orientation concerns the problem of making the civic orientation sessions meaningful for the newcomers. This aspect is difficult for the tutors to address on a general level because of the newcomers’ heterogeneity. For instance, one of the newcomers may be a professor in a scientific discipline, while another newcomer may be illiterate. Another aspect concerns the fact that there are no explicit phases of evaluating newcomers’ learning outcomes (e.g. through exams or tests). This makes it difficult for the tutors to control specific learning outcomes from each and every session. The only requirement that the newcomers need to take into consideration in order to accomplish the civic orientation program is to attend the sessions and be present for a total of 60 hours. Thus, their
presence is a crucial, yet complicated issue, because if they miss one session they cannot recover their absence through other modes of participation (e.g. participating in another group, digital participation).

Additionally, the content assumes that the tutors know how to contextualize and use the content in a meaningful way during their 60 hours of sessions. Here, the tutors’ presence is also an important factor for mediating meaningful sessions through engaging dialogues with the newcomers, which address a particular theme (e.g. democracy in Sweden). Meaning-creation and learning thus become primarily a consequence of engagement and participation in the situations where tutors and newcomers interact (e.g. through dialogues), rather than through one-way interaction with the content per se (e.g. reading the book ‘Om Sverige’).

Creating meaning through situated knowledge and learning is something that scholars (e.g. Lave & Wenger, 1991; Wenger, 1998) advocate as communities of practice, where practitioners (e.g. integration workers) develop a common repertoire and knowledge base that accumulates competencies and skills among practitioners over time. Arguably, similar premises may be suitable for the tutors, because they do not have a common repertoire or knowledge base that they can use to coordinate and establish a common ground of skills (technological or pedagogical) and methods from. Nor do they have formalized ways of handling tensions that emerge due to the heterogeneous worldviews of newcomers. This is, however, an open issue for further inquiry. Furthermore, the tutors are not, within the frame of their profession as tutors, formally educated to handle or resolve conflict-oriented situations, which emerge due to different worldviews (e.g. norms, values, beliefs). Other integration workers, such as content producers, do not have a unified approach or routine for updating civic orientation content either. Nor do they have technological support for collaboration and distribution of the content digitally. As a response to these and other aspects of organizing and conducting the civic orientation program, an urgent need for digitalizing the civic orientation program emerged.

2.5 The Case of Digitalizing the Civic Orientation Program

The information that is provided in this section derives from an early case description that was formulated before the initialization of the actual case. The case description was formulated by the project members of the case, who were representatives from both University West and the integration center in Gothenburg, Sweden. Representatives from the integration center shared their insider view of how the civic orientation program is organized and implemented, the underlying motivation for digitalizing the program, the objectives of digitalizing the program, as well as other information that helped diagnose and identify tentative challenges and implications of conducting the case. I will depict these issues further below.

The case of digitalizing civic orientation was launched by the integration center in Gothenburg together with University West in December 2013 and finished in December 2015. Representatives from both the integration center and University West were appointed to form a project group. The underlying motivation and reason for digitalizing the program were, in conjunction with describing the overall project in an enclosed funding application, articulated as follows:

- To increase the availability of the program for newcomers who live in rural areas or newcomers who have certain deficiencies (e.g. mental or physical handicap)
- To coordinate different counties and municipalities toward approaches and methods that enable them to unify sufficient prerequisites of organizing and providing civic orientation
- To balance different pedagogies of providing civic orientation with the heterogeneity of newcomers
- To increase the flexibility of civic orientation content so that it is adaptable to different group of newcomers’ culture, language, knowledge basis, etc.
- To provide personalized learning modules that advance newcomers’ knowledge of society
- To improve the quality of the civic orientation program with respect to offering new organizational prerequisites which support integration work as a professional practice
- To integrate and distribute sufficient technologies that enable integration workers to collaborate,
communicate, and interact efficiently with each other and the newcomers

In order to incorporate the motives articulated above, a set of specific objectives was formulated by the project members to govern the digitalization process. These objectives are shown in Table 1.

| • Design an infrastructure for e-learning solutions that is adaptable and flexible for different groups of newcomers |
| • Design a supporting digital platform that increases the availability of the civic orientation program through distance education, online collaborative tools, and other e-learning solutions |
| • Design advanced learning modules that advance newcomers’ knowledge of society |
| • Design approaches and methods that are adaptable for the different pedagogies and knowledge prerequisites, which the integration workers use to provide civic orientation |
| • Design a structure and performance of civic orientation in the physical classroom as well as through e-learning through blended learning solutions |
| • Design a model of e-learning, where pedagogies, structure, and content are adaptable for different modes of delivery |

Table 1. Objectives of digitalizing the civic orientation program

The objectives shown in Table 1 are summarized as follows: designing an infrastructure for e-learning solutions that distribute 60 hours of civic orientation online, both asynchronously (e.g. pre-recorded video lectures, discussion forums) as well as synchronously (e.g. videoconferencing); a supportive digital platform is desired to integrate e-learning solutions such as course sites (e.g. a site for a specific group of newcomers), scheduling, presence support (e.g. the presence of tutors, the presence of newcomers); advanced learning modules that have the purpose of expanding newcomers’ knowledge of society with an emphasis on social phenomena that are embedded into the society’s worldview; pedagogical methods and approaches that resonate with how 60 hours of civic orientation is organized and performed in the classroom, as well as through e-learning solutions such as videoconferencing; Finally, due to the heterogeneity of integration workers and newcomers, adaptable solutions (e.g. structure, pedagogies) for different modes of delivery (e.g. different languages) are requested.

Consequent to the objectives shown in Table 1, a set of tentative implications of digitalizing the civic orientation program was tentatively identified as shown in Table 2.

| • Knowledge development concerning teaching methods and supportive teaching content for providing 60 hours of civic orientation in a digital as well as physical setting |
| • Explicating the effects of providing 60 hours of civic orientation to newcomers, which are situated in sparsely populated areas of Sweden, in their native language |
| • Nationally and internationally strategic influences of spreading the project’s findings |
| • The development of quality assurance concerning teaching content that is used by tutors during their civic orientation sessions (both classroom and e-learning sessions) |
| • The development of a model for organizing and conducting 60 hours of civic orientation through a digital platform that is supported through adaptable e-learning pedagogies, as well as distributed content that is flexible and adaptable to newcomers’ heterogeneity |
Another crucial aspect of digitalizing the civic orientation program concerns the development of a common knowledge base for the integration workers' professional practice. This concerns the integration workers at the integration center of Gothenburg as well as integration workers that are situated in other Swedish municipalities. Other consequences of establishing a commonly shared knowledge base arguably lead to an increased ability for the integration workers to structure and process their activities collaboratively. In addition, the project group requests the ability for municipalities to hire tutors and introduce them to a commonly shared body of knowledge domain and repertoire, which helps them organize and conduct their sessions of civic orientation through a unified way. This shall in turn help other municipalities to: (1) reduce the overhead costs of educating newly hired integration workers; (2) gradually accumulate more knowledge about how to support integration work through civic orientation; and (3) share this knowledge with society.

Finally, challenges for the project's research endeavours were identified and tentatively addressed as interrelated aspects of heterogeneity. These were articulated as follows:

1) **The challenge of supporting IT literacy**: to increase the integration workers’ ability to use IT artifacts sufficiently in accordance with their professional roles (e.g. content producer, tutor) and area of responsibilities. Here, the challenging task concerns the strong heterogeneity among integration workers with respect to their a priori knowledge of using IT artifacts on a daily basis in their everyday lives. A related issue concerns their ability to update their knowledge (e.g. adopting and using new technologies) over time without any support from external actors (e.g. training consultancy). Another related issue concerns the challenging task of how the integration workers share their knowledge with each other and how well their sharing resonates with the idea of establishing a common knowledge base and repertoire. This challenge is thus taken into consideration for further problematization.

1. **The challenge of multimodality**: to organize and provide 60 hours of civic orientation to different groups of newcomers through different modes of delivery and performance through adaptable e-learning solutions. Here, the challenging task concerns heterogeneity from the perspective of how civic orientation content shall be produced, coordinated, distributed, and used, in order to distribute it through different modes that address different groups of newcomers. In addition to this challenge, sufficient technology and pedagogies are required to support how and when content is produced, coordinated, distributed, and used. Another interrelated issue concerns how to adapt advanced learning modules to newcomers’ heterogeneity, with particular regard for dissimilarities of language and learning abilities. Interrelated to this is how to provide online content that is not static, but rather dynamic and interactive, and how such content shall be sufficiently produced, maintained, updated, and distributed by the integration workers. This requires that the integration workers acquire new IT literacy, alternatively, the integration center must hire new employees that possess appropriate forms of IT literacy. This challenge is thus taken into consideration for further problematization.

2) **The challenge of creating and/or extending professional roles**: to create and/or to extend the roles of integration workers as a direct implication of digitalizing their professional practice (e.g. introducing technologies, organizational prerequisites). An extension of the integration workers’ professional roles is deemed an inevitable implication of digitalization and will thus acquire approaches and methods that support their work-integrated learning. This shall be elaborated through

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<td>To give newcomers an increased understanding about culture, norms and values in Sweden</td>
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<td>2.</td>
<td>To teach newcomers an increased IT literacy that helps them search and find information concerning practical issues of living in Sweden</td>
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<tr>
<td>3.</td>
<td>To help the integration workers of the civic orientation program develop more knowledge about the effects of providing the civic orientation program and how it helps integration work in Sweden in general</td>
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Table 2. Tentative implications of digitalizing the civic orientation program
knowledge development over time, through formalized or non-formalized WiL-activities (e.g. workplace training). A challenging issue considering this concerns how to organize learning activities and how to manage them due to the complexity of integration workers’ heterogeneity and practice. Another challenge concerns the question of how and when it is appropriate to organize and conduct WiL-activities: shall the activities be governed as a part of the digitalization process, or shall they be conducted after the digitalization process is completed, or both? This challenge is thus taken into consideration for further problematization.

The challenge of presence: to facilitate different modes of presence in different environments (e.g. online, classroom). The different modes of presence concern the potential modes (e.g. digital, physical, cognitive, social, or a combination) of which presence becomes manifested and comported through in space and time (synchronous, asynchronous). Here, the heterogeneity of tutors and newcomers afford different ways by which they cope in a given situation or context. One challenging task thus concerns how supportive technologies can facilitate different group of tutors’ and newcomers’ presence and degree of participation. For instance, if a newcomer is physically absent from a session of civic orientation, how can they be informed of the content of that particular session retrospectively? Another challenging issue concerns the tutors and their pedagogies toward newcomers that are present, simultaneously, at different places (e.g. digital classroom, physical classroom, discussion forums, chat). This challenge is thus taken into consideration for further problematization.

A common denominator for each and every challenge concerns, as pointed out, the complex and present phenomenon of heterogeneity. Heterogeneous worldviews (integration workers, newcomers, society) are dispersed from one party to another, making it a central phenomenon of this research to problematize and respond to throughout the case of digitalizing the civic orientation program. And from a general perspective, the phenomenon of heterogeneity is now addressed not only as a phenomenon that is locally situated within the case of digitalizing the civic orientation program, but a phenomenon that is relevant to problematize further in order to address the question of how to design for integration work. However, at this stage this statement is a tentative one, because the identified challenges are diagnosed and articulated as tentative ones, meaning that there may be other aspects of digitalizing the civic orientation program that have not yet been revealed as relevant for this research.

In summary, this chapter has outlined civic orientation as a phenomenon and as a support program of the integration work in Sweden. I have presented civic orientation, the purpose of it, its relation towards integration work in general, and the constitutive parts (e.g. motives, objectives) of digitalizing the civic orientation program. From this perspective, it is now known that this research began exploratively through a relevant problem for society, namely the need of digitalizing the civic orientation program. Now, when the empirical context of the thesis has been explicated to the degree where the reader is informed about the essentials concerning the civic orientation program and the case of digitalizing it, in the next chapter I will elaborate on related research that helps inform the relevant areas of this research, concerning integration work as a phenomenon and professional practice, workplace learning as a knowledge domain that problematizes WiL-related issues, e-learning, and research on IS design. I consider all these four areas relevant because they all have a bearing on the empirical and research context of this research.
3 Related Research

This chapter presents related research on integration work, work-integrated learning (WiL) e-learning, and IS design. All four areas of research are relevant for the case of digitalizing the civic orientation program, as well as the research purpose of the thesis. For instance, research on integration work elucidates the view on integration from the perspective of societal challenges that concern the professional practice of integration work. Another aspect of integration work concerns the element of ‘work’ and how the organization of work activities, in terms of methods and procedures as well as the development of a body of relevant professional knowledge (e.g. skills, competencies for integration work), can be supported through digitalization. Subsequently, research on WiL sheds light on different views concerning the relations of humans, learning, knowledge, and work. Additionally, research on e-learning complements related research on WiL by focusing on how e-learning has traditionally been supported through technologies, and problematizing what bearing it has on the digitalization of the civic orientation program. Consequently, research on IS design is emphasized from the viewpoint of design science research, participatory notions of design, and philosophy. All of these areas of related research thus serve as a frame of reference for adopting a body of relevant knowledge (e.g. concepts, theories), which will then influence and incorporate the theoretical considerations and use of this research.

3.1 Research on Integration Work

Globally, millions of people are forced to leave their home countries due to international hostilities, war, violence, and persecution. Host countries – mainly countries that are located in Europe – face the responsibilities of protecting newcomers (e.g. refugees) and guaranteeing their human rights, while the newcomers face crucial challenges of re-building their lives in countries typically not of their own culture and/or choosing. As a response, host societies develop programs that support integration work.

Studies on integration work (e.g. Asselin et al., 2006; Valenta & Bunar, 2010; Eastmond, 2011) indicate that there are general issues that make it difficult for governmental programs to achieve successful integration work in society. Such issues include measures such as training, housing, education, work, and the fact that none of these alone can ensure successful integration. Other issues concern how welfare agencies and health services coordinate regarding difficulties with handling traumatized newcomers. Such cases are described to be difficult to handle for authorities, due to the mental status of newcomers, their lack of adequate skills, cultural differences, and language barriers (Eastmond, 2011). In worst cases, some of the newcomers are not in proper shape (mentally and physically) due to post-traumatic experiences of war, and are thus unable to participate in their host society. Furthermore, from the perspective of immigrants, it is experienced as a tedious process to participate in each and every integration program (e.g. SFI, civic orientation) in order to become established as citizens of their host society. For instance, in the study by Eastmond (2011), immigrants from Bosnia-Herzegovina who settled in Sweden in the 1990s felt that they may risk becoming unemployed for a longer period of time, due to the introduction period of 18 months.

Other studies on integration work (e.g. Asselin et al., 2006; Martinovic et al., 2009; Bennet et al., 2009; Erdal, 2013; Ekström & Östman, 2013; Yohani, 2013) indicate that integration work needs to essentially be understood as a societal topic in relation to elements such as integration policies, ideologies, the organizational prerequisites and setting, affordances and constraints of supportive IT, as well as to the newcomers’ personal needs and interests. Yohani (2013) points out that integration work is heavily governed through the practice of integration workers, where integration workers are constantly faced with situations that require an understanding about facets such as the cultural boundaries of newcomers (Valenta, 2012), or how to balance formal prerequisites (e.g. standardized learning content) with the needs of newcomers (e.g. learning how to get a job).

However, these facets alone cannot guarantee a successfully accomplished integration process, because the everyday work of integration workers also requires other forms of knowledge such as: procedural knowledge (Eastmond, 2011; Valenta, 2012), which includes performance of working tasks, and how to handle conflicts and tensions between different participants (e.g. newcomers); learning how to use IT
artifacts (e.g. computers, tablets, smartphones) that support the newcomers’ access and participation in society (Andrade & Doolin, 2016); and finally, how to incorporate the differences, in terms of newcomers’ heterogeneity, through supportive approaches and methods of pedagogies.

As an elaboration on the above thoughts, and with a focus on the civic orientation program as a special case of supporting integration work, Vesterlind (2016) discusses the importance of producing a professional knowledge base for integration workers, which will help integration programs develop a sustainable knowledge domain of integration work that stretches beyond local practices of integration work (e.g. civic orientation). Vesterlind (2016) further concludes that future research on integration work needs to address questions concerning how teaching pedagogies, content, and technologies can be designed to address the newcomers’ heterogeneous needs, enabling adaptable solutions that allow flexible learning procedures. Vesterlind (2016, p. 97) discusses this as follow:

\[\text{What would a digitalization of civic orientation imply in relation to time and space aspects? For example, would it allow for more flexible learning? Development of digital tools is already going on in this area. There is, for example, a national joint data platform being developed for civic orientation, common materials, PowerPoint presentations, etc. From a WiL perspective, it would be interesting to investigate how this inter-institutional development of civic orientation plays out.}\]

Obviously, Vesterlind (2016) discusses the potentials of future research within the realms of the civic orientation program, with an emphasis on digitalization. Additionally, Vesterlind (2016) is also discussing the necessity of establishing a body of professional knowledge that can be used to govern integration work as a professional practice. Such issues, concerning how to incorporate and further develop integration work as a professional practice, are issues that concern the relation between humans, knowledge, learning, and work, in general. This will be further elaborated in the next section about research on WiL.

### 3.2 Research on Work-Integrated Learning

The idea of developing a body of knowledge that is integrated with work activities is something that has occupied researchers within the domain of WiL (and WPL) for nearly two decades. In particular, the relationship between humans, knowledge, learning, and work is something that is considered widely within research on WiL. (Billett, 2001, 2004; Boswell & Buchanan, 2007; Perlow, 2012; Malloch et al., 2010; Ramarajan & Reid, 2013; Glen et al., 2014; Yee, 2014; Brown & Martin, 2015; Reyt & Wiesenfeld, 2015).

Early studies of WiL (e.g. Knippen & Green, 1997; Kirk & Kirk, 1997; Teare, 1998a, 1998b; Bowerman & Collins, 1999; Billett, 2001) were linked to the foundations of vocational practices and training traditions with concerns about human skills, competencies, and how organizations can engage their employees in a participative culture of knowledge development through sharing. Further characteristics of WiL-related research have been outlined and profiled in the *SAGE Handbook of Workplace Learning* (Malloch et al., 2010) as follows:

- Development of ‘hard’ and ‘soft’ skills at work
- Developing multi-tasking skills at work
- Promoting knowledge at work through formal and informal learning
- Promoting learning-technologies at work
- Engaging practitioners in processes of reflective learning at work
- Establishing a knowledge-sharing culture through participation and co-participation
- Facilitating workplace learning activities through support of IT

From the perspective of engagement and participation in learning activities at work, Billett (2001) in particular has successfully identified factors that shape how learning proceeds in workplaces, by emphasizing the dual bases of how workplaces afford opportunities for learning, and how that is integrated with work activities through guidance that is embedded in the workplace culture. Billett (2001) argues that co-participation among practitioners of a workplace is a key aspect in order to facilitate
learning at the workplace on a continuous basis. Enabling co-participation in this manner is problematized from the perspective of how well the workplace can afford or constrain work-integrated learning opportunities for individuals to engage with. Underlying premises of such participation originate from the Vygotskian view (see for instance Van der Veer, 2008), where learning is problematized and understood from a sociocultural perspective that is integral with understanding different levels of knowledge expertise (Dreyfus & Dreyfus, 1986). Furthermore, this is problematized from the perspective of how participation in professional practice can increase levels of expertise through a gradual and continuous learning process at work (Billett, 2001).

This socio-cultural nature of WiL can furthermore be found through different manifestations and interrelated concepts and philosophies, which problematize the relationship between human, knowledge, learning, and work. Examples of this can be found in studies concerning the idea of situated learning and communities of practice (Lave & Wenger, 1991; Wenger, 1998), workplace learning in general (e.g. Fenwick, 2001; Billett, 2004), the influence that workplace culture has on learning at work (Solomon, 2001; Brockbank et al., 2002), and learning as a socially governed process that is integrated with work activities. Additionally, choosing appropriate forms of pedagogy (e.g. strategies for teaching and learning) is also considered an integral part of WiL’s socio-cultural nature (Skippington, 2002; Fuller et al., 2007).

However, according to Vaughan’s (2008, p. 14) extensive study of WPL:

\[T\]here is no sure-fire set of ‘things to do’. There are, instead, things to consider in relation to the structure of the organization and its goals, the immediate workplace conditions, and the learners themselves.

The things that Vaughan (2008) refers to include e.g. the socio-cognitive demands (e.g. task complexity, what skills the practitioner needs), the importance of the job within the organization such as the impact a specific task has on a larger work process, organization, relative prestige of the practitioner, and the access characteristics of knowledge (e.g. technical questions concerning knowledge access). Other considerations that affect the support of learning at work include wider factors such as regulations (e.g. work rules, government) and technology (e.g. pace and nature of change in technologies used in organization and difficulty of mastering new technologies at work). Such factors make a difference in how organizations might want to integrate learning processes with work activities (Cullen et al., 2002; Fuller et al., 2007; Choy et al., 2008). Although there are a number of different pedagogical techniques that incorporate this idea, without opportunities that encourage and support learning through participation, according to Hughes & Thornton Moore (1999) they will become moot.

Communities of Practice (CoP) (Lave & Wenger, 1991; Wenger, 1998) in particular is a well adopted theory that advocates learning through practice and participation. Although there are a variety of interpretations (e.g. Lesser & Storeck, 2001; Hildreth & Kimble, 2004; Cox, 2005), the essence of CoP focuses on learning as social participation, where the individual is an active participant in the practices of social communities, and where the individual gradually develops his/her professional identity through engaging in and contributing to the practices of their communities (Wenger et al., 2002). Furthermore, the purpose of a CoP is to provide a way for practitioners to share knowledge (e.g. tips, best practices), ask questions to their colleagues, and provide continuous support for each other. From this perspective, CoP provides this research a theory of learning, which is based on certain criteria (explicated by Wenger, 1998) that allow this research to study the situated work-integrated learning of integration workers, as well as providing a lens for observing and analyzing the integration workers’ professional practice.

The perspectives outlined above provide this research theoretical perspectives that inspire and problematize the issue of organizing and performing integration work through support of WiL-related knowledge. This is a relevant task because the underlying foundation of organizing and performing integration work does not rely on any particular type of approach or method (e.g. particular technique or strategy). Rather, performing integration work in the civic orientation program is solely performed through participative dialogues between tutors and newcomers. Thus, providing and learning civic orientation are activities that stress participation as a crucial element of integrating learning processes with work activities, rather than stressing a particular approach or method that fosters learning as a pure cognitive activity. This notion of learning through engagement and participation not only concerns the
performing part of integration work. Rather, it also concerns other aspects of incorporating integration work, such as acquiring new abilities and skills (e.g. IT skills) at work, and bridging and sharing knowledge within communities of practice. This research thus finds it reasonable to incorporate the question of how to design for integration work, by adopting relevant concepts and theories of WiL to enable learning processes as intertwined with the digitalization process. However, this is one aspect of incorporating the objectives of digitalization, whereas other aspects concern the objectives of designing and implementing e-learning solutions.

3.3 Research on E-Learning

E-learning is generally defined as instruction delivered through an IT-artifact (e.g. computer, tablet, smartphone) that is intended to support learning (Clark & Mayer, 2016). Other definitions of e-learning (e.g. Garrison, 2011) emphasize that e-learning is learning that is facilitated online through network technologies (e.g. videoconferencing) and sufficient pedagogies. Earlier, however, the term e-learning came into use in the mid-1990s along with developments of the World Wide Web, and a particular interest in asynchronous discussion groups. Additionally, the application of e-learning became widely popular within the setting of higher education (e.g. university). The primary objective of using e-learning at universities was to create a community of inquiry (Garrison & Anderson, 2003; Shea et al, 2006; Garrison, 2007), which is independent of time and location through the use of supportive IT. In light of this, a community of inquiry became known as a group of individuals who collaboratively engage in purposeful critical discourse and reflection, to construct personal meaning and confirm mutual understanding (Garrison, 2007). From this perspective, the process of building a community of inquiry reflects a particular educational approach using the possibilities of new and emerging e-learning solutions that help build collaborative constructivist e-learning communities.

Beyond the general descriptions of e-learning as a mediator of traditional distance education and learning, two essential applications that constitute the broader magnitude of e-learning are online and blended learning. Fully online learning is a subset of distance education with a focus on interactive content and features that are delivered through support of various form of resources, including Open Educational Resources (OER), Massive Open Online Course (MOOC), wikis, blogs, virtual worlds (e.g. Second Life), etc. Blended learning, however, is a prevalent form of e-learning in traditional higher education institutions, which combines online learning material (e.g. video streaming, pre-recorded lectures) with traditional classroom methods. Blended learning requires the physical presence of both teacher and student, with additional elements of awareness and control over time, place, path, and pace (Friesen, 2012; Lothringer, 2013; Banditvilai, 2016). From these two perspectives (online and blended learning), e-learning is no longer a synonym for distance education alone. Rather, e-learning is considered an open system that blends access to information and purposeful communication into a dynamic and intellectually challenging learning community.

Another central part of organizing and performing e-learning as an open, yet cohesive, system, is the essential rethinking of how e-learning shall be delivered and supported through appropriate forms of pedagogy, which mediate an educational experience to a community of learners (Garrison & Anderson, 2003; Lowenthal, 2009). One of the more prominent contributions of e-learning research that supports the community philosophy is the Community of Inquiry (CoI) model. Research on the CoI model (Garrison & Anderson, 2003; Shea et al., 2006; Garrison, 2007) illuminates that the model focuses on the context of learning experience and interactions that drive and motivate learning. Additionally, the model advocates that e-learning shall consider the presence of the learner and the teacher, in order to accomplish a fruitful and sufficient educational experience (Garrison & Anderson, 2003; Shea et al., 2012).

Presence as a phenomenon in general, has been, and still is, of great interest for e-learning research (e.g. Rourke et al., 2001; Garrison & Anderson, 2003; Shea et al., 2005; Garrison, 2007; Shea et al., 2013; Orcutt & Dringus, 2017). Different modes of presence concern, for instance, the social presence of the learner in terms of her ability to establish herself socially and emotionally as a real person through the learning experience; the cognitive presence of the learner that refers to her ability to construct and
confirm meaning through interaction and reflection; and the teaching presence that involves the provision of structure and a process for the learning. All three kinds of presence are elaborated through early seminal works of Gunawardena and his colleagues (Gunawardena, 1995; Gunawardena & Zittle, 1997), further to Garrison & Anderson’s (2003) CoI model, and later elaborations by Shea and his colleagues (Shea et al., 2005; Shea & Bidjerano, 2010; Shea et al., 2012, 2014).

Seminal e-learning research (e.g. Gunawardena, 1995; Gunawardena & Zittle, 1997; Garrison & Anderson, 2003) has not, however, had an explicit focus on problematizing presence of e-learning participants from the perspective of participants’ heterogeneity in workplaces outside of academia. From the perspective of the empirical context of this research, presence has tentatively been identified as a crucial challenge of designing for integration work. Therefore, further knowledge is needed about how presence in e-learning is manifested in a community of learners outside the context of higher education and how the aspect of heterogeneity affects the modes of presence (e.g. social presence, digital presence). Furthermore, from the perspective of accumulating knowledge to e-learning research, this issue is relevant because e-learning is no longer an isolated domain of interest that is only applied within the realms of higher education. Rather, e-learning solutions are increasingly adopted within workplaces outside of academia (see for instance DeRouin & Fritzsch, 2005; Tynjälä & Häkkinen, 2005; Nunes et al., 2009; Östlund, 2017), which is also the case of this research because of the objectives of digitalizing the civic orientation program.

### 3.4 Research on IS Design

This section will emphasize different streams of research within IS that problematize design as the study object of IS research. This is of particular interest to the thesis because design is one of the central pillars of this research, along with the idea of bridging design of sufficient artifacts with a production of academic knowledge. Therefore, in the following I will explicate research on IS design with a focus on different streams of design-oriented IS research, which provide this research a foundation or frame of reference for: (1) incorporating an underlying design science that justifies design of sufficient artifacts and theorization of design outcomes that support designing for integration work; (2) choosing appropriate concepts and philosophies that inform design as the mediator for research activities that help problematize the interrelated phenomena of designing for integration work (such as the phenomenon of heterogeneity); and (3) choosing an appropriate methodology to govern this research. I will thus address these issues below by depicting different aspects of research on IS design.

The idea of conducting IS research with design as the study object, has been an inherent knowledge interest for the IS discipline since the 1970s (e.g. Nygaard, 1975, 1979; Ivari & Koskela, 1980; Mumford, 1983; Ivari, 1986; Flensburg, 1986; Bjørknes et al., 1987; Ehn, 1988). Historically, there have been juxtaposed philosophies concerning how to design efficient and sufficient IT artifacts for support of work activities (Ehn, 1988), and how to conduct design activities in organizations together with organizational stakeholders (Greenbaum & Kyng, 1991). In particular, the Scandinavian approach (e.g. Bjørknes et al., 1987; Kraft & Bansler, 1994; Bjørknes & Bratteteig, 1995; Bratteteig & Wagner, 2012) is an example of a school which has emphasized the process of engaging stakeholders and end-users in design activities, as a crucial aspect of conducting sufficient design-oriented IS research. This view of engaging and involving stakeholders as co-designers of the design process established the approach of Participatory Design (PD) (Ehn & Kyng, 1987; Greenbaum & Kyng, 1991; Bodker, 1996; Kensing, 2003; Bodker et al., 2004; Bratteteig & Wagner, 2012), which is one way of bridging design activities with research activities.

PD aims at collectively designing efficient and sufficient IT artifacts, by involving prospective users in the design process. According to Bratteteig & Wagner (2012), PD as an approach differs from other user or human-centered design approaches, because PD puts emphasis on users (or stakeholders) as co-designers during all phases of the design process, rather than only as information sources for the designer’s ideas or testers of more or less finished artifacts. This participatory philosophy is based on the core principle of PD, which Robertson & Wagner (2012, p. 65) explain as follows:

> The core principle of PD is that people have a basic right to make decisions about how they do their work and indeed any other activities where they might use technology. This is also the most contested aspect of PD, its most
Although PD has been adopted to design IT artifacts that support e-learning (e.g. Brown & Voltz, 2005, Bullen, 2006; Winters & Mor, 2007) and a community of learners (e.g. Merkel et al., 2004; Milne, 2006; Bonsignore, 2013; Könings et al., 2014), there are seemingly no examples that demonstrate how PD can be used to engage and involve a heterogeneous group of stakeholders and end-users, as co-designers of the design process. Nor has prior research within the Scandinavian school enabled any specific design guidelines for how to design IT artifacts that support a professional practice that is inherently characterized by a heterogeneous group of practitioners, such as integration work and the integration workers of the civic orientation program. However, the idea of constructing guidelines for the design process to address and solve both specific problems and classes of problems, has generally been an essential task of the paradigm of DSR in IS (Nunamaker et al., 1991; Walls et al., 1992; March & Smith, 1995; Hevner et al., 2004; Vaishnavi & Kuechler, 2007; Gregor & Jones, 2007; Peffers et al, 2008; Sein et al., 2011). 

Historically, DSR has its roots in engineering and the ‘sciences of the artificial’ (Simon, 1996). It is fundamentally a pragmatic problem-solving paradigm that has rapidly evolved within the discipline of IS. Essentially, DSR seeks to create innovations that define the underlying ideas, practices, technological capabilities, and products through which the analysis, design, implementation, evaluation, and use of IT artifacts can be efficiently accomplished to solve organizational problems (Hevner et al., 2004; Peffers et al., 2008; Sein et al., 2011). Such problems are considered ‘wicked problems’ (Rittel & Weber, 1984; DeGrace & Stahl, 1990), and are characterized by elements such as:

- Unstable or unknown phenomena
- Constraints based on ill-defined working environments
- Inherent flexibility to change design processes as well as design IT artifacts
- A critical dependence upon human cognitive abilities (e.g. creativity) to produce efficient and sufficient solutions
- A critical dependence upon human social abilities (e.g. teamwork) to produce efficient and sufficient solutions

By addressing problems as wicked problems, DSR scholars are not only interested in solving specific problems in organizations. Rather, addressing and solving a class of problems that share common characteristics that are relevant for different contexts is considered a central mediator for bridging practical problem-solving with production of prescriptive knowledge, such as design principles (Markus et al., 2002) or design theories (Walls et al., 1992; Gregor & Jones, 2007). From such a perspective, the process of designing for integration work can be considered a mediator for conducting sufficient research that aims to solve specific problems as well as produce generalizable research outcomes that cast a specific problem into a class of problems. In order to elaborate such logical levels of abstraction (specific problem to class of problems), DSR encourages IS researchers to apply, test, modify, and extend kernel theories (March & Smith, 1995; Markus et al., 2002; Hevner et al., 2004; Sein et al, 2011) from other disciplines (e.g. behavioral science, philosophy) to incorporate the experience, creativity, intuition, and problem-solving capabilities of the IS researcher (Walls et al., 1992; Markus et al., 2002), and to inform the actual design process. In turn, the design process generates DSR outputs on different levels of abstraction, varying from outcomes such as specific IT artifacts to meta-artifacts (Walls et al., 1992; Gregor & Jones, 2007). Thus, more knowledge is needed about what kind of DSR outputs there are in general, and what bearing they have on this research.

3.4.1 Levels of DSR Outputs

In order to support a consistent view on how DSR outputs contribute to the general body of knowledge in DSR, Gregor & Hevner (2013) introduce three levels of DSR outputs:
1. **Level 1 outputs**: situated implementation of IT artifacts such as software products or implemented processes. This level of contribution is classified as more specific, limited, and less scientifically mature, but still relevant for producing outputs that can be operationalized in a particular context (e.g. organization).

2. **Level 2 outputs**: nascent design theories (explicated by Heinrich & Schwabe, 2014) or knowledge as operational principles/architecture, such as constructs, methods, models, design principles, and technological rules (described by Bunge, 1988). Level 2 outputs are more conceptually constituted than Level 1 outputs, because they are designed and proposed as meta-artifacts (Iivari, 2015).

3. **Level 3 outputs**: well-developed meta-artifacts such as design theories (e.g. mid-range theories, grand theories) that address a class of problems. This level of contribution is classified as more abstract, complete, and scientifically mature (Gregor & Hevner, 2013) than Level 2 outputs, because they can comprise Level 2 contributions as constituting parts of a Level 3 output (e.g. a design theory that comprises and offers a set of design principles).

Gregor & Hevner (2013) thus argue that a DSR project can produce contributions on one or more levels of outputs, ranging from being more specific solutions at Level 1 (e.g. prototypes, processes), to more general and abstract contributions at Level 2 in the form of nascent design theories (e.g. design principles), to mature DSR outputs that address highly complex research phenomena. All three levels of DSR outputs are thus relevant for a single DSR project. All three levels of DSR outputs are also knowledge types that are relevant for this research. However, the DSR outputs are essentially artifacts (e.g instantiated artifacts, meta-artifacts) that are produced through a particular approach or methodology (e.g. Peffers et al., 2008; Sein et al., 2011). In turn, adopting a particular approach or methodology is governed by the research problem that inspires the selection of a governing strategy. This will be discussed further in the next section.

### 3.4.2 Two Different DSR Strategies

Arguably, there are two distinct strategies which one can choose to organize and execute DSR in the field of IS. Iivari (2015) distinguishes the two strategies as follows:

1. **Strategy 1**: starts with a general problem (a class of problems) to be addressed, where an IS researcher builds a meta-artifact (described by e.g. Walls et al., 1992; Iivari, 2003) as a general solution concept (Aken, 2004) with the possibilities of being instantiated (March & Smith, 1995) into a specific solution concept or a concrete IT artifact (e.g. software system). DSR projects that resonate with strategy 1, echo a traditional grounding in the schools of systems development and engineering (e.g. Nunamaker, 1991; Hevner et al., 2004), and rely heavily on the expertise of researchers and designers, rather than on a philosophy of involving stakeholders and end-users in crucial DSR activities (e.g. problem awareness, building and evaluation).

2. **Strategy 2**: starts with a specific problem encountered in an organizational setting (e.g. Markus et al., 2002; Cole et al., 2005; Sein et al., 2011) and seeks to identify a class of problems deriving from the specific problem. Following strategy 2, researchers and designers attempt to solve the specific problem for a specific group of stakeholders by building, implementing, and evaluating a concrete IT artifact (e.g. software system) in a specific context (e.g. workplace). Additionally, during (or after) the process of solving the identified problem, the IS researcher distills and encapsulates prescriptive knowledge (e.g. knowledge about the design process) from sufficient DSR activities to create general solution concepts (e.g. design theory, design principles) that address a class of problems. DSR projects that follow this line of strategy resonate well with the Scandinavian approach of IS design, where stakeholders and end-users are engaged and involved in crucial DSR activities and decision making.

Iivari (2015) argues that the selection of a DSR strategy depends on the nature of the research, its empirical setting, and the scope of the practical problem. Furthermore, choosing one of the strategies in favor of another, produces consequences for how to conduct DSR activities. In order to explicate this, Iivari (2015) provides an overview of how the two strategies are contrasted (shown in Table 3).
philosophy per se, its relation to IS phenomena that inspire or problematize IS general research to grasp fundamental knowledge about design and its relevant philosophical underpinnings and rationale in general, have historically been adopted in IS research to grasp fundamental knowledge about relevant phenomena that inspire or problematize IS design. I will thus in the next section elaborate further on philosophy per se, its relation to IS research, as well as its relevance for this research.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Strategy 1</th>
<th>Strategy 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Researcher-client</td>
<td>A stakeholder or end-user may be involved, but not necessarily</td>
<td>Stakeholder and end-user involvement inevitable</td>
</tr>
<tr>
<td>relationship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Major problems</td>
<td>1. A class of problems, more or less informed by specific problems in practice</td>
<td>1. Uncertainty about the specific solution to the specific problem encountered by the stakeholder or end-user</td>
</tr>
<tr>
<td>to be addressed</td>
<td></td>
<td>2. The class of problems to be figured out during the DSR project</td>
</tr>
<tr>
<td>3. Typical uncertainty of</td>
<td>1. Uncertainty about the new, innovative general solution concept to the class of problems</td>
<td>1. Uncertainty about the specific solution to the specific problem encountered by the stakeholder or end-user</td>
</tr>
<tr>
<td>a DSR project</td>
<td>2. Uncertainty about the total complexity of specific problems and their solutions in practice</td>
<td>2. Uncertainty about the possible DSR contribution (output)</td>
</tr>
</tbody>
</table>

Table 3. Contrasting the two strategies of DSR (Iivari, 2015)

From the perspective of the two different DSR strategies, strategy 2 stresses a strong view of involving stakeholders and end-users as an inevitable ingredient of a DSR project. Approaches and methodologies of strategy 2 (e.g. Sein et al., 2011) thus embrace a participatory philosophy that focuses on how to conduct sufficient DSR together with stakeholders and end-users as equally worthy participants in crucial DSR activities (e.g. problem definition, design, evaluation, reflection, learning). This view is, as mentioned, close to the Scandinavian school of IS design. Both DSR strategy 2 and the Scandinavian approach resonate with an underlying philosophy that advocates organizational knowledge development through action and design-oriented research activities. Such philosophy advocates artifact design with support of academic knowledge, as well as production of academic knowledge through the design process. DSR strategy 2, along with the Scandinavian approach, are thus relevant choices to adopt for this research, because this research starts by addressing a specific phenomenon (digitalization) in a specific empirical setting (the civic orientation program), with a set of specific objectives that inform the empirical work of this research.

Another essential element of DSR that is relevant for this research is the element and conception of artifacts. Artifacts (as DSR outputs) range in their characteristics, from being addressed on a meta-level such as frameworks (e.g. Hevner et al., 2004; Kuechler & Vaishnavi, 2012), process models and methodologies (e.g. Peffers et al., 2008; Sein et al., 2011), and theory development approaches (e.g. Walls et al., 1992; Gregor & Jones, 2007; Kuechler & Vaishnavi, 2008), to being addressed as concrete level of outputs (e.g. instantiated artifacts). Additionally, kernel theories (or justifiable knowledge) (Walls et al., 1992; Gregor & Jones, 2007), are also considered meta-artifacts, which can be adopted from other disciplines (e.g. behavioral science, psychology, philosophy) and used to inform and support the design process of artifacts. However, in order to design technologies that sufficiently support the professional practice of integration work, more knowledge is needed about how to address and incorporate integration workers’ heterogeneity, because otherwise, the design outcomes risk becoming detached from the integration workers’ worldviews. In turn, worldview is a concept that has been problematized and discussed extensively by post-modern philosophers, in particular, philosophers such as Martin Heidegger (1962, 1977) and Jürgen Habermas (1984, 1987). Furthermore, philosophical underpinnings and rationale in general have historically been adopted in IS research to grasp fundamental knowledge about relevant phenomena that inspire or problematize IS design. I will thus in the next section elaborate further on philosophy per se, its relation to IS research, as well as its relevance for this research.
3.5 Research on Philosophy in IS

Philosophy in general is considered to be the root of understanding the underlying nature of reality and phenomena. Examples of this are ideologies and worldviews of science and research (Grayling, 1998). Philosophers have, throughout the centuries, asked questions that study the nature of human beings (metaphysics), the nature of being or existence (ontology), the nature of knowing (epistemology), and the nature of right or wrong (ethics). Western philosophers in particular have produced a vast body of knowledge for the emergence of scientific assets and thinking (e.g. methods, concepts, theories). This dates back to the early pre- and post-Socratic philosophers (e.g. Thales, Pythagoras, Plato, Aristotle), to early modern philosophers (e.g. Thomas Hobbes, Rene Descartes), and post-modern philosophers (e.g. Edmund Husserl, Martin Heidegger, Jürgen Habermas). As a continuation of producing knowledge within the discipline of philosophy, the interrelationship between philosophy and other scientific disciplines (e.g. IS, social sciences), has been strengthened through a continuous knowledge exchange. For instance, the philosophy of science (Losce, 1998) and the area of logical positivism (Quine, 1970, 1976; Friedman, 1999), have inspired IS researchers to produce systems development models and early models of DSR in IS (e.g. Bunge, 1988; Nunamaker et al., 1991).

Further examples of how philosophy has been adopted and used in IS research concern the use of pragmatism (e.g. James, 1907; Dewey, 1938; Habermas, 1984, 1987; Putnam, 1994) as a philosophical rationale for designing and studying IS phenomena (e.g. Goles & Hirschheim, 2000; Goldkuhl & Ågerfalk, 2002; Aakhus & Jackson, 2005; Markus & Silver, 2008; Ågerfalk, 2010; Sjöström, 2010; Goldkuhl, 2012). Arguably, foundations of pragmatism are reflected in the evolving DSR discourse (Hevner et al., 2004; Sein et al., 2011; Gregor & Hevner, 2013; Venable et al., 2016). Furthermore, IS research has paid attention to works of post-modern philosophers, such as Jürgen Habermas (1984, 1987) and Martin Heidegger (1962, 1977), to inspire and make sense of IS design. For instance, the early works of Pelle Ehn (1988) emphasized Heidegger’s (1962, 1977) notion of Dasein (Dasein is explicated in detail by Dreyfus, 1990) and the relationship between humans and technology as informing concepts of designing work-oriented IT artifacts. While others, such as Introna (2002, 2005), have attempted to conceptualize phenomenological approaches to ethics and IT, as well as theorizing the essence of IT through Heideggerian doctrines, IS researchers such as Ngwenyama & Lee (1997) and Janson et al. (2000) have used Habermas’s philosophy (1984, 1987) to incorporate sense-making of existing IT artifacts. Philosophy has thus had (and continues to have) a fruitful impact on IS research.

In order to partition various manners of how IS researchers have used philosophy in IS research, I distinguish two approaches (shown in Table 4) as follows: (1) philosophy as an analytic tool for making sense (understanding) of IT artifacts; and (2) philosophy as inspiration for designing IT artifacts. Both approaches are relevant for this research to incorporate because sense-making is an interrelated activity of design, whereas design enables a process of sense-making through participation and reflective learning.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Making Sense through Philosophy</th>
<th>Philosophy-Inspired Design Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Activities</td>
<td>Reflecting on or analyzing established IT, using certain</td>
<td>Using certain philosophical works as the</td>
</tr>
<tr>
<td></td>
<td>philosophical works and thus evaluating the use of philosophy</td>
<td>foundation for identifying requirements and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>generating design knowledge in designing IT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>artifacts</td>
</tr>
<tr>
<td>Point of Departure</td>
<td>Existing IT artifacts; socio-technical</td>
<td>Socio-technical phenomena; problems to be</td>
</tr>
<tr>
<td></td>
<td>phenomena; previous research; existing conceptual models</td>
<td>solved; philosophical works</td>
</tr>
<tr>
<td>Position of Philosophy</td>
<td>A posteriori (informed by design/use case)</td>
<td>A priori (informing design)</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Conceptual models; justifications;</td>
<td>Requirements; design knowledge</td>
</tr>
</tbody>
</table>
Making sense through philosophy encompasses the attempts to use a philosophical lens or theories to reflect on and analyze (make sense of) already established IT artifacts or phenomena that involve the use of IT in organizations or societies. Examples of this include IS research that concerns computer-supported work (Ngwenyama, 1991), computer-mediated communication (Ngwenyama & Lee, 1997), e-commerce (Janson et al., 2000), phenomenological analysis of IT artifacts (Introna, 2002, 2005), and IS design (Lyytinen, 1987; Hirschheim & Klein, 1989, 1994; Hirschheim et al., 1996; De Moor & Weigand, 1996; Te’eni, 2011). Following this stream of sense-making through philosophy, one starts from existing IT artifacts, socio-technical phenomena, previous research, or existing conceptual models, and then applies philosophy in an inductive (a posteriori) manner to arrive at resulting models or justifications of existing models. From this perspective, philosophizing is therefore informed by IT design or IT use and results in rational arguments that elucidate the underpinnings of IT design or IT use.

On the other hand, a philosophy-inspired design process applies philosophy at the beginning of the inquiry as a foundation in the attempt to identify requirements and generate design knowledge (e.g. design principles) iteratively throughout the design process. Consequently, philosophy informs design and philosophizing occurs in a deductive (a priori) manner. An example of this endeavor is the early research of Ehn (1988) where he used Martin Heidegger’s existential phenomenology (Heidegger, 1962) as an inspiration for designing work-oriented IT artifacts. Others such as Heng & De Moor (2003) have used Habermas’s (1984, 1987) Theory of Communicative Action (TCA) to identify conditions and requirements to be fulfilled in order for communicative actions to occur in Habermasian ideal speech situations that are captured by design principles. Others (e.g. Te’eni, 2011; Ross & Chiasson, 2011) have used Habermas’ TCA to elucidate user behavior for guiding design needs to satisfy several conditions and requirements processing of IT design.

Based on this section’s outline of how philosophy can inform or inspire IS research, it is evident to say that there are more studies within the field of IS that have used a body of philosophical knowledge to make sense of existing IT artifacts, rather than designing them. However, there are studies (e.g. Heng & De Moor, 2003; Ross & Chiasson, 2011) that have successfully used philosophy, in particular Habermas’s TCA (1984, 1987), to inspire design of IT artifacts from a perspective that encompasses social action and interaction between individuals in organization and society. For instance, Heng & De Moor’s study drew heavily on Habermas’s TCA to illustrate and frame their analyses within the case of GRASS – a web-based Group Report Authoring Support System – from which they extracted a set of design principles. In the case of Ross & Chiasson’s (2011) study, they also applied TCA in their reconceptualization of the requirements process in designing IT artifacts. Even though they explored other works, Habermas’s TCA continued to be the center of their analyses and propositions. Thus, despite the limitations – in terms of prior research and studies - of using philosophical constructs (e.g. concepts, theories) that incorporate design processes, it is fair to say that philosophy, as a domain of knowledge, offers a sufficient and relevant body of knowledge for IS design.

From the perspective of using philosophy to inspire and make sense of the interrelated and problematic phenomena (e.g. heterogeneity) of designing for integration work, Habermas’s (1984, 1987) TCA and Heidegger’s existential phenomenology (1962) are both considered relevant choices to adopt for this research. The latter focuses on the human worldview and nature of being through Dasein (e.g. modes of behavior, presence, feeling of belongingness, etc.), whereas the former stresses a typology of social actions, which is manifested and expressed towards orientation (e.g. learning Swedish society), the aim of influencing others and achieving success, reaching a mutual consensus through communicative action, etc. (Habermas, 1984). Both philosophers provide a rationale that will be taken into further consideration in
this research, because both philosophical perspectives offer concepts that enable this research to step back, identify, reflect, analyze, and problematize fundamental knowledge that addresses complex questions about interrelated phenomena of designing for integration work, such as the phenomenon of heterogeneity (e.g. what is the nature of heterogeneity? what bearing does heterogeneity have on designing for integration work?).

The ideas of both philosophers (Habermas and Heidegger) are thus relevant for this research, because both offer a philosophical rationale that helps in problematizing and theorizing knowledge that informs the design process. From this perspective, the process of theorizing sufficient research outcomes becomes inevitable.

### 3.6 Theorizing in IS Research

The purpose of this section is to understand how theorizing is conducted in IS research. Generally speaking, this research will provide a body of knowledge that addresses the digitalization of the civic orientation program as a special case of designing for integration work. Based on this logic, the theoretical contribution of this research thus needs to provide knowledge that addresses the case-specific objectives of digitalizing the civic orientation program, as well as knowledge that addresses a class of problems concerning the general research purpose.

Research and science in general relies heavily on the idea of producing theories as a primary output of research activities. Scholars in the field of — or in the intersection of — IS address theory development as a central activity, which indicates a distinct separation of academic researchers from practitioners and consultants (Gregor, 2006). In creating and validating knowledge, scientists rely on a lucid and distinct statement of theory, which embodies statements of the knowledge that has been developed for research (Venable, 2006). Scholars (Van de Ven, 1989; Järvinen, 2001; Gregor, 2006) argue that a good theory is useful when it advances knowledge in a scientific discipline, guides research towards crucial questions, and enables knowledge to be accumulated in a systematic manner for use that informs practice.

Within the field of IS, there have been different approaches to identify and define the role of theories for IS research. For instance, Iivari (1983) describes three levels of theories (conceptual, descriptive, and prescriptive), while other scholars (Nunamaker et al., 1991; Walls et al., 1992; Kuechler & Vaishnavi, 2008) have emphasized the distinction of kernel theories, which are used to inform design research, and design theories based on prescriptive and normative knowledge. Gregor (2006) in particular identified five interrelated categories of theory, based on the primary type of question at the foundation of a research project. These five categories and their question of interest are exhibited and summarized in Table 5.

<table>
<thead>
<tr>
<th>Type of Theory</th>
<th>Distinct Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis</td>
<td>Says 'what is'.</td>
</tr>
<tr>
<td></td>
<td>The theory does not extend beyond analysis and description. No causal relationships among phenomena are specified and no predictions are made</td>
</tr>
<tr>
<td>Explanation</td>
<td>Says 'what is', 'how', 'why', 'when', and 'where'.</td>
</tr>
<tr>
<td></td>
<td>The theory provides explanations but does not focus on predicting with any precision. There are no testable propositions for this type of theory.</td>
</tr>
<tr>
<td>Prediction</td>
<td>Says 'what is' and 'what will be'.</td>
</tr>
<tr>
<td></td>
<td>The theory provides predictions and has testable propositions but does not have well-developed justificatory causal relationships.</td>
</tr>
<tr>
<td>Explanation and Prediction</td>
<td>Says 'what is', 'how', 'why', 'when', 'where', and 'what will be'.</td>
</tr>
</tbody>
</table>

Within the field of IS, there have been different approaches to identify and define the role of theories for IS research. For instance, Iivari (1983) describes three levels of theories (conceptual, descriptive, and prescriptive), while other scholars (Nunamaker et al., 1991; Walls et al., 1992; Kuechler & Vaishnavi, 2008) have emphasized the distinction of kernel theories, which are used to inform design research, and design theories based on prescriptive and normative knowledge. Gregor (2006) in particular identified five interrelated categories of theory, based on the primary type of question at the foundation of a research project. These five categories and their question of interest are exhibited and summarized in Table 5.
Provides predictions and has both testable propositions and causal explanations.

| Design and Action | Says ‘how to do something’.
|-------------------|---------------------------------------------------------------------
|                   | The theory gives explicit prescriptions (e.g. methods, techniques, testable hypothesis, principles of form and function) for constructing an artifact (e.g. an information system). |

Table 5. Taxonomy of theory types in IS research (Gregor, 2006)

Gregor’s (2006) taxonomy provides a fair foundation of how to distinguish different kind of theories, but also on which to build cumulatively sufficient, integrated, and practical bodies of knowledge in the form of theories within the discipline of IS. Recognizing different categories of theories also makes it possible to see the differences as complementary, which consequently enables a wider body of knowledge (Gregor, 2006). Furthermore, it is suggested that certain methods/paradigms are better suited for certain categories of theory, research problems, and research questions (Gregor, 2006). Judging by the nature of the research purpose and questions of this research, the question of how to design for integration work calls for an answer that is informed by a category 5 theory (‘Design and Action’). Therefore, more knowledge about design theories, their representations in IS research, and how they can be developed and operationalized for this research is needed.

3.6.1. REPRESENTATIONS OF DESIGN THEORIES IN IS RESEARCH

It is suggested that information systems design theories (ISDT) are an example of fifth type theories (Gregor, 2006) for design and action. The primary focus of a design theory is to provide general knowledge (e.g. principles, theories) that guide the design process of artifacts. Guidance about how to achieve certain objectives that incorporate the design process is therefore intrinsic for a design theory. Consequently, a design theory provides guidance about how to design an artifact (e.g. instantiated IT system) or what the artifact should look like, how it should behave, what functionality it should provide, etc. An early representation of such thoughts can be found in Walls et al.’s seminal paper from 1992, where they developed and proposed components of an ISDT (shown in Figure 3).

Walls et al. (1992) consider an ISDT an integrated set of prescriptions consisting of a particular class of user requirements (meta-requirements), a type of system solution with distinctive features (meta-design) and a set of effective development practices (meta-design). Each of these components can be informed by kernel theories, either academic or practitioner theory-in-use (e.g. Sarker & Lee, 2002), which enable the formulation of empirically testable design guidelines (or principles) that are constituted through a design theory (as for instance developed by Markus et al., 2002).

![Figure 3. Components of an ISDT (Walls et al., 1992)](image)

Each and every component shown in Figure 3 serves a function for the outcome of an ISDT. However, the distinction between a design product and a design process lies in the context of defining the concept
of design as a product or a process or both. Walls et al. (1992) thus distinguish between a product and process by describing them separately together with the other components of an ISDT (depicted in Tables 6 & 7).

<table>
<thead>
<tr>
<th>Design Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-requirements</td>
<td>Describes the class of goals to which the theory applies</td>
</tr>
<tr>
<td>Meta-design</td>
<td>Describes a class of artifacts hypothesized to meet the meta-requirements</td>
</tr>
<tr>
<td>Kernel theories</td>
<td>Theories from natural or social sciences governing design requirements</td>
</tr>
<tr>
<td>Testable design product hypothesis</td>
<td>Used to test whether the meta-design satisfies the meta-requirements</td>
</tr>
</tbody>
</table>

Table 6. Components of an ISDT with focus on design product (Walls et al., 1992)

<table>
<thead>
<tr>
<th>Design Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design method</td>
<td>A description of procedure(s) for artifact construction</td>
</tr>
<tr>
<td>Kernel theories</td>
<td>Theories from natural or social sciences governing the design process itself</td>
</tr>
<tr>
<td>Testable design process hypothesis</td>
<td>Used to verify whether the design method results in an artifact which is consistent with the meta-design</td>
</tr>
</tbody>
</table>

Table 7. Components of an ISDT with focus on design process (Walls et al., 1992)

Walls et al. (1992) suggest that the meta-design of an ISDT should describe a class of instantiations that are able to meet the meta-requirements, rather than a single instantiation that addresses specific requirements. Aken (2004) followed this line of reasoning by arguing that the intent of an ISDT should be for a general prescription of a class of problems, rather than a specific prescription for a specific instantiation. However, according to Gregor and Jones (2007), the original representation of ISDTs (Walls et al., 1992) appeared to have weaknesses, which led to iterative improvements found in the representation of Gregor & Jones’s (2007) anatomy of a design theory. The perceived weaknesses identified by Gregor & Jones (2007) include:

1. Units and system states, proposed originally by Dubin (1978), were missing
2. An incomplete capturing of the full range of Simon’s (1996) ideas
3. A lack of an explicit discussion of specifying an ISDT for methodologies
4. Suggestions that the depiction of design theory and its components may be too unwieldy for use (Walls et al., 2004) and could thus be improved by drawing on other work

In order to address these problems, Gregor & Jones’s (2007) anatomy of a design theory is argued by researchers such as Jones (2011) to be more complete and usable than Walls et al.’s (1992) representation of an ISDT. Table 8 depicts Gregor & Jones’s (2007) anatomy of a design theory.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose and Scope</td>
<td>“What the system is for”; the set of meta-requirements or goals that specifies the type of artifact to which the theory applies and in conjunction also defines the scope, or boundaries, of the theory</td>
</tr>
</tbody>
</table>
Constructs | Representations of the entities of interest in the theory
---|---
Principle of form and function | The abstract ‘blueprint’ or architecture that describes an IS artifact, either product or method/invention
Artifact mutability | The changes in state of the artifact anticipated in the theory, that is, what degree of artifact change is encompassed by the theory
Testable propositions | Truth statements about the design theory
Justificatory knowledge | The underlying knowledge of theory from the natural or social or design sciences that gives a basis for explanation for the design (kernel theories)
Principles of implementation | A description of processes for implementing the theory (either product or method) in specific contexts
Expository instantiation | A physical implementation of the artifact that can assist in representing the theory both as an expository device and for purposes of testing

Table 8. Anatomy of a design theory (Gregor & Jones, 2007)

Gregor & Jones’s (2007) anatomy of a design theory (shown in Table 8) has been cited or adopted by several scholars (including Baskerville & Pries-Heje, 2010; Hrastinski et al., 2010; Carlsson et al., 2011; Kuechler & Vaishnavi, 2012), showing that it is acknowledged as a prominent representation for developing a design theory in IS research. I argue however that Walls et al.’s (1992) and Gregor & Jones’s (2007) models for developing a design theory are complementary and useful for providing guidelines that inform the design process of various DSR outputs. Furthermore, the proposed weaknesses of Walls et al.’s (1992) representation are not crucial in any way in terms of lack of efficiency or sufficiency, because it is an essential part of science in general to continuously accumulate and improve research outcomes through continuous research. Therefore, from a pragmatic perspective I will focus on what is useful in terms of adopting one representation or another that helps in theorizing a sufficient body of knowledge aligned with the purpose and questions of this research. However, the designing part of this research is not only considered a process or artifact (e.g. IT system), but is also considered a motivator and object of study that enables combining an appropriate research strategy with research methodology and methods. Thus, it is crucial to choose and launch a consistent research strategy that incorporates a dual mission of digitalizing the civic orientation program, as well as producing a body of scientific knowledge that helps to address, problematize, and answer the research questions.
4 RESEARCH STRATEGY

According to Saunders (2003), a research strategy is a general plan that helps the researcher in addressing and answering the purpose and questions of a research endeavor, in a systematic way. An efficient research strategy helps the researcher to define why the researcher chooses to employ a particular research approach, design, and methods/techniques for conducting and processing empirical works (e.g. data collection). For this research, the strategy is established by adopting ways in which the research purpose and questions can be addressed sufficiently. In the upcoming sections I will present and motivate my selections of a research approach, research design that is constituted by informing types of knowledge, design method, and research methods for data collection and data analysis.

4.1 RESEARCH APPROACH

I have chosen the Action Design Research methodology (ADR) (Sein et al., 2011) as the overarching research approach and methodology. The main reason why I chose ADR is because of the nature of this research, which emphasizes exploratively addressing a societal problem that originates within the case of digitalizing the civic orientation program (described in chapter 2). ADR advocates that the researcher shall start his/her ADR project by focusing on a specific problem or objective that is situated in a specific setting, and from there, abstract and extract knowledge through activities of building, intervention, evaluation, reflection, learning, etc. (Sein et al., 2011). This philosophy resonates well with the nature of digitalizing the civic orientation program, because the research case was initiated and formed due to a specific purpose, motives, and objectives. Therefore, I chose ADR as an appropriate approach and methodology, because ADR provides a structured framework that enables the researcher to combine design science research with action research to specific objectives (e.g. digitalizing the civic orientation program) as well as to address a class of problems that is discovered through iterative cycles of ADR activities. Furthermore, I chose ADR because it resonates well with the second strategy of DSR (Iivari, 2015), which fosters the idea of starting a research project within the domain of an organization to address and resolve specific objectives. Additionally, I chose ADR because it represents a variant of DSR (March & Smith, 1995; Hevner et al., 2004; Vaishnavi & Kuechler, 2004) that privileges organizational influences on design and evolution of the IT artifact, emphasizing concurrent building, intervention, and evaluation as an alternative to traditional stage-gate model design research approaches (e.g. Nunamaker et al., 1991; Peffers et al., 2008). Nevertheless, the founders of the ADR methodology (Sein et al., 2011) claim that ADR allows both a research team as well as organizational actors (e.g. stakeholders, end-users, practitioners) to engage and shape artifact solutions, reciprocally and iteratively through active participation.

Unlike early DSR approaches and methodologies (see for instance Takeda et al., 1990; Nunamaker et al., 1991), ADR does not exclusively focus on the idea of constructing an initial IT meta-artifact (Iivari, 2003) as a general solution concept (Aken, 2004), method, construct or instantiation (March & Smith, 1995). Rather, ADR stresses the construction of a situated artifact that solves a specific organizational problem, which over time can be developed into a meta-artifact. ADR thus incorporates the key tenets of DSR (e.g. bridging practical relevance with scientific rigor through design of artifacts) and extends the key tenets by allowing for the emergence of situated artifacts in an organizational setting (Dennis, 2001) by seeking applicability in the ensemble (Orlikowski & Iacono, 2001; Purao et al., 2013). Sein et al.(2011) describe this procedure as Guided Emergence, a term that captures the underlying tension between the two sets of stakeholders and end-users, who engage in the Reciprocal Shaping of the artifact (Sein et al., 2011). Furthermore, with artifacts as ensembles, rather than being specific in their nature (e.g. a singular IT artifact), Sein et al. (2011, p. 38) suggest ensemble artifacts as:

the material and organizational features that are socially recognized as bundles of hardware and/or software
(Orlikowski & Iacono, 2001). This definition reflects a ‘technology as structure’ view of the ensemble artifact, where structures of the organizational domain are inscribed into the artifact during its development and use
(Orlikowski & Iacono, 2001). It accommodates designers’ building and organizational stakeholders’ shaping in a
In other words, Sein et al. (2011) position their view of ensemble artifacts as artifacts that involve dimensions beyond the purely technological ones, because such ensemble artifacts result from the interaction of design efforts and contextual factors throughout the design process. Such interaction between these dimensions becomes in turn manifested in the form, structure, objectives, content, and conceptualization of the artifact as being both a specific solution as well as a meta-artifact that addresses a class of problems. Additionally, the ADR methodology recommends research activities to be performed iteratively together with actors from other research disciplines along with representative stakeholders, practitioners (e.g. IS designers), and end-users, in an ADR team. Thus, ADR opens up and legitimizes IS research that incorporates an underlying philosophy that fosters participation for reciprocal interaction, reflection, and learning between researchers and others (e.g. stakeholders, practitioners). This resonates well with the Scandinavian school of IS research (e.g. Ehn & Kyng, 1987; Greenbaum & Kyng, 1991; Bodker et al., 2004; Bratteteig & Wagner, 2012). In other words, ADR fits in well with the second DSR strategy (Iivari, 2015), the family of approaches that promote a participatory design philosophy, and with methodologies that promote ‘softer’ approaches to DSR (e.g. Baskerville et al., 2009).

Subsequently, ADR provides a set of governing activity stages (shown in Figure 4) and principles (outlined in Table 9), which govern the ADR project.

![Figure 4 Action Design Research: stages and principles (Sein et al., 2011)](image)

Each ADR stage (shown in Figure 4) offers governing principles (summarized in Table 9) that capture the underlying assumptions, beliefs and values of subsequent ADR cycles. The stages and principles are incorporated with an action research philosophy, emphasizing the notion of finding problems from the perceptions of practitioners within specific and local contexts (Argyris & Schön, 1989). Action Research (AR) builds explanations within this specific context and tests them with intervention experiments, which are experiments that both test an assumption and affect desirable change in a given situation (Argyris & Schön, 1989). This is incorporated into the ADR methodology (the first stage of problem formulation in particular), and the second ADR stage, where specific problems are addressed through building, intervention, and evaluation of an artifact solution, together with stakeholders, practitioners, and end-users. It is also during the second ADR stage, in which the ADR team executes one of the two following approaches for building, intervention, and evaluation (BIE):

- **IT-Dominant BIE**: This approach suits ADR efforts that emphasize creating an innovative technological design. An example of an artifact that can be framed through this approach, is new process grammars to generate and manage business process alternatives (Lee et al., 2008). Early designs and alpha versions of the artifact serve as lightweight interventions in a limited organizational context. According to Sein et al. (2011), the emerging artifact, as well as the
theories ingrained in it, are continuously instantiated and repeatedly tested through organizational intervention and evaluation. This participatory process intends to build organizational commitment and guides the eventual design of the artifact.

- **Organization-Dominant BIE**: This approach suits ADR efforts to generate design knowledge, where the primary source of innovation is organizational interventions. An example of an artifact that can be framed through this approach is the set of tools created by Pries-Heje & Baskerville (2008) for structuring decision-making situations in organizations.

The last two ADR stages emphasize the process of reflection and learning (stage 3) and the process of formalizing learning outcomes into generalizable solutions (stage 4). Reflection and learning is a continuous stage and parallels with the first two stages. The stage recognizes that the research process involves more than simply solving a problem, by conceptually moving from an instantiated form of solution to a class of solutions that can be applied to a broader class of problems. This stage also enables the ADR team to refine the designed artifact, and make substantial changes to the design, meta-design, and meta-requirements (Walls et al., 1992) that culminate in changes to the artifact, similar to the ideas described by Gregor & Jones (2007).

Sein et al. (2011) suggest that the objective of the fourth ADR stage is to formalize learning outcomes, by developing situated learning from an ADR project into general solution concepts (e.g. Aken, 2004) for a class of problems. In order to accomplish such an objective, researchers strive to outline the accomplishments realized in the artifact and describe the organizational outcomes to formalize learning (e.g. Schacht & Mädche, 2013; Maccani et al., 2014; Zuiderwijk et al, 2014; Keijzer-Broers et al., 2016). The generalized outcomes of this stage can thus be characterized as design principles or design theories, which are either derived to a nascent level of DSR outcomes (Heinriss & Schwabe, 2014) or fully matured design theories (Walls et al., 1992; Gregor & Jones, 2007).

Consequent to each ADR stage, Sein et al. (2011) offer guiding principles that can be used by the ADR team to sufficiently govern the ADR stages. The principles are summarized and depicted in Table 9.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1: Practice-Inspired Research| 1: Problem Formulation | This principle advocates the research activity as being problem inspired (e.g. Markus et al., 2002; Vaishnavi & Kuechler, 2006). Sein et al. (2011, p. 40) describe this principle as follows:  
emphasizes viewing field problems (as opposed to theoretical puzzles) as knowledge-creation opportunities. ADR seeks these opportunities at the intersection of technological and organizational domains, although the degree of the novelty can vary across the two. The intent of the ADR team should not be to solve the problem per se as a software engineer or a consultant might. Instead, the action design researcher should generate knowledge that can be applied to the class of problems that the specific problem exemplifies. |
| 2: Theory-Grained Artifact   | 1: Problem Formulation | This principle advocates that the action design researcher actively inscribes theoretical elements in the ensemble artifact. Sein et al. (2011, p. 40) describe this principle as follows:  
emphasizes that the ensemble artifacts created and evaluated via ADR are informed by theories.  
Furthermore, Sein et al. (2011, p. 40) acknowledges three overlapping uses of prior type of theories, which derive from Gregor’s (2006) theory types explained in Table 7, with a particular focus on Type IV (‘Explanation and Prediction Theories’) and Type V (‘Design Theories’): to structure the problem (Type IV), to identify solution possibilities (Type IV), and to guide design (Type V). This principle suggests that, like |
technology designers who inscribe in the theoretical traces that reflect the socio-political context of the design situation (Hanseth & Monteiro, 1997), the action design researcher actively inscribes theoretical elements in the ensemble artifact, thus manifesting the theory in a ‘socially recognizable form’.

According to Sein et al. (2011, p. 43), this principle emphasizes:

the inseparable influences mutually exerted by the two domains: the IT artifact and the organizational context. The ADR team may engage in recursive cycles of decisions at finer levels of detail in each domain. The iterative process is similar to what DeGrace and Stahl (1990) describe as solving ‘Wicked Problems’.

Sein et al. (2011, p. 43) describe this principle as:

[It] points the importance of mutual learning among the different project participants. Action design researchers bring their knowledge of theory and technological advances, while the practitioners bring practical hypotheses and knowledge of organizational work practices. These perspectives and contributions may compete with one another or be complementary.

This last principle of stage 2 is described as follows (Sein et al., 2011, p. 43):

[It] emphasizes a key characteristic of ADR: evaluation is not a separate stage of the research process that follows building. In this, ADR differs from the stage-gate models proposed in prior work (see March & Smith, 1995; Peffers et al., 2008). Instead, decisions about designing, shaping, and reshaping the ensemble artifact and intervening in organizational work practices should be interwoven with ongoing evaluation, although their specific format may vary based on the BIE form.

Sein et al. (2011) provide a single principle during the stage of reflection and learning, which emphasizes that the ADR team shall be open for signals that indicate an ongoing refinement to the design, meta-design, and meta-requirements (Walls et al., 1992), which culminate in changes to the artifact, as well as refinements to the evolution of meta-contributions (e.g. design principles). Sein et al. (2011, p. 43) writes that this principle uses:

the term guided emergence to capture a vital trait of ADR: the interplay between the two seemingly conflicting perspectives. It emphasizes that the ensemble artifact will reflect not only the preliminary design (see Principle 2) created by the researchers but also its ongoing shaping by organizational use, perspectives, and participants…and by outcomes of authentic, concurrent evaluation.

The seventh and last principle concerns the fourth and last ADR stage. Sein et al. (2011, p. 44) elaborate on the principle as follows:

The resulting ensemble is, by definition, a bundle of properties in different domains. This ensemble represents a solution that addresses a problem. Both can be generalized. This move from the specific-and-unique to generic-and-abstract is a critical component of ADR. We suggest three levels for this conceptual move: (1) generalization of the problem instance, (2) generalization of the solution instance, and (3) derivation of design principles from the design research outcomes.

Table 9. Guiding principles for governing ADR stages (Sein et al., 2011)
With respect to the outline of the ADR methodology as the chosen research approach and methodology, in the next section I will continue to elaborate on a research design that incorporates the ADR methodology and which explicates more information about the components of the research design.

4.2 Research Design

ADR has been chosen as the appropriate research approach and methodology. Furthermore, ADR has been chosen to produce and formalize knowledge into generalizable DSR outputs in terms of artifacts of various kinds (e.g. instantiations, meta-artifacts), which help to address the research purpose and questions. As a consequence, three iterative ADR cycles were conducted, within the confines of the research case, from 2013 to 2015.

Throughout these cycles, my role as a researcher was twofold: (1) responsible for organizing and performing research activities and systematically producing, analyzing and presenting empirical data (e.g. conference proceedings); and (2) a designer and facilitator of the ADR team. Consequently, the ADR cycles were conducted at the integration center together with the integration workers and representatives from University West. More detailed information about the conducted cycles will be provided in Chapters 5, 6, and 7.

The ADR cycles were also framed as organization-dominant (the general generic schema for the organization-dominant approach is illustrated in Figure 5).

As illustrated in Figure 5, the focus is on engaging the ADR team in iterative cycles of BIE, and to contribute to different types of contributions throughout an ADR cycle (e.g. design principles, design theories, design refinements to the artifact, etc.). For this research, the ADR team consisted of the thesis author as a researcher, two scholars with pedagogical/technical experience from University West, and the integration workers. Furthermore, newcomers as end-users were not involved (due to lack of accessibility and interest) during the ADR cycles.

Throughout each and every cycle, the ADR stages were populated with supportive body of knowledge (e.g. kernel theories), research methods, and a design methodology, which together helped produce utility for the integration workers, as well as generalizable research outcomes. Each member of the ADR team was thus consequently involved throughout the ADR cycles. For instance, while the whole ADR team (researcher, scholars, tutors, content producers, coordinators, etc.) was involved in the majority of the ADR stages (three out of four stages), only representatives from academia (the principal researcher and scholars from University West) were actively involved in the fourth and last ADR stage, because this stage concerned extracting knowledge, theorizing, formalizing theoretical contributions, and writing research papers. Furthermore, as illustrated in the schematic overview (shown in Figure 6), the research methods,
design methodology, and supportive body of knowledge (e.g. kernel theories and analytical theories), were subsequently populated into the ADR cycles. Consequently, all three components (research methods, design methodology, and theory) were interrelated (as the dotted line between them suggests in Figure 6) towards theoretically ingraining the ADR stages. And finally, the fourth and final ADR stage of the cycles produced artifacts such as concepts, design principles, design theories, etc.

![Figure 6. Schematic overview of the research design of this thesis](image)

In subsequent sections I will focus on each and every component of the research design, with respect to the chosen research methods and design methodology. First, however, I will start by presenting and describing the different types of theories that I have chosen to incorporate in this research.

### 4.2.1 Type of Theories

For this research, the following three types of theories were incorporated as a supportive body of knowledge that helped address the research purpose and questions:

- **Kernel Theories**: theories that were adopted and used from other scientific disciplines to inform and support sufficient design and research activities. Kernel theories fall under Gregor’s (2006) type II (‘Explanation’), III (‘Prediction’), and IV (‘Explanation and Prediction’) theories. For more detailed information about the definition of kernel theories in DSR, see March & Storey (2006).

- **Analytical Theories**: theories that were adopted to say ‘what is’ and which do not extend beyond analysis and descriptions (Gregor, 2006). No causal relationships among phenomena were specified using this type of theory, nor were any predictions made.

- **Theoretical Contributions as meta-artifacts**: the generalizable learning outcomes of each and every conducted ADR cycle. Such contributions vary in terms of characteristics from being design theories and principles to theoretical constructs such as concepts and elaborated...
methodologies. I frame such contributions as meta-artifacts due to their distinctive nature from the instantiated contributions (prototype versions of the IT solution) of the second ADR stage. Consequently, the selection of theories was inspired by the frame of reference provided in Chapter 3, and will be subsequently exhibited throughout each ADR cycle in Chapters 5, 6, and 7. The purpose of describing the different types of theories thus has to do with how they were distinctively incorporated throughout the ADR cycles. In other words, for the reader’s sake, it is sufficient to be supported with these distinctions so that he/she follows the line of progression every time a theory is either incorporated as a kernel theory, or produced as a meta-artifact and formalized learning outcome. In other words, I will not present each and every specific theory outside the realm of the ADR cycles, through for instance a separate and traditional theory chapter. Rather, I will situate and present the selected theories in the ADR cycles. In so doing, the theories become attached to the ADR activities, rather than being pedagogically detached and presented separately outside the frame of the performance of each cycle.

4.2.2 Research Methods

Beside populating the ADR cycles with appropriate types of theories, a set of sufficient research methods was used for data collection and analysis. Each individual cycle, along with subsequent ADR stages, was populated with research methods. This was crucial, because ADR does not explicitly advocate what methods to use, but rather the researcher on his/her own can choose the appropriate set of methods to populate the ADR stages.

For this research, qualitative research methods were used for data collection to grasp knowledge about the reality with which the integration workers coped. For example, qualitative research methods such as in-depth interviews (Boyce & Neale, 2006) were used to illuminate the worldview of integration workers, to grasp early knowledge of their heterogeneity, their conceptions of digitalization in general, their specific thoughts about digitalizing the civic orientation program in particular, etc. Furthermore, research methods were also used to organize and support knowledge development through subsequent WiL activities such as formal workplace training sessions. Data was collected and documented through observations, sound recording, video recording, and notes.

A summary of the chosen research methods, their rationale, and the cycle(s) of which they were utilized in, is depicted in Table 10.

<table>
<thead>
<tr>
<th>Method</th>
<th>Rationale</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory Workshops</td>
<td>Participatory workshops were used to foster the idea of participatory design and learning (e.g. Greenbaum &amp; Kyng, 1991; Schuler &amp; Namioka, 1993) and to establish a reciprocal space, where integration workers and researchers were encouraged to share information, learn from each other, and work together to address and solve relevant problems of design. Consequently, the workshops raised a consistent problem-solution awareness throughout the cycles of ADR. The workshops were also utilized to evaluate each iteration of BIE, together with the practitioners. Finally, the workshops were conducted to support WiL by facilitating the sessions through discussions, demonstrations of each participants’ learning outcome and contribution. Thus, the research team acted as facilitators during the workshops, whereas the integration workers were involved as active participants.</td>
<td>1, 2</td>
</tr>
<tr>
<td>In-Depth Interviews</td>
<td>In essence, in-depth interviews involve not only asking questions, but also systematic recording and documenting of responses coupled with intense probing for deeper meaning and understanding of the responses. Furthermore, in-depth interviews are a qualitative research technique that involves organizing and conducting individual interviews with one respondent at a time, to explore their perspectives on a particular idea, phenomenon, or situation (Boyce &amp; Neale, 2006). In-depth interviews were thus used to build an initial awareness</td>
<td>1</td>
</tr>
</tbody>
</table>
of the integration workers’ expectations, hesitations, desires, fear, and general thoughts about the outcomes and effects (e.g. change) of digitalizing the civic orientation program.

**Focus Groups**
Focus groups provide insights into how people think and provide a deeper understanding of the phenomena being studied by involving a larger number of respondents as a group and conducting an informal discussion about a particular topic (Wilkinson & Silverman, 2004; Kitzinger, 2005). The primary aim of a focus group is to describe and understand meanings and interpretations of a selected group of people to gain an elaborated understanding of a specific issue from the perspective of the participants’ worldview (Liamputtong, 2009). A focus group session was thus facilitated in order to evaluate the WiL outcomes of the integration workers.

**Participant Observations**
A participant observation is the process enabling researchers to learn about the activities of the people under study in the natural setting through observing and participating in those activities. It provides the context for development of sampling guidelines and interview guides (DeWalt & DeWalt, 2002) and enables the researcher to get an insight into the day-to-day activities of participants in a certain setting. Participant observations were used for this research to gain insights into how tutors organize and conduct their sessions of civic orientation with newcomers, in classroom settings, as well as for evaluating the civic orientation sessions that were provided through support of e-learning.

**Workplace Training**
Workplace training involves organizing and facilitating sessions, where practitioners have the opportunity to improve their current skills or to develop new skills and competency, during working hours, at their workplace setting (Billett, 2011a, 2011b). Workplace training sessions were established throughout the ADR cycles to train practitioners and inform them of relevant knowledge (e.g. IT skills, pedagogical skills). Additionally, the workplace training sessions were held to enable the integration workers to develop a WiL culture, which encourages a continuous process of learning and knowledge sharing.

**Survey**
A survey gathers data through questionnaires asking certain type of questions (e.g. open-ended, multiple choice) and aims to answer questions about a sampled population (Andres, 2012). The survey method was thus used to evaluate artifact efficiency and sufficiency. Subsequently, a web questionnaire was sent out to integration workers, using Google Forms.

<table>
<thead>
<tr>
<th>Table 10. A summary of research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collected data from various activities was processed and analyzed continuously throughout the ADR cycles with an exploratory approach through iterative phases of transcribing and coding (illustrated in Table 11). With an explorative approach, I mean that I did not enter the phases of analysis with pre-defined hypotheses, but rather, I entered these phases openly to explore and code relevant themes and categories. This was executed iteratively with the support of NVivo 10 as the software for analyzing the collected data. Furthermore, the process of data analysis was executed continuously throughout the ADR stages of each cycle, but framed as a main activity of reflection and learning. Additionally, input from other kinds of empirical encounters (e.g. meetings, email conversations, etc.) was also incorporated into each cycle. Such encounters included initial meetings with the integration workers, where the ADR team was put together, or meetings with third-party actors that were invited to present early examples of standardized systems that aim to support civic orientation through e-learning.</td>
</tr>
</tbody>
</table>
I believe that an open system can help civic orientation content producers to share and update available content of civic orientation whenever we want, without sending the content back and forth, or without risking to do the same work twice. (Content producer)

Content producers have difficulties with collaboration in terms of producing, updating, and sharing content.

Initial set of collaborative artifact features need to be designed and tested with content producers.

Balancing the open-ended nature of the future IT artifact may evolve depending on content availability.

E-learning features for supporting and providing civic orientation content.

Table 11. Coding examples

<table>
<thead>
<tr>
<th>Transcripts (Excerpts)</th>
<th>Analytical Memos</th>
<th>Emerging Insights</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe it is good that we can offer our program on a distance basis… but then we must restrict, or sell, our civic orientation content so that it is carefully shared and not openly available for the public. (Manager)</td>
<td>Balancing the open-ended nature of the future IT artifact may evolve depending on content availability</td>
<td>E-learning features for supporting and providing civic orientation content</td>
</tr>
</tbody>
</table>

The examples shown in Table 11 illustrate how transcripts were coded into analytical memos that emerged into further case-specific insights, which in turn were derived into generalizable learning outcomes through formalization. More information about data collection, analysis, and outcomes will be exhibited within the frame of the ADR cycles in Chapters 5, 6, and 7.

### 4.2.3 Design Methodology

Besides the adoption of incorporated theories and specific research methods, a customized design methodology aligned with the philosophy of agile software development was chosen as an approach to design the instantiated artifacts (prototypes). The agile philosophy in general provides a group of software development methods in which the process of identifying needs, requirements, and solutions evolve through collaboration between self-organizing and cross-functional teams (Highsmith & Cockburn, 2001). Agile methods break identified tasks into small increments with minimal planning and sufficient problem-solving through short iteration frames, which typically last from one to four weeks (Larman, 2004; Vijayasarathy & Turk, 2008). Furthermore, at the core of the agile philosophy is the promotion of adaptable planning, evolutionary design, early delivery, continuous improvement, encouragement of rapid and flexible prototyping and response to change, and a close involvement of stakeholders and/or end-users of the product (Vasiliauskas, 2014).

This research does not however focus solely on the development process of supportive technologies for integration work. Rather, the agile philosophy was thus adopted and adapted to design activities, with an emphasis on involving integration workers as essential members of the ADR team to participate iteratively in phases of testing and evaluation of designed artifact increments. Thus, a constant stream of deliverables was provided to the integration workers through increments of prototypes, to support their sense-making process and to allow them to propose and respond quickly toward future revisions of the design. Furthermore, iterative check-ins were done between members of the ADR team on a daily basis. This increased the communication frequency between the members of the ADR team and helped make design decisions reciprocally to reduce over-planning or implementing unnecessary design work.

Design activities were complemented with activities of evaluation and testing of the deliverables. This was populated into the ADR cycles, with an emphasis on the second ADR stage, as well as through a continuous process of reflection and learning. Table 12 exemplifies a case of how the design methodology was used. More information about the utility of the design methodology will be incorporated throughout the ADR cycles in Chapters 5, 6, and 7.

<table>
<thead>
<tr>
<th>Objective(s)</th>
<th>Explanation</th>
<th>Outcome(s)</th>
<th>ADR cycle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To conceptualize early e-learning features of the alpha prototype

The ADR team initiated a participatory design workshop to (collectively) produce conceptual ideas that inform stakeholders/end-users’ needs for organizing and conducting sessions of civic orientation through support of e-learning features

A set of conceptual e-learning features such as advanced learning modules for providing content online

To reciprocally shape the graphical user interface of the alpha prototype

The representatives from University West presented other members of the ADR team (e.g. tutors, coordinators) a scheme of interface elements (e.g. pictures, symbols) and a structured layout, as a first version of a graphical user interface for how online civic orientation content can be presented. The ADR team shaped the interface conceptually, and then implemented the changes into a first Alpha prototype

A mutual decision within the ADR team about how a first version prototype shall constitute graphical user interface elements and present online content

<table>
<thead>
<tr>
<th>Table 12. Example of how the design methodology was utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>To conceptualize early e-learning features of the alpha prototype</td>
</tr>
<tr>
<td>To reciprocally shape the graphical user interface of the alpha prototype</td>
</tr>
</tbody>
</table>

The examples shown in Table 12 present the purpose of illustrating the utility of the design methodology, with respect to its underlying philosophy of working agile. The design methodology advocates activities that encourage different roles within the ADR team (e.g. researcher, tutor) to collaborate and share knowledge through collectively organized decisions, which influence the design outcomes and which instantiate populated data into the ADR stages (e.g. design outcomes as outcomes of building, intervention, and evaluation). Therefore, the design methodology and the participatory philosophy of ADR resonate well with the endeavors of this research, in terms of bridging practically relevant activities (e.g. designing, evaluating, and testing prototype features) with rigorous activities of research through ADR (e.g. reflection and learning, formalizing generalizable learning outcomes).
5 The First Action Design Research Cycle

This chapter exhibits the implementation of the first ADR cycle. The first ADR cycle was executed between December 2013 and May 2014. The cycle generated crucial outcomes for both digitalizing the civic orientation program as well as for the constitutive research outputs of the thesis. For the research outputs, the formalized learning outcomes resulted in four research papers (Haj-Bolouri et al., 2014a; Haj-Bolouri & Svensson, 2014; Haj-Bolouri et al., 2014b; Haj-Bolouri & Flensburg, 2017), where one of them (Haj-Bolouri & Flensburg, 2017) is a constitutive part of the main research contributions of the thesis. The empirical outcomes were synthesized into an alpha prototype, which was built, introduced, and evaluated together with the integration workers at their workplace. Figure 7 shows a summary of the first ADR cycle.

5.1 The Problem Formulation Stage

The first cycle begun with the first ADR stage of problem formulation, where the research team held a preliminary meeting (in early December) together with the integration workers (coordinators, tutors, content producers, and manager) at the integration center in Gothenburg, Sweden. The purpose of the preliminary meeting was to get acquainted with the organization, the integration workers, their roles in the organization, their work setting, their practice, and to discuss the vision, purpose, objectives, and possible implications of digitalizing the civic orientation program. After the preliminary meeting, the ADR team was formed, together with representatives from University West, and the integration workers from the integration center.
At this stage and time, the ADR team consisted of the principal researcher and two scholars from University West (one senior scholar and one instructor) who incorporated their pedagogical expertise as well as their competency that supported the ADR stages. Other members of the ADR team consisted of one project manager, four tutors, four coordinators, and two content producers. By using the ADR terminology, I classify the principal researcher as the researcher of the team because I had the main obligation of focusing on the research aspect of the project and to act as a designer; the two scholars as supportive scholars because their focus was to support the practical and research activities within the case; the integration workers as the practitioners, stakeholders, and end-users, because of their professional roles and responsibilities as professional practitioners of the civic orientation program, their case-specific function as stakeholders, as well as being the end-users of future design outcomes.

Once the ADR team was formed, the problem formulation stage proceeded through two participatory workshops, eleven in-depth interviews, four participant observations, and one literature study, which helped identify an initial problem-space awareness, targeting potential solutions for the second ADR stage, as well as facilitating the process of data collection. I will now go through each activity (e.g. participatory workshops, interviews, etc.) and describe them in more detail.

### 5.1.1 Participatory Workshops

Table 13 depicts the two initial workshop sessions.

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Theme</th>
<th>Participants</th>
<th>Period of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory Workshop 1</td>
<td>Identify elements of an early problem-solution space</td>
<td>4 Coordinators, 2 Content producers, 4 Tutors, 1 Project manager, 1 Researcher, 2 Supportive scholars</td>
<td>January 2014</td>
</tr>
<tr>
<td>Participatory Workshop 2</td>
<td>Identify and conceptualize extended learning content</td>
<td>4 Coordinators, 2 Content producers, 4 Tutors, 1 Project manager, 1 Researcher, 2 Supportive scholars</td>
<td>February 2014</td>
</tr>
</tbody>
</table>

Table 13. Participatory workshop sessions in the problem formulation stage of the first ADR cycle

The theme of the first workshop session was to identify elements of an early problem-solution space that focused on challenges and issues of facilitating and mediating civic orientation content in both a digital and physical environment. During the workshop, each participant was encouraged to share their input through dialogues concerning the challenges, which concerned how to mediate the present content of civic orientation to groups of heterogeneous newcomers who speak different languages, come from different cultures, with different ages, backgrounds, education, worldviews, etc. This first workshop session lasted for three hours and was documented through field notes and sound recording.
A second workshop session was held a month after the initial one, with focus on how to follow up outcomes from the previous session in terms of identifying and elaborating extended learning features of civic orientation sessions. During this workshop session, the participants were encouraged to fill out and share Post-its that summed up their ideas. In the end of the session, the participants presented and motivated their Post-its through a summarizing presentation with the group, where each participant was encouraged to present his/her input for the group. This second workshop session was documented through field-notes and sound recordings.

Data from both sessions were analyzed through open coding and structuring of discovered needs and requirements for building, intervening, and evaluating a first alpha prototype, which incorporates the input from both sessions. Analyzed data from the first session resulted in a call for identifying and elaborating extended civic orientation content, which can be available and universally understandable for all groups of newcomers, while data from the second session generated early needs for addressing extended learning content as advanced learning modules, which are a non-standardized form of civic orientation content and which provide newcomers extended information on standardized themes such as, how do you apply for a job in Sweden? Or what does it mean to exercise your civic rights in Sweden? A correlation between these insights concerned the need to develop and incorporate both standardized and non-standardized content, formed and populated with appropriate content that supports the newcomers’ heterogeneous worldviews. Here the idea of utilizing supportive IT that distributes the content online became an evident need and requirement. But at this stage, little was known about the integration workers’ heterogeneity and worldviews in particular.

5.1.2 In-Depth Interviews
As a complementary activity to the participatory workshops, ten in-depth interviews were conducted together with four tutors, two content producers, four coordinators, and one manager. Each interview was held in the work setting of the respondents, at the integration center in Gothenburg, Sweden. The interviews were held between January and March 2014, parallel to the participatory workshops. Table 14 shows a summary of the interviewee profiles and interviews (due to an ethical agreement with the respondents, their names and age were anonymized for this research). Furthermore, all interviews were documented through field notes and sound recordings.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Role</th>
<th>Session Length (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41</td>
<td>Tutor</td>
<td>72</td>
</tr>
<tr>
<td>Female</td>
<td>35</td>
<td>Tutor</td>
<td>57</td>
</tr>
</tbody>
</table>
Table 14. Profile of interviewees and interviews

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Position</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>46</td>
<td>Tutor</td>
<td>64</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>Tutor</td>
<td>59</td>
</tr>
<tr>
<td>Male</td>
<td>37</td>
<td>Content Producer</td>
<td>69</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
<td>Content Producer</td>
<td>56</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>Coordinator</td>
<td>65</td>
</tr>
<tr>
<td>Female</td>
<td>47</td>
<td>Coordinator</td>
<td>75</td>
</tr>
<tr>
<td>Female</td>
<td>53</td>
<td>Coordinator</td>
<td>92</td>
</tr>
<tr>
<td>Male</td>
<td>43</td>
<td>Coordinator</td>
<td>84</td>
</tr>
<tr>
<td>Female</td>
<td>38</td>
<td>Manager</td>
<td>118</td>
</tr>
</tbody>
</table>

The purpose of the interviews was to probe for a deeper meaning and understanding about the integration workers' worldviews, with respect to openly exploring the integration workers' heterogeneous worldviews. This included aspects concerning knowledge background in terms of education, IT skills, work experience, their individual experience of how civic orientation is organized and conducted, their own roles and contributions to the program, the nature of their working activities and tasks, and their beliefs, expectations, fears, and general conceptions of digitalizing the program. The interviews were documented through notes and sound recordings.

After each interview, documented data was analyzed through a process of transcribing and open coding (as illustrated in Figure 9). This process was also adopted to analyze data collected from other sources (e.g., workshops) as well. The open coding process generated outcomes for analytical memos, which served as a rationale for choosing and incorporating appropriate theories (analytical and kernel) that help in understanding the problematic aspects of the integration workers’ practice, as well as the needs and implications of digitalizing the civic orientation program.

Figure 9. Schematic overview of the interview and analysis process

An interview guide was adopted from Boyce & Neale (2006) to incorporate governing principles for organizing and analyzing the in-depth interviews. The governing principles of the guide are depicted in Table 15.
### Principles for Conducting In-Depth Interviews

- Questions should be open-ended rather than close-ended.
- Ask factual questions before opinion questions.
- Use probes as needed.

### Principles for Analyzing the In-Depth Interviews

- Read through the interview responses and look for patterns or themes among the participants.
- Investigate if you can group a variety of themes in any meaningful way, such as by type of participant.
- Identify responses from various magnitude of enthusiasm, such as responses that were given through few words or responses that were given through more words.

#### Table 15. Interview guide and governing principles

The principles for conducting the interviews were utilized by first asking the respondents some background questions (e.g., name, age, gender) and then evolving towards asking open questions about different issues such as the: respondents’ work, practice, knowledge interests, professional roles, responsibilities, general IT literacy, beliefs, ideals, expectations, preconceptions and fears about digitalizing the civic orientation program. The utilization of the principles for conducting the in-depth interviews are illustrated as follows:

- **Utilizing the first principle:** ‘Please describe your profession, your role, and your specific responsibilities within the context of your work’
- **Utilizing the second principle:** ‘What are your daily work tasks’? (factual question); ‘How do you think technologies could incorporate your current work, with respect to your practice, role, area of responsibility, and daily tasks?’ (opinion question)
- **Utilizing the third principle:** ‘Would you give me an example of one of your daily tasks at work?’; ‘Can you elaborate on your initial beliefs and expectations of digitalizing the civic orientation program?’

Consequently, the utilization of the principles for analyzing the in-depth interviews resulted in responses that indicated a strong sense of heterogeneity among the integration workers’ roles, responsibilities, and worldviews (e.g., beliefs, fears, expectations, conceptions). As an illustration of this, Table 16 depicts brief excerpts from the data analysis that confirm the aspect of heterogeneity.

#### Table 16. Analytical memos and emerging insights

<table>
<thead>
<tr>
<th>Transcripts (Excerpts)</th>
<th>Analytical Memos</th>
<th>Emerging Insights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well, I believe that it is a good idea to provide our program to as many newcomers as possible... but I also believe that it may become difficult for the newcomers to use new technology... the technology must be simple for them to use... as well as for us who organize the sessions. (Tutor)</td>
<td>Expectations on providing sessions through support of e-learning technologies</td>
<td>Sufficiency as a key design feature for addressing the heterogeneity of integration workers and newcomers, with respect to sufficient functionality for different purposes</td>
</tr>
<tr>
<td>Then we need to educate ourselves as tutors... because we are very different from each other... some are good at using IT, and some are not... we need to be educated in how to use the technology for organizing and implementing our sessions... otherwise it will be difficult I think.” (Tutor)</td>
<td>Expectations on providing sessions through support of e-learning technologies</td>
<td>Efficiency as a key design and pedagogical feature for supporting the heterogeneity among integration workers</td>
</tr>
</tbody>
</table>
We need to expand the program and we need to offer civic orientation to more and more people. It is important that other counties and municipalities in Sweden feel that they can use our services without too much difficulty in learning the introduced technology. We must keep the technology simple to learn and use. (Manager)

As a coordinator, we have the main responsibility to coordinate different groups of newcomers with the appropriate tutor. This is highly dependent on which language the newcomers speak. Therefore, we must find tutors that speak their native language. This process is easy to coordinate, but I really don’t know how we could coordinate and distribute non-standardized content that is supported through different languages. (Coordinator)

When we produce content for civic orientation, we don’t share a common set of tools or resources. Instead, we work separately, and sometimes we do the same work, without being synchronized. This causes some overlap in our work, and takes time to adjust. (Content producer)

Expectations on providing sessions through support of e-learning technologies

Sufficient simplicity as a key design feature for providing and enabling a larger group of integration workers to adopt and use proposed technologies through support of e-learning

The need for supporting multi-modality of content (standardized and non-standardized) with respect to the heterogeneity of newcomers (e.g., different languages)

The need for a common source of collaborative tools that supports sharing and distribution of content

Table 16. Examples of excerpts from in-depth interviews

5.1.3 Participative Observations and Outcomes of the First ADR Stage

As an extension to the workshop sessions and interviews, four participative observations were held in parallel in February–March 2014 to acquire a holistic understanding (DeWalt & DeWalt, 2002) about the everyday practice of tutors’ work setting, their sessions on civic orientation, their pedagogy in terms of interacting with supportive technology (presentation slides), and their interaction with the newcomers. The researcher of the ADR team participated and observed the tutors during their sessions of providing civic orientation, to observe how their civic orientation sessions were organized and provided. The participative observations were held with tutors that are responsible for English-speaking, Persian-speaking, and Arabic-speaking newcomers. The idea of participating in the different groups was to get an insight about similarities and diversities among the tutors with respect to how they organize and perform their sessions of civic orientation, as well as the presence of newcomers and how they engage in the learning discourse.

Additionally, during the first ADR stage, the principle of Practice-Inspired Research (Sein et al., 2011, p. 40) was incorporated by establishing an early problem-solution awareness through the participatory workshops, interviews, and participative observations, which in turn generated tentative knowledge about specific problems of organizing and providing civic orientation content to different group of newcomers. These problems were addressed as early design implications into problems of designing for heterogeneous groups of end-users.

Furthermore, the principle of Theory-Ingrained Artifact (Sein et al., 2011, p. 40) was applied through a literature study about relevant theories that helped identify and formulate the early proposed design implications. These theories varied from being kernel theories and analytical theories. Table 17 summarizes the incorporated theories and their role toward identifying and formulating design implications for the second ADR stage.
Table 17. Incorporated theories within the first ADR stage of the first cycle

<table>
<thead>
<tr>
<th>Theory</th>
<th>Type of Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-learning theories with focus on strategies for interactive learning processes (Garrison et al., 2001; Anderson et al., 2001; Osman &amp; Herring, 2007) with respect to the idea of providing form and content on various levels of complexity for novice and advance learners among the heterogeneous groups of participants.</td>
<td>Kernel Theory</td>
</tr>
<tr>
<td>E-learning theories that inform how different tools, web-based resources, learning modules, virtual communities, and other online-based learning material can be provided for newcomers with a heterogeneous background, culture, norms, values, literacy, and beliefs (Fawcett et al., 2000; Raynes-Goldie &amp; Walker, 2008; Bers, 2008).</td>
<td>Kernel Theory</td>
</tr>
<tr>
<td>Potential e-learning models that inform different approaches (Vrasidas, 2000) and which problematize crucial aspects of e-learning such as the aspect of presence (Garrison &amp; Anderson, 2003; Lee, 2004; Shea et al., 2012, 2014). Here, the phenomenon of presence (Garrison &amp; Anderson, 2003) in e-learning became a crucial aspect to address further. Furthermore, the concept of embedded learning objects (Churchill, 2007) was identified as a conceptual term for conceptually addressing and elaborating digital civic orientation content.</td>
<td>Analytical Theory</td>
</tr>
<tr>
<td>Theories about the use of technology as a process of enactment (Orlikowski &amp; Iacono, 2001; Leonardi, 2012) were used to enable an understanding of the role of the integration workers’ practice through the ongoing use and change of technologies in their workplace setting. The theory was used to analyze the role of supportive IT for the civic orientation program, its shaping, and the sense-making of it from the perspective of enactment through continuous use and refinements.</td>
<td>Analytical Theory</td>
</tr>
</tbody>
</table>

The **problem formulation** stage ended by formulating and proposing the following design implications, as essential aspects of digitalizing the civic orientation program:

1. **Design implications for building advanced learning modules**: modules that are distributed online for newcomers. The purpose of the modules is to extend the standardized learning content of civic orientation (e.g. books, slides) and provide system features that incorporate activities for acquiring knowledge about social phenomena such as the relation between studies and work, how to establish a network of professional contacts, customs and laws, how to apply for a job, and the parenting role in Sweden. Informational literature (e.g. Orlikowski, 2000; Fawcett et al., 2000; Bers, 2008) was used as inspiration for mapping the design implications with concrete features of the advanced learning modules.

2. **Design implications for a supporting e-learning model**: an e-learning model that offers adaptable features for organizing and distributing civic orientation content and sessions online. Early input from the integration workers identified the need for designing an e-learning model that is open in terms of availability of content and features, and which is adaptable toward different group of tutors and participants. The content included customized form of content (including advanced learning modules) created in collaboration between content producers, tutors, and coordinators, and distributed in the form of embedded learning objects such as video clips, animations, graphics, and text. The content is produced, organized, uploaded, maintained, updated, and distributed through collaborative features that are adaptable to the integration workers and their different areas of responsibilities. Finally, the model shall incorporate various modes of presence (e.g. social, teaching) in e-learning environments (e.g. Garrison & Anderson, 2003; Lee, 2004; Shea et al., 2012, 2014).
5.2 The Building, Intervention, and Evaluation Stage

In the second ADR stage of building, intervention, and evaluation, a synthesis of the design implications was addressed and then built into an alpha prototype. Increments of the prototype were built through the customized design methodology and evaluated through two additional participatory workshops (as summarized in Table 18).

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Theme</th>
<th>Participants</th>
<th>Period of Time</th>
</tr>
</thead>
</table>
| Participatory Workshop 3 | Elaborate design features for the alpha prototype | 1 Manager  
3 Coordinators  
2 Content producers  
3 Tutors  
1 Researcher/Designer  
2 Scholars/Developers | April 2014 |
| Participatory Workshop 4 | Demonstrate, test and evaluate the alpha prototype | 1 Manager  
3 Coordinators  
2 Content producers  
3 Tutors  
1 Researcher/Designer  
2 Scholars/Developers | May 2014 |

Table 18. Participatory workshop sessions in the BIE stage of the first ADR cycle

The first workshop lasted for two hours and was documented through field notes and sound recording. Essentially, the workshop focused on elaborating early conceptual design features that derived from the design implications. Initially, the whole group of participants was involved in a discussion about:

- Sufficient features that are supported by appropriate pedagogies for organizing and providing advanced learning modules
- Artifact features that shall support civic orientation through different modes of delivery depending on the setting (classroom, e-learning)
- The design of a graphical user interface, together with desired functionality for creating course sites, and organizing and distributing content (both standardized and non-standardized)

Throughout discussions from the first workshop, it became evident that the prototype interface shall provide a rich set of functionality that, similar to suggestions from Tynjälä & Häkkinen (2005), provides features that support:

- Integration of theoretical knowledge with the tutors’ practical experience – incorporating relevant knowledge from their previous work experience, education, IT literacy
- Learning tasks that help newcomers in conceptualizing their past experiences from their original background and culture
- Encouragement of collaboration and knowledge sharing between the integration workers
Integration of different forms of learning activities for the newcomers, including writing, discussions, exercises, audio, video, and advanced learning modules

The second design workshop was conducted one month after the first one. This time, focus was on testing and evaluating the early alpha version, its content, interface, and functionality. The alpha prototype was thus designed as a mockup with dummy data as content, before demonstrating and evaluating the prototype at the second workshop. The mockup was designed with WordPress (Mullenweg, 2010) to exemplify platform features for content management, site publishing, communication, and collaboration. At this point of view however, the ADR team did not discuss the prototype in technical terms, such as what kind of technology WordPress is and what other options there are. Rather, the integration workers were encouraged to explore and test the alpha prototype features and evaluate them in accordance with their own roles and areas of responsibilities. Thus, for evaluation and testing, participatory design principles (Kusunoki & Sarcevic, 2012) were used to address usability aspects such as:

- The relevance of the prototype’s content
- The sufficiency of the prototype’s interface
- The complexity of the prototype’s functionality

This procedure was conducted iteratively with each and every integration worker on the ADR team, and feedback was provided from them through both just-in-time feedback, as well as through a general debriefing at the end of the workshop session. The session lasted for approximately three hours and generated an early insight about how to proceed for further designing a beta prototype of the IT artifact. Subsequently, feedback from the integration workers was documented through sound recording and transcribed into separate answers from the respondents. Examples of the excerpts are provided as follows:

I feel that this is a good start… we can now use some of our present content online… but I don’t know how this is going to be regulated… if it is going to be available for us all, or just for the group which I am in charge of. (Tutor)

[T]he interface is simple and intuitive… I feel though that it can be developed more… for instance, as a tutor, I want to have the possibility of communicating with my participants online… perhaps a chat function would be good. (Tutor)

[E]ven though all functionality is not ready yet, I feel that it must be as simple as possible… to begin with at least… so I think that the current simplicity is fine… but we need more functionality for the advanced learning modules… so they become more interactive. (Coordinator)

During the second stage, the ADR team applied the principle of Reciprocal Shaping (Sein et al., 2011, p. 43) by involving the integration workers as active participants in the design process and encouraging them to provide feedback continuously, both through scheduled occasions (e.g. workshops) as well as through informal interaction via email, chat, or videoconferencing, when needed. Consequently, the principle of Mutually Influential Roles (Sein et al., 2011, p. 43) was supported by first interpreting and addressing the practice of the integration workers as a wicked practice, which involves a strong dimension of heterogeneity among the integration workers as well as the participants of the civic orientation program. Then, through the workshops, the scholars from the university established a discourse that emphasized perspective making and perspective taking with the integration workers. This discourse was established by reflecting the implications of introducing the alpha prototype and evaluating its implications for the integration workers’ practice. Doing so, a sense of trust was established between the members of the ADR team, motivating the members to mutually influence the evolution of the ADR cycle. Finally, the principle of Authentic and Concurrent Evaluation (Sein et al., 2011, p. 43) was consciously incorporated by organizing and conducting artifact evaluation iteratively and continuously within the integration workers’ context of work, rather than in an isolated space outside their context of work (e.g. a laboratory).
5.3 The Reflection and Learning Stage

The stage of reflection and learning was already initiated in the beginning of this cycle as an ongoing activity for identifying and discussing problems as well as identifying issues for refining the alpha prototype. The challenges and issues for the latter concerned developing pedagogical methods that resonate with the desired e-learning model, together with a set of organizational prerequisites that reinforce and extend the practitioners’ current roles and areas of responsibilities.

Although reflection and learning was an ongoing process through the whole cycle, at one occasion, the ADR team held a two-hour-long informal meeting, discussing the organizational consequences of extending the professional roles of practitioners and supporting them to acquire new pedagogical and technological skills for their tasks. The meeting was documented through field notes and sound recording. During the meeting, crucial decisions were taken about how to proceed in order to integrate a stronger connection between artifact features and the tasks faced daily by every integration worker. Additionally, the ADR team identified needs for integrating artifact features for three different modes of content delivery: (1) in the classroom; (2) in the classroom and through videoconferencing; and (3) asynchronous modules that the newcomers interact with outside the scope of their 60 hours. Thus, the need of choosing appropriate technologies that support e-learning, through for instance videoconferencing, were identified as a crucial task for further work.

Additionally, the ADR team discovered that the current roles of the integration workers need to be extended with new responsibilities due to intervention of new technologies. In other words, the integration workers need to learn how newer technology works, how it can be used to support their professional roles and daily tasks, and how they can transfer acquired knowledge to future employees. Thus, a need for supporting a link between learning new technologies and their everyday work activities was identified as a necessary task to incorporate for the second ADR cycle. This was addressed as a need for planning, organizing, and performing workplace training sessions, which support the integration workers’ work-integrated learning. Finally, during the discussions, the ADR team suggested using the term digital platform for civic orientation as an appropriate term for addressing the ensemble artifact. The reason for this was because there was a need for incorporating civic orientation sessions through e-learning solutions (e.g. videoconferencing, course sites, publishing tools, etc.), as well as collaborative technologies that support content production. Additionally, the integration workers decided that the digital platform should have the functionality to openly distribute the content online, meaning that anyone can have access to the platform and its content. Table 19 summarizes the outcomes of this stage.

<table>
<thead>
<tr>
<th>Outcome(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrating artifact features with different modes of delivery</td>
<td>Due to the heterogeneous nature of newcomers (e.g. different languages, culture, background, etc.), different ways of delivering civic orientation content was reflected as an essential aspect to support through artifact features.</td>
</tr>
<tr>
<td>Supporting civic orientation sessions through videoconferencing</td>
<td>A videoconferencing tool was identified as a crucial component for providing civic orientation sessions online, to participants that are located in other areas of Sweden.</td>
</tr>
<tr>
<td>The extension of current roles and areas of responsibilities</td>
<td>Due to the intervention of new technologies, the need of extending integration workers’ current roles and areas of responsibilities was considered as an inevitable implication of digitalizing the civic orientation program.</td>
</tr>
<tr>
<td>The need for workplace training</td>
<td>Planning, organizing, and performing workplace training sessions was identified as an indicator of supporting the work-integrated learning of integration workers.</td>
</tr>
<tr>
<td>A digital platform for civic</td>
<td>An integrative platform that integrates different technologies for different</td>
</tr>
</tbody>
</table>

51
purposes of organizing and providing civic orientation content and sessions, through various modes of delivery.

Table 19. Summary of outcomes from the first cycle’s reflection and learning

During this stage, the principle of *Guided Emergence* (Sein et al., 2011, p. 44) was incorporated to reflect and prompt refinements that indicate substantial changes toward the shaping of the alpha prototype for the second ADR cycle. These refinements included not only specific refinements (e.g., features for distributing content online), but also refinements that helped in designing meta-artifacts that address an initial class of problems.

5.4 THE FORMALIZATION OF LEARNING STAGE

In the stage of *formalization of learning*, the ADR team formulated and proposed a set of meta-artifacts (theoretical contributions such as a conceptualization and design guidelines). During this last stage of the first cycle, the principle *Generalized Outcomes* (Sein et al., 2011, p. 44) was applied by addressing an initial class of problems, as well as generating a conceptual view of presence in e-learning from a Heideggerian perspective. However, the first meta-artifact was formalized into a set of tentative design guidelines for an open digital experience of civic orientation. In turn, designing for an open digital experience of civic orientation was addressed as an initial class of problems.

5.4.1 THE TENTATIVE DESIGN GUIDELINES

Tentative design guidelines are generally considered early DSR outcomes (Gregor & Hevner, 2013), which inform further work of design and evaluation of the IT artifact. The guidelines were thus distilled and extracted from the process of designing the alpha prototype. The design guidelines were proposed as follows (for more detailed description of each guideline, see Haj-Bolouri & Svensson, 2014):

- **The guideline of designing for flexible modes of learning material**: a set of design features needs to be incorporated to provide flexible and adaptable content and form of online distribution
- **The guideline of designing for non-redundant distribution of learning material**: administrative activities such as collaboratively producing, sharing, and updating content of civic orientation are central issues incorporated for the design vision. Central repositories for content need to be established in order to give content producers the ability to share common set of tools for collaboration
- **The guideline of designing for large variation in IT literacy**: the interaction with the content should be intuitively easy for end-users such as newcomers, but also task efficient for users such as content producers and tutors in their administrative activities. Consequently, this design guideline supports the desirable circumstances of a higher throughput of participants (newcomers), by enabling the civic orientation program through support of e-learning (e.g., videoconferencing, advanced learning modules)
- **The guideline of supporting multimodal and multilingual digital features**: to support the content of civic orientation with multimodal features (e.g., images, sounds, videos) in a wide range of foreign languages
- **The guideline of designing for advanced forms of learning processes**: distributed forms of advanced content in terms of advanced learning modules and embedded learning objects

The essential purpose of suggesting the design guidelines as tentative was to communicate learning outcomes from the design process on an intermediary level, which essentially addressed the need of designing features that address and support the aspect of heterogeneity among integration workers and newcomers. Furthermore, the guidelines were written and reported in a published conference paper (Haj-Bolouri & Svensson, 2014), and used as an entry point for the second ADR cycle’s stage of building, intervention, and evaluation.
5.4.2 Explicating the notions of presence

A crucial issue and element of designing a sufficient e-learning model that supports civic orientation through e-learning solutions and various modes of delivery (e.g. online, classroom) concerns notions of presence in general, and notions of presence in e-learning in particular. Thus, a literature study on the topic of presence was performed to understand and conceptualize an essence of presence in e-learning. The literature study started explicating the phenomenon of presence in general by reading concepts and theories about different notions of presence. The theories were thus incorporated as analytical theories for understanding different notions of presence in general, and notions of presence that are relevant for e-learning in particular. Based on the literature study, a gap within the e-learning literature was found and led to a second theoretical contribution of the first cycle. However, first things first, and the literature study started by explicating the notions of presence from a general perspective. The entire inquiry was scrutinized and understood as sufficient toward conceptualizing an essence of presence in e-learning. I will thus show below how the phenomenon of presence was explicated in this research.

First, a general definition was found through Steuer’s (1992, p. 76) definition of presence as follows:

the extent to which one feels present in the mediated environment, rather than in the immediate physical environment.

Similarly, Witmer & Singer (1998, p. 225) referred to presence as:

the subjective experience of being in one place or environment, even when one is physically situated in another.

Furthermore, based on the Heideggerian/Gibsonian view of the ontology of being, Zahorik & Jenison (1998, p. 87) proposed that:

presence is tantamount to successfully supported action in the environment.

Others such as Biocca (1997) traced the origin of the term presence and concluded that it has been generalized into the illusion of being there, whether or not there exists in physical space. Biocca (1997) proposed that this sense of presence oscillates around physical (e.g. real environment), virtual (mediated environment), or imaginable (e.g. daydreaming) environments.

The literature study also showed additional attempts to synthesize different notions of presence. For instance, Lombard & Ditton (1997), and Lombard et al. (2000) conducted an extensive literature review of the phenomenon of presence, and identified six notions of presence, which are summarized in Table 20.

<table>
<thead>
<tr>
<th>Notion</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective or objective social richness</td>
<td>The warmth or intimacy possible via a medium. Media having a high degree of social presence are judged as being warm personal, sensitive, and sociable</td>
</tr>
<tr>
<td>Perceptual or social realism</td>
<td>Social realism: realistic or plausible portrayal of the real world in that it reflects events that do or could occur in the world. Perceptual realism: life-like creation of the physical world by providing rich sensory stimuli, where individuals perceive that the people and objects that they encounter in a virtual world look, sound, smell, and feel like real people and objects.</td>
</tr>
<tr>
<td>Transportation of self, place, or other selves</td>
<td>Telepresence in its original meaning – being there The feeling that you are actually transported to a virtual world (‘You are there’), or the feeling that the virtual world comes to you while you are remaining where you are initially (‘It is there’), or the feeling that you and your interaction partners are sharing a space in a</td>
</tr>
</tbody>
</table>
virtual world ("We are together in a shared space").

| Perceptual or psychological immersion | Perceptual immersion: The degree to which a virtual environment submerges the perceptual system of the user
Psychological immersion: the degree to which users of a virtual environment feel involved with, absorbed in, and engrossed by stimuli from the virtual environment (Palmer, 1995). |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social interaction with an entity within a medium</td>
<td>The degree to which individuals illogically overlook the mediated or artificial nature of interaction with an entity within a medium</td>
</tr>
<tr>
<td>Social interaction with a medium itself</td>
<td>The degree to which users illogically confuse the mediated or artificial nature of social interaction with a medium itself</td>
</tr>
</tbody>
</table>

Table 20: Notions of presence (Lombard & Ditton, 1997; Lombard et al., 2000)

Additionally, after conducting an extensive literature review of previous notions of presence, Lombard and his colleagues (Lombard & Ditton, 1997; Lombard et al., 2000, p.77) defined presence as:

the perceptual illusion of non-mediation. The term “perceptual” means that the feelings of presence involve continuous (real time) responses of the human sensory, cognitive, and affective processing systems to objects and entities in a person’s environment.

By illusion of non-mediation, Lombard et al. (2000, p. 77) refer to a phenomenon in which:

a person fails to perceive or acknowledge the existence of a medium in his or her communication environment and responds as he or she would if the medium were not there.

At this stage and time of the literature study, it became evident that Lombard and his colleagues provide an extended set of answers for the different notions of presence in general. More evidently, they illustrate the relation between presence and how presence is mediated through a medium such as digital technologies. But their notions do not explicitly penetrate into how presence is manifested and expressed through virtual experiences. From the perspective of digitalizing and offering the civic orientation program through support of e-learning solutions, however, the virtual experience as being a learning experience becomes a subject matter both for the tutors that provide their sessions as well as for the participants that experience the sessions. More fundamental theories about presence and virtual experience were thus needed, in order to identify and understand the implications of digitalizing the civic orientation program and providing or experiencing civic orientation sessions through virtual experiences. Thus, a further investigation of what a virtual experience is, and how presence is relevant for the virtual experience, was conducted.

5.4.3 Explicating Presence and Virtual Experiences

The literature study on the subject of presence continued by incorporating Lee’s (2004) notions of presence and virtual experiences. According to Lee (2004), individuals who engage with digital technologies can engage in three types of behaviors – perception, manipulation, and interaction – when experiencing mediated/simulated objects/environments. Through perception, individuals identify and interpret objects that they are experiencing (e.g. through television). If individuals can make changes to objects that they are perceiving (manipulation), a higher level of experience occurs (e.g. changing the location of a virtual object in a virtual environment). Finally, when individuals and experienced objects mutually affect each other, the domain of individual experience goes beyond the physical world and becomes a higher level of experience, termed occurring interaction in the virtual world (Lee, 2004). In this context, the notion of presence becomes attached to the virtual world, where it is addressed as a psychological state in which virtual objects are experienced as actual objects in either sensory or non-sensory ways.
As an elaboration to the notion of presence in a virtual world, Lee (2004) elaborates three subtypes of presence – physical, social, and self-presence. These subtypes are presented and depicted in Table 21.

<table>
<thead>
<tr>
<th>Domains of Virtual Experience</th>
<th>Para-Authentic</th>
<th>Artificial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Experience of para-authentic objects: experiencing virtual physical objects and environments that have authentic connection with the corresponding actual physical objects and environments</td>
<td>Experience of artificial objects: experiencing virtual physical objects and environments artificially created or simulated by technology</td>
</tr>
<tr>
<td></td>
<td>Examples: remote exploration of a tele-operating system; tele-surgery; broadcasting of sports events; television news</td>
<td>Examples: exploration of a prehistoric battlefield depicted by “Dungeons and Dragons” games; watching science fiction movies; reading nonfiction</td>
</tr>
<tr>
<td>Social</td>
<td>Experience of para-authentic social actors: experiencing the representation of other humans who are connected by digital technologies</td>
<td>Experience of artificial social actors: experiencing artificial objects manifesting humanness</td>
</tr>
<tr>
<td></td>
<td>Examples: CSCW (computer-supported cooperative work); videoconference; Internet chatting; seeing a person on television; seeing a photographed image of someone</td>
<td>Examples: conversation with a talking machine; social interaction with computers; social robots; software agents</td>
</tr>
<tr>
<td>Self</td>
<td>Experiencing of a para-authentic self: experiencing the representation of one’s own genuine self – either physically manipulated or psychologically assumed – inside a virtual environment</td>
<td>Experience of an artificial alter-ego(s): experience an alter-ego(s) constructed either – physical or psychologically – inside a virtual environment</td>
</tr>
<tr>
<td></td>
<td>Examples: seeing oneself in a videoconference; exploring environment reacting to user inputs; using a robot representing a user in a tele-operating system</td>
<td>Examples: readers’ identification with novel or movie characters; gender-swapped avatars in online games; user-chosen characters in role-playing game</td>
</tr>
</tbody>
</table>

Table 21: Typology of virtual experience and subtypes of presence (Lee, 2004)

Lee’s (2004) typology illustrates the complexity and versatility of presence as phenomenon. But at the same time, Lee’s (2004) typology explicates the notion of presence, attached to a virtual experience on a general level. The typology does, however, bring clarity to the relevance of presence in virtual environments with respect to different ways in which presence can be manifested and expressed in domains of a virtual experience. Additionally, the typology provides general examples that illustrate the distinctions between artificial and para-authentic presence, as different modes of experiencing presence in virtual environments. From here on, it became evident that presence is a complex phenomenon with multiple aspects of how it can become manifested and expressed through virtual experiences in general. Although the combination of presence and virtual experiences is relevant for this research, the notion of presence in e-learning is even more relevant to explicate, especially because one of the main objectives of
digitalizing the civic orientation program is to support the arrangement and performance of civic orientation through support of e-learning solutions.

5.4.4 EXPLICATING PRESENCE AND E-LEARNING

With Lee’s (2004) explication of presence as a broad entry point toward presence and virtual experiences, the question narrowed down to what the literature within e-learning offers about presence. Presence in e-learning has the theoretical starting point that certain forms of social interactions (e.g. dialogues) among learners, but also between teachers and learners, can create presence in their digital space of communication, when they are engaged in interaction with each other. Such presence, in turn, fosters the emergence and development of a community of inquiry (CoI) (Garrison & Anderson, 2003; Garrison, 2007). In turn, a CoI focuses on the context of a learning experience and the interactions that drive the learning process forward.

In order to elaborate on a model for CoI, Garrison & Anderson (2003) emphasize that learners interact in a community and should thus be encouraged to take responsibility for their own learning. Additionally, Garrison & Anderson (2003) argue that e-learning designers should consider three key elements when designing the context, content, and service of e-learning. These key elements concern three different forms of presence, which together are situated in and mediate an educational experience. The three forms of presence proposed by Garrison & Anderson (2003) are:

- **Social Presence**: the ability of learners to establish themselves socially and emotionally as a real person through the learning experience
- **Cognitive Presence**: refers to learners’ ability to construct and confirm meaning through interaction and reflection
- **Teaching Presence**: involves the provision of structure and a process for the learning to take place (e.g. Rourke et al., 2001; Garrison, 2007)

Essentially, the proposed CoI model by Garrison & Anderson (2003) is based on a model of critical thinking and practical inquiry. The model posits that learning occurs through the interaction of students and their teachers and is manifested through the three dimensions of presence (social, cognitive, teaching). The model theorizes online knowledge building as the outcome of collaborative work among active participants in learning communities reflecting instructional orchestration, which is appropriate to the online environments (teaching presence) and an encouraging collegial online setting (social presence) that fosters critical and creative thinking (cognitive presence) as a result of practical inquiry within a community of learners. This is illustrated in Figure 10.

![Figure 10. The community of inquiry model (Garrison & Anderson, 2003)](image)

Besides the three dimensions of presence (Social, Cognitive, Teaching), the CoI model focuses on overlapping elements such as the supporting discourse, setting climate, selecting content, and more essentially, the educational experience (Garrison & Anderson, 2003). However, Garrison & Anderson’s (2003) model essentially emphasizes the educational experience and the dimensions of presence from the
perspective of implementing e-learning in higher education. And while the CoI model represents an ideal in which teachers perform the same roles (expressed as teaching presence), the model ignores the real world dynamics that shape and constrain much of online learning in practice. Nor does the CoI model emphasize the learning aspect to a further degree than the dimension of educational experience, which in itself has solely been utilized in the setting of higher education.

As a response to the limitations of the CoI model, an elaborated version (shown in Figure 11) of the CoI model was revised by Shea and his colleagues (Shea & Bidjerano, 2010; Shea et al., 2012, 2014) to elaborate the relation between teaching presence and self-efficacy in e-learning environments.

![Figure 11. Revised community of inquiry model including learner presence (Shea & Bidjerano, 2010; Shea et al., 2012, 2014)](image)

The new dimension of learning presence concerns the moment where learners are asked to actively collaborate with each other and with the teacher. Shea & Bidjerano (2010) introduced the dimension of learning presence as a construct that comprises a wide variety of elements concerning issues of e-learning, including meta-cognitive, motivational, and behavioral traits and activities that are under control of successful online learners. Furthermore, Shea et al. (2012) suggest that learning presence integrates with other forms of presence in the CoI model and reflects the proactive stance adopted by students who marshal thoughts, emotions, motivations, behaviors and strategies in the service of a successful e-learning experience.

Shea et al. (2014) elaborate further on how their original idea of learning presence can refine the CoI model and make it more focused on the roles of teachers and learners in collaborative learning environments by explicating the role of the learners and drawing on theories of learner self-regulation (Shea et al., 2012, 2014). But Shea and his colleagues (Shea & Bidjerano, 2010; Shea et al., 2012, 2014) have been trying to refine the CoI model for some time now, and there is clearly a need for elaborating new concepts on what role presence has in the context of e-learning in particular. For example, the fact that teachers and students establish interaction through e-learning environments, without being present in the same physical room, implies that they can either be here (e.g. participants in the same physical room) and/or be there (e.g. participants in a different physical room located in another site), or a combination of both (e.g. being in the physical room, while being projected digitally) synchronously or asynchronously. Such issues were interpreted as a call for conceptualizing a further notion of presence in e-learning (explicated by Haj-Bolouri & Flensburg, 2017).

5.4.5 Conceptualizing a Further Notion of Presence in E-Learning

The stage of formalization of learning was concluded by focusing on a particular notion of presence (being here, being there, being both here and there) as being aligned with Martin Heidegger’s (1962) philosophical concept of Dasein (or Being-In-The-World). Heidegger’s philosophy was adopted because of the multiple and complex notions of presence in general and because of the discovered gap in how the e-learning literature addresses presence in e-learning as a phenomenon solely situated in the setting of higher education. The argument that individuals can be multi-situated (see for instance Lindroth, 2015) through support of advanced technologies that afford different modes of presence — which are manifested and expressed
through the individuals’ mode of being (e.g. how he/she comports himself/herself) — was one of the underlying traits of the identified multi-complexity. Another argument was directed towards the indication that an individuals’ mode of being becomes in turn demarcated to possibilities and constraints of which he/she can interact through technology. This argument was addressed as valid for the case of supporting various modes of delivery within the case of digitalizing the civic orientation program, especially with respect to the integration workers’ and newcomers’ heterogeneity. Thus, understanding the different modes of presence in providing and experiencing civic orientation helps to incorporate an underlying rationale for the aspects of designing for integration work. The concept of *Digital Dasein* (Haj-Bolouri et al., 2014b; Haj-Bolouri & Flensburg, 2017) was thus formalized and proposed as the second meta-artifact of the first ADR cycle.

In terms of formalizing the learning outcomes into research papers, the first cycle generated a total of four papers (Haj-Bolouri et al., 2014a; Haj-Bolouri & Svensson, 2014; Haj-Bolouri et al., 2014b; Haj-Bolouri & Flensburg, 2017). The first paper was written and accepted as a conference paper during the first ADR stage, and reported the findings from initial workshops with an emphasis on introducing the concept of advanced learning modules and a synthesis of design implications (Haj-Bolouri et al., 2014a). The second paper was written and accepted as a conference paper during the fourth stage, and emphasized a set of tentative design guidelines for realizing an open digital experience of civic orientation (Haj-Bolouri & Svensson, 2014). Finally, a first version of the third paper was written and accepted as a conference paper during the fourth and final ADR stage, emphasizing the essence of presence in e-learning. The paper was later revised and accepted as a journal article, which is now used as one of the constitutive papers of this research.
6 The Second Action Design Research Cycle

This chapter exhibits the implementation of the second ADR cycle, which was executed between August 2014 and the beginning of February 2015. The cycle generated research outcomes crucial for both digitalizing the civic orientation program as well as the constitutive research contribution of this thesis. For the research findings, the formalized learning outcomes resulted in four research papers (Haj-Bolouri et al., 2015; Haj-Bolouri, 2015; Haj-Bolouri et al., 2016a; Haj-Bolouri et al., 2016b), while two of them (Haj-Bolouri et al., 2016a; Haj-Bolouri et al., 2016b) are used as a constitutive part of the research contribution. The empirical outcomes, however, resulted in a beta prototype that was built, introduced, and evaluated as the final version of the instantiated artifact, a set of learning modules for conducting workplace training sessions were identified and defined as a part of the formalized learning outcomes of the second ADR cycle. Figure 12 shows a summary of the second ADR cycle.

6.1 The Problem Formulation Stage

The second ADR cycle initiated in mid-August 2014 with the problem formulation stage. Initially, a literature study was performed concerning WiL-related literature that inform and problematize issues coupled with humans, knowledge, learning, and work. This was done from the perspective of incorporating the work-integrated learning of integration workers in the civic orientation program through the learning theory of CoP (Lave & Wenger, 1991; Wenger, 1998). Additionally, knowledge about WiL strategies/techniques (Billett, 2001; Berge, 2002; Lee, 2010; Malloch et al., 2010; Tynjälä et al., 2014) helped organize and implement workplace training sessions for the integration workers. This endeavor
was initiated due to insights from the previous ADR cycle concerning the need of incorporating the work-integrated learning of the integration workers (e.g. development of pedagogical competency, development of IT skills). Thus, theories about how to integrate learning with work through practice and activities that foster a participatory philosophy (Billett, 2001) were introduced and discussed within the ADR team. This was done through a total of three meetings: two initial meetings between the university representatives at the university’s facilities, and one meeting with the whole ADR team at the integration center. Both meetings were documented through sound recordings (Table 22 depicts the meetings).

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Outcome</th>
<th>Participants</th>
<th>Period of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting for discussing workplace training theories</td>
<td>Identified workplace learning theories were used as kernel theories to advocate a participatory philosophy (Billett, 2001; Berge, 2002; Lee, 2010) as an appropriate strategy to choose specific techniques for how to organize and implement workplace training sessions in the workplace setting of the integration workers. The meeting lasted for 60 minutes.</td>
<td>Researcher and two scholars</td>
<td>August 2014</td>
</tr>
<tr>
<td>Meeting for discussing appropriate workplace training strategies</td>
<td>Based on the informed kernel theories from the first meeting, the second meeting focused on scanning different strategies for workplace training. The SAGE Handbook of Workplace Learning (Malloch et al., 2010) was scanned and a strategy was customized based on the informing literature (Malloch et al., 2010; Tynjälä et al., 2014). The meeting lasted for 66 minutes.</td>
<td>Researcher and two scholars</td>
<td>August 2014</td>
</tr>
<tr>
<td>Meeting for discussing and planning workplace training sessions</td>
<td>Concerned topics of discussion such as how to structure the workplace training sessions, how to divide them into a set of several sessions, when to implement them, with whom, for what reasons. The meeting lasted for 90 minutes.</td>
<td>The whole ADR team</td>
<td>September 2014</td>
</tr>
</tbody>
</table>

Table 22. Summary of meetings

In addition to the discussion and planning of workplace training sessions, it became evident that the integration workers have changed their opinions concerning the idea of providing civic orientation content openly online. As a result, design visions contradicting their opinions from the first ADR cycle emerged. For instance, during one of the interview sessions from the first ADR cycle, one of the coordinator stated that:

*If the content is open and available online for everyone, then basically a larger population of individuals in society can join and learn civic orientation.* (Coordinator)

But during the third meeting session of the second ADR cycle, the same person had changed his/her mind by declaring that:

*We cannot have the content open for everyone, because then other parties may copy our material and claim that it is theirs… we can either sell the content or have it restricted, open for our organization only.* (Coordinator)

Following up this change of opinion, other integration workers consolidated similar ideas about keeping a restrictive approach towards the proposed platform’s content and availability:

*I believe that the system is only for those who have registered for the civic orientation program, and not the public in general.* (Manager)
Well... it is not reasonable to offer our content for free... especially not the standardized book... because it is our responsibility to distribute the content to a group of newcomers only... and not everyone. (Tutor)

However, during this point of time, it became evident that the standardized book was already uploaded and digitally available in twelve different languages. This became evident during the meeting through input from one of the integration workers:

But the book is already open and available for everyone with an internet connection... our learning material extends the book... it would be good to offer everything for free for anyone who intends to join and learn more. (Content producer)

The contradictions of changed opinions created a tension between members of the ADR team and their opinions about how open or restricted the digital platform should be. The integration workers' heterogeneous worldviews caused them to rethink a vision of the digital platform by moving away from an open-ended platform to a more restrictive one. Additionally, the scholars and the researcher on the ADR team addressed this as a problem that is related to the integration workers' work-integrated learning, because the sense-making (and thus changed visions) of the platform evolved through the artifact's situated use towards the integration workers' practice. Here, the principle of Practice-Inspired Research (Sein et al., 2011, p. 40) was utilized to understand the problematic aspect of the integration workers' heterogeneous roles, responsibilities, and worldviews, by looking at theories about learning and practice that help illuminate the WiL of the integration workers from a socio-cultural perspective. Hence, more knowledge about learning and practice from a socio-cultural perspective with an emphasis on WiL was adopted to understand and incorporate the WiL of the integration workers.

6.1.1 Incorporating WiL-Related Literature

For this research, learning as a phenomenon became (throughout previous ADR stages) more and more considered as being relational and executed through engagement and participation in everyday activities (as advocated by for instance Lave & Wenger, 1991; Wenger, 1998; Billett, 2001), rather than being a solely individual cognitive process. From the perspective of integration workers and their professional practice, their performance is influenced by changes in their workplace, which include policy issues, adoption and implementation of new technologies, new demands from authorities (e.g. the government), the political landscape, etc. However, through social processes and interaction within the realms of their practice, the integration workers engage in activities and learn through experience, and thus contribute to the knowledge accumulation of their practice.

According to Wenger (1998), the learning of social process in general becomes a practice of identity formation and modes of belonging, rather than just a process of accumulating skills and competencies. Practice and learning are thus considered not separate, but rather intertwined and integrated. This was also the ambition with incorporating WiL into the everyday work of the integration workers. Subsequently, CoP as a learning theory was adopted to observe and analyze whether or not the practice of the integration workers can be framed as a community of practice. In order to do so, Wenger's (1998) main characteristics of a CoP were incorporated. Wenger (1998) defines these characteristics as follows:

- **Mutual Engagement**: Through participation in the community, members of the community establish norms and build collaborative relationships through mutual engagement. Their relationships are the ties that bind the members of the community together as a social entity.
- **Joint Enterprise**: Through the members' interactions, they create a shared understanding of what binds them together. The joint enterprise of a CoP is renegotiated by its members and is referred to as the ‘domain’ of the community.
- **Shared Repertoire**: As a part of a CoP, the community produces a set of communal resources, which is termed their shared repertoire; the term is used in the pursuit of the communities' joint enterprise, and can include both literal and symbolic meanings.
With the three above-mentioned characteristics of a CoP as an entry point for analyzing integration workers’ practice, further knowledge about CoP was incorporated to consider members’ activities such as learning and working as interrelated, compatible, intertwined, and connected. Generally, the members of a CoP find value in their interaction, spending time discussing their situations and needs in order to accumulate knowledge and learn more about their community. Members also act as so-called brokers/spanners by crossing their boundaries and introducing elements of one practice into another (Wenger, 1998). Through the members’ practice, the community develops, shares, and maintains its core of knowledge. The members’ practice may change as the role of the members changes over time.

This knowledge was used to observe how the implications of designing for integration work enables participation and continuous knowledge sharing among the integration workers. Subsequently, other aspects of CoP were taken into consideration to elaborate the forms of membership in a CoP. Wenger et al. (2002) explicate three forms of membership in a CoP as follows:

- **Core Members**: initiate different projects and function as leaders of the community. Core members are engaged in the progress and development of the CoP.
- **Active Members**: are involved in projects and engage actively, but in different negotiations. Active members seek advice from core members and lack the mandate to develop and change the CoP.
- **Peripheral Members**: are observers of the interaction in the community and do not contribute to the creation of meaning in the practice of the community.

Although the three above-mentioned types of members are defined thoroughly, the status of a member changes over time. For instance, a peripheral member can become an active member, an active member can become a core member, and of course other trajectories towards the core and periphery are constantly enacted as new members enter and exit the CoP. Such notions of community, members, and practice were adopted to analyze the practice of integration workers as well as their gradual change of knowledge awareness. For instance, learning how to produce, share, and use civic orientation content through various modes of delivery (e.g. e-learning environment, classroom environment) were addressed as activities that were governed through a mutual engagement and knowledge exchange among content producers, coordinators, and tutors. This was framed as an example of boundary crossing between different explicit integration workers and their practice.

The knowledge provided about the learning and practice of integration workers in the civic orientation program helped in understanding the WiL of integration workers in light of their work. It also helped inform and initiate the ADR principle *Theory-Imgrained Artifact* (Sein et al., 2011, p. 40) by going a step further and adopting the theory of *wicked problems* (Rittel & Webber, 1984; DeGrace & Stahl, 1990) to address the heterogeneity of integration workers’ worldviews as a wicked problem of designing for integration work. As a consequence, it became evident that future prescriptive knowledge (e.g. design principles) could no longer only focus on classes of problems that concern designing for an open digital experience of civic orientation (as the tentative design guidelines from the first ADR cycle did) because of the contradictory design visions that juxtapose an open digital experience of civic orientation. Hence, the identified problem from this stage became addressed as a problem of contradicting design visions, and was incorporated into the second stage of building, intervention, and evaluation.

### 6.2 The Building, Intervention, and Evaluation Stage

The stage of **building, intervention, and evaluation** was initiated in September 2014 and ended in late January 2015. During this stage, focus was on refining the alpha prototype features and to build and evaluate a beta version of the prototype. During this stage, a preliminary meeting was held together with the researcher and the two original scholars from University West, one tutor, one content producer, one coordinator, the project manager, and one third-party representative. The third-party representative was an expert on the topic of Content Management Systems (CMS). The purpose of the meeting was to discuss different type of standard CMS solutions, as a potential alternative to the alpha prototype. The
idea of organizing and conducting this meeting came as a request from the integration workers, because they now wanted a digital platform on a restricted basis (as opposed to an open one). During the meeting, the CMS expert demonstrated Moodle as an appropriate CMS for organizing and preforming the civic orientation program through support of e-learning. The CMS expert spent nearly three hours demonstrating and explaining features of Moodle, including features for uploading and sharing documents, creating course sites for individual groups of tutors, managing users and levels of authentication, and more. The meeting was held through Skype and documented through sound recordings and notes. After the meeting, however, a unanimous decision was taken within the ADR team that Moodle was not an appropriate choice, because it was too stiff and not adaptable toward the wicked practice of integration work. One of the participants of the meeting said that:

*I feel that this system is too framed and not flexible to use for our tasks as tutors... because sometimes, I want to add content on the fly to my course site, without having to process it through several stages... I want the system to be adaptable towards creative ideas and content.* (Tutor)

Another participant shared a similar opinion by saying that:

*Moodle seems complicated and not so adaptable towards our needs.... The system must be adaptable towards different roles and responsibilities... this system was purely administrative... we want both... a system that helps integration workers' activities, but also a system that newcomers can use to learn civic orientation content.... It must be more adaptable than this.* (Manager)

With the decision not to adopt a standard CMS solution such as Moodle, a continuation of refining the alpha version into a beta prototype was once again motivated and initiated. This was initiated through two initial participatory workshops and two participative online observations. The workshops and the participative observations were held in October and November of 2014. The workshops were documented through field notes and sound recordings, and analyzed through open coding, while the participative observations were video-recorded through the videoconferencing tool Adobe Connect and analyzed in NVivo 10.

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Theme</th>
<th>Participants</th>
<th>Period of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory</td>
<td>Identify and elaborate refined design features for a</td>
<td>1 manager, 4 coordinators,</td>
<td>October 2014</td>
</tr>
<tr>
<td>Workshop 1</td>
<td>beta prototype</td>
<td>2 content producers, 4 tutors,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 researcher, 2 scholars</td>
<td></td>
</tr>
<tr>
<td>Participatory</td>
<td>Demonstrate, test and evaluate the beta prototype,</td>
<td>1 manager, 4 coordinators,</td>
<td>October 2014</td>
</tr>
<tr>
<td>Workshop 2</td>
<td>together with a videoconferencing tool</td>
<td>2 content producers, 4 tutors,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 researcher, 2 scholars</td>
<td></td>
</tr>
<tr>
<td>Participative</td>
<td>Test videoconferencing and</td>
<td>10 newcomers</td>
<td>November 2014</td>
</tr>
<tr>
<td>Test</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
During the first participatory workshop, objectives were established for identifying and elaborating a set of refined design features for a beta prototype. Throughout the entire workshop session, the ADR team worked consistently to identify and define new features that support content production, content management and distribution, and security features in terms of user authentication and content availability. The workshop session ended through individual presentations of the integration workers’ ideas and thoughts through a roundtable discussion.

The ideas for the elaborated features concerned refined features for videoconferencing, embedded learning objects for newcomers to interact with (both standardized and non-standardized content), a general layout and structure for course sites that incorporate tutors’ tasks (e.g. preparing and publishing learning objects), and administrative features for organizing a class of template (layout, structure) that can be instantiated and used in particular course sites. This idea was inspired by literature (Pecinovsky, 2013), where a metaphor about how object-oriented programming philosophy, with respect to classes and instantiated objects, can be adopted to utilize a simple process of defining and creating course sites for the tutors through a class-instantiation relation.

Two weeks after the first workshop, a workshop was held to demonstrate, test, and evaluate the beta prototype. Consequently, the new prototype was introduced along with Adobe Connect as the proposed videoconferencing tool for providing civic orientation sessions online. During the workshop, the integration workers interacted with the prototype features and tested its functionality, to organize and provide content and sessions of civic orientation. Subsequently, specific e-learning features were introduced, including asynchronous and synchronous features for support of online videos, communication functionality, advanced learning modules that extend the standardized content, authoring tools for creating course sites, adding users and user rights, etc.

Additionally, a set of collaborative tools was introduced to support the integration workers, to organize and execute content production, maintenance, and distribution of online content. Finally, the videoconferencing tool was tested through live interaction between one of the scholars and the rest of the group. For this issue, the group was in one room, while the scholar was in another room, interacting with the rest of the group through the videoconferencing tool. During this point, it became evident which specific technologies the prototype was built on. Thus, the potential of the prototype was properly discussed through a roundtable discussion between the participants of the workshop (excerpts from the final discussions are shown in Table 24).

<table>
<thead>
<tr>
<th>Transcripts (Excerpts)</th>
<th>Analytical Memos</th>
<th>Emerging Insights</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like the idea of combining different simple technologies to organize and prepare my sessions… it seems that this platform can be adapted and used at different levels of complexity… which is good, but requires more knowledge about the different features. (Tutor)</td>
<td>Sense-making of the different technologies’ relevance for different roles evolves through early and iterative use</td>
<td>Being adaptable as sufficient for use at different levels of complexity</td>
</tr>
</tbody>
</table>

Table 23. Participatory workshop sessions and participative online observations in the BIE stage of the second ADR cycle
In the beginning I thought that the platform features were too trivial and not sufficient... especially from the perspective of coordinating content and sessions... but then after this workshop and the discussions... I feel that the features are easy to understand and adapt to... even for a person that is not an IT expert like me... this is important, especially because we at the integration center have different IT skills... and also because we need to teach future employees how the platform works... so I like the adaptable feeling of the features. (Coordinator)

The security features seem to be easy to administrate... I mean, because we need to administrate different users I guess... ranging from being tutors, to newcomers... from this perspective, the features need to be easy to understand and adapt to... and it seems that they are adaptable enough to different kind of users in the system. (Coordinator)

I did not understand at first why we need to use the platform to embed our digital slides for our sessions... but then when I saw how easy it is to upload and embed non-standardized content into a course site, I realized that this is feasible and supportive before and during a session... I can basically choose what content I want to publish... it feels more personalized in this sense... and adaptable towards me as a tutor who is not so skilled with technology. (Tutors)

<table>
<thead>
<tr>
<th>Sense-making of the different technologies’ relevance for different roles evolves through early and iterative use</th>
<th>Being adaptable as sufficient for use at different levels of complexity and entry point for new employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>The security features seem to be easy to administrate... I mean, because we need to administrate different users I guess... ranging from being tutors, to newcomers... from this perspective, the features need to be easy to understand and adapt to... and it seems that they are adaptable enough to different kind of users in the system. (Coordinator)</td>
<td>Being adaptable as sufficient for use at different levels of user security</td>
</tr>
<tr>
<td>I did not understand at first why we need to use the platform to embed our digital slides for our sessions... but then when I saw how easy it is to upload and embed non-standardized content into a course site, I realized that this is feasible and supportive before and during a session... I can basically choose what content I want to publish... it feels more personalized in this sense... and adaptable towards me as a tutor who is not so skilled with technology. (Tutors)</td>
<td>Being adaptable as sufficient for personalized features</td>
</tr>
</tbody>
</table>

Table 24. Excerpts from the second participatory workshop

After the workshops were concluded, two participative online sessions were conducted with a tutor responsible for a group of Albanian newcomers. The sessions were established through the videoconferencing tool, where the tutor, seven newcomers in Gothenburg, together with three newcomers in the city of Vänersborg, Sweden, participated in sessions of civic orientation. During both sessions, the researcher of the ADR team participated online to observe and document events and anomalies. During the sessions, features of the prototype were consequentially used to present embedded learning objects (e.g. slides). The sessions ended with a small debriefing between the researcher and the tutor, discussing the tutor’s experience in terms of how he/she experienced using the prototype, and how well the videoconferencing tool supported his/her activities and tasks for conducting the civic orientation session online. The tutor responded that:

*Yes, it was easy to use... no problem... I have used lots of IT before... so this was easy to understand and it worked well... but I don’t know if all tutors will find it as easy as I did.* (Tutor)

Then when the researcher asked why the tutor thinks that other tutors may not find it as easy as he/she did, the tutor answered:

*Well, you see... we are so different in terms of age, background, education, interests, IT skills, etc... I think it is natural that people are different... but in our practice here at the integration center, all tutors are different due to their background and culture... making it unpredictable to know how they will use the technology... but I think it will be okay after a while... they will adapt.* (Tutor)

Once again, the aspect of heterogeneity among the integration workers became evident as an inevitable aspect to take into further consideration. Another aspect started to emerge throughout the discussions from the workshops, as well as from the tutor’s answers, and that was the aspect addressing heterogeneity
through adaptable and flexible design features. Finally, during the second ADR stage, the principles *Reciprocal Shaping, Mutually Influential Roles, and Authentic and Concurrent Evaluation* (Sein et al., 2011, p. 43), were implemented through the workshops and the participatory observation sessions, where the integration workers were reciprocally involved as active facilitators of providing instant feedback for prototype refinement. Reflections upon experiences of using the prototype and the videoconferencing tool in action were thus consolidated and documented into a design of the final instantiated version of the prototype.

### 6.2.1 The Design of the Final Prototype

The final prototype was addressed and instantiated as the *digital platform for civic orientation*, while the researcher and scholars on the ADR team termed it *CollaborGeneous: A Framework of Collaborative IT Tools for Heterogeneous Groups of Learners* (Haj-Bolouri et al., 2015a). The *Collabor* part stands for the collaborative nature of the proposed IT tools, whereas the *Geneous* part indicates that the IT tools are designed to support the integration workers (tutors, coordinators, content producers) as a heterogeneous group of learners. They were addressed as learners due to their need to develop new IT skills by learning new IT tools.

The overall design of the final prototype consists of multiple system layers (summarized in Table 25 and illustrated in Figure 13), and a technical architecture (summarized in Table 26 and illustrated in Figure 14).

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Layer</td>
<td>Is an open entry-point for the public, which means that it is accessible regardless of user-credentials. This layer comprises system features for presenting general information about the civic orientation program, news through RSS feeds, Google translate for translating information on the page, and links to the specific course sites. Content producers and coordinators (also referred to as <em>Clerks</em> in system terms) are responsible for maintaining and updating the open layer.</td>
</tr>
<tr>
<td>Presentation Layer</td>
<td>Is used in connection with the course sites. The course sites are maintained, in terms of design, layout, and content, by the clerks. Clerks instantiate course sites from a class of templates that follow a standardized design, layout, and features. Subsequently, tutors use the course sites for their sessions of civic orientation. Each tutor, together with a clerk (either a coordinator or a content producer), is owner of a course site. Furthermore, a participant (newcomer) can interact with features of the presentation layer, provided that the participant has been provided with user credentials. Features of this layer support the collaboration and interaction between tutors, participants, and the distributed content.</td>
</tr>
<tr>
<td>Content Layer</td>
<td>Is maintained by clerks and comprises the produced and distributed content, which generally speaking is provided through different modes of delivery (e.g. book, advanced learning modules, embedded slides as learning objects) in different formats (e.g. video, text, pictures), which follow a specific theme of the civic orientation content. Additionally, the tutors have the authority to add, modify, and embed additional content to their own course sites.</td>
</tr>
<tr>
<td>Production Layer</td>
<td>Clerks (content producers and coordinators) use Google services to collaborate with each other and produce, maintain, share, and distribute content. For example, when standardized content (such as the book) is updated in the production layer, the update is instantly implemented and published for the content layer.</td>
</tr>
</tbody>
</table>

Table 25. System layers of the final prototype
Figure 13. Schematic of system layers

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WordPress Multisite</td>
<td>WordPress is generally used as web software to create a website or blog (Mullerweg, 2010). However, WordPress Multisite is used to create a network of multiple websites all running on a single installation of WordPress. The open layer and the presentation layer are based on WordPress Multisite to define the general class of template and to instantiate a network of course sites. A handful of selected clerks (coordinators and content producers) are appointed as administrators and super-admins, and they are responsible for maintaining the template and course sites with respect to functionality, user authentication, changing design and layout, adding content and so forth.</td>
</tr>
<tr>
<td>Google Drive</td>
<td>Includes Google Services that are used for collaboration purposes regarding activities such as producing, maintaining, and distributing learning material. Clerks share a common Google account and use services such as Google Presentation, Google Docs, and Google Sheets to share and distribute content and to publish and present it in the presentation layer. Furthermore, a YouTube channel was created to distribute and embed relevant video clips into the course sites. Activities in Google Drive are a part of the production layer, and are only relevant for the clerks (coordinators and content producers).</td>
</tr>
</tbody>
</table>
Figure 14. Technical architecture

Block 15- Demokrati i Sverige

Block 15 startar med en diskussion om vad demokrati är och ger en tillgångslås över demokratins utveckling i Europa och i Sverige. Vi tittar sedan på olika typer grundläggande som är en förutsättning för ett demokratiskt system i Sverige. Vi beskrivs slutligen Sveriges demokratiska system utifrån dess olika nivåer kommun, landsbygd, och region, städer och EU, samt vilka samhällsnytor och funktioner som de olika nivåerna ansvarar för.

Figure 15. Screenshot of CollaborGeneous: presentation layer

Figure 16. Screenshot of CollaborGeneous: content layer
6.3 The Reflection and Learning Stage

The stage of reflection and learning was conducted continuously during the second ADR cycle. For instance, after the researcher identified the problem of the first ADR stage, he consulted this issue together with the other scholars from the university, discussing whether or not they should extract the issue into a crucial aspect of designing IT that supports adaptable e-learning. Additionally, ideas emerged to address the contradictory design visions among the integration workers, as design paradoxes, in the sense that they illustrate how tensions between different ‘voices’ emerge and influence the design process, based on contradictory premises that influenced the design process and crucial decision-making. Based on analysis of excerpts from the participatory workshops (presented in Table 24), an initial notion of adaptable learning emerged as an essential response to the problematic aspect of dealing with the heterogeneity among integration workers and newcomers. Furthermore, during the second ADR cycle, it also became evident that the ADR methodology had been applied with a strong emphasis on consequently involving the integration workers as active participants and co-designers, where they acted as facilitators of sufficient feedback through iterative phases of incremental deliveries, testing, and evaluation of prototype features.

During the stage of reflection and learning, the principle Guided Emergence (Sein et al., 2011, p. 44) was applied through ongoing dialogues within the ADR team. The dialogues concerned the design of the instantiated beta prototype, as well as meta-artifacts and their relevance for the concept of adaptable learning. Insights about the implementation of adaptable content emerged to cope with the heterogeneity of newcomers, through advanced learning modules. Other insights concerned the concept of adaptable learning with respect to the meaning of learning in the context of integration workers’ practice, roles, and responsibilities. Here, the concept of adaptable e-learning became a prerequisite for understanding adaptable learning as a response to the problematization of heterogeneity in designing for integration work.

Additionally, new organizational prerequisites in terms of extended roles and responsibilities became more evident as a direct consequence of digitalizing the civic orientation program. This was identified, on an overarching level, as an adaptable organization with new roles, competencies, and responsibilities for content production, content delivery, and interaction with different groups of newcomers, as well as features of an adaptable platform that supports collaborative interaction among the integration workers. All these outcomes of reflection and learning were used as input for the formalization of learning stage.

6.4 The Formalization of Learning Stage

The formalization of learning stage proceeded between December 2014 and February 2015, and resulted in the following outcomes:

- First, the researcher and the scholars of the ADR team decided to write a short paper about the finalized version of the ensemble artifact (Haj-Bolouri et al., 2015a). The artifact was then presented and demonstrated at the 10th conference for Design Science Research in Information Systems and Technologies (DESRIST).
- Consequently, the fourth stage resulted in an information systems design theory for adaptable e-learning, which reports the two conducted ADR cycles, identified design paradoxes, as well as utilizing the theory of CoP, the design methodology (based on agile philosophy), and essential e-learning literature, such as informing kernel theories. This was written and reported as a full conference paper (Haj-Bolouri et al., 2016a) for the 49th Hawaii International Conference on System Sciences (HICSS), and is subsequently used as a part of the constitutive research contribution of this thesis.
- Based on reflection and learning of how the ADR methodology had been applied, a modified and extended version of the ADR methodology was proposed under the alias PADRE, referring to Participatory Action Design Research. PADRE is considered a methodological contribution that incorporates a design research methodology that stresses work-integrated learning through participation and design. This was written and reported as a full conference paper (Haj-Bolouri et al., 2016b) for the 11th conference of Design Science Research in Information Systems and Technologies (DESRIST).
• Additional learning modules of workplace training were defined and formulated as modules for planned workplace training sessions. The purpose of the learning modules was to encapsulate and support the work-integrated learning of the integration workers, by partially providing them knowledge about different themes of the workplace training sessions, as well as enabling them to re-use the modules as material which they can use for knowledge transfer to future employees. The learning modules were thus constituted by relevant themes that target the integration workers’ need of learning how to sufficiently use the ensemble artifact and how to incorporate artifact features into daily work.

Finally, the principle of Generalized Outcomes (Sein et al., 2011, p. 44) was used to move from the original class of problems (extracted in the first ADR cycle) to a new class of problems as design paradoxes for designing for adaptable e-learning, where the design theory incorporated a new set of design principles that were extracted through the design process.
7 THE THIRD ACTION DESIGN RESEARCH CYCLE

The third and final ADR cycle was initiated in March 2015 and ended in December 2015. However, after the case was finished in December 2015, the final stage of formalization of learning continued until the completion of this thesis. This final cycle focused on organizational intervention by incorporating the WiL of integration workers (until December 2015), and subsequently on abstracting, reflecting, and formalizing insights and knowledge for this thesis. A total of three research papers (Haj-Bolouri, 2015; Haj-Bolouri et al., 2016c; Haj-Bolouri et al., 2016d) were produced during this period of time, although only one of them (Haj-Bolouri et al., 2016c) is included in this thesis. Additional meta-artifacts were also extracted and implemented as a part of the research contribution (Figure 17 depicts the third and final ADR cycle).

Figure 17. The third ADR cycle

7.1 THE PROBLEM FORMULATION STAGE

The problem formulation stage was done in March 2015. At the beginning of this stage, a web-based questionnaire was defined and implemented, with the focus on evaluating the present awareness among the integration workers’ use and general opinions about the instantiated artifact. The questionnaire was created through Google Forms and sent out twice to two different groups of integration workers: (1) those who were a part of the ADR team; and (2) those who were not part of the ADR team, but who
worked at the integration center as tutors, coordinators, and administrators. The first group consisted of six respondents, of which two were tutors, two were coordinators, and two were content producers. The second group of respondents consisted of fourteen respondents, of which eight were tutors, two were coordinators, two defined their roles as administrators, while the last two did not report their roles. However, due to an ethical agreement with the respondents about keeping their responses as anonymous as possible, the survey did not deliberately create correlations between their stated roles and their actual answers. Furthermore, the questionnaire questions were semi-structured and concerned questions such as (here, the general term system was used because not all of the respondents had been involved in previous decisions about addressing the instantiated artifact as a digital platform):

- Have you used the system yet?
- Do you experience that the system fulfills your expectations?
- What functionalities contribute to your experience?
- Do you believe that the system will fulfill your expectations?
- What functionalities do you miss in the system?
- How should the system have been designed instead?

The answers from the survey varied depending on the questions. For instance, on the question of Have you used the system yet? a total of eighteen respondents answered Yes, whereas only two respondents answered No. When asked why the respondents haven’t used the system, one of the respondents answered:

I haven’t been provided with any group in the system yet.

To the question of What functionalities contribute to your experience? one of the respondents answered:

Distinct look but unknown how much it is going to be used. At the moment, there aren’t any explicit ‘benefits’ with using the system versus having all content on a USB stick.

When asked the same question, other respondents answered:

The user-friendliness, the efficiency, etc. It feels that the system is going to be as good as it can be.

Easily accessible and user-friendly system. No complexities. Although I haven’t used the system to a great degree in order to comprehend all its functionality.

On the question of Do you believe that the system will fulfill your expectations? the answers varied as follows:

I believe that it will become much better when we work further with the system.

I doubt that. It is not my expectations that need to be fulfilled, but rather the tutors (who are going to use it), and there I believe it will become too much work for little reward.

I believe so. It is going to become a very useful tool.

If there isn’t a better translation function, then it is only appropriate to use for Swedish.

It is going to fulfill all our expectations.

Overall, the answers indicated a variation among the integration workers’ awareness of the system functionality. Through open coding analysis, it once again became evident that the integration workers are heterogeneous in their expectations, beliefs, and understanding of the instantiated artifact. Furthermore, the analysis indicated that the theme of adaptable learning is still a relevant response to the aspect of heterogeneity. Finally, the answers were used as input to motivate and construct a set of supportive learning modules for the intended workplace training sessions.
7.1.1 Defining and Constructing a Set of Supportive Learning Modules

The supportive learning modules were defined and constructed in early April of 2015 by the representatives of University West (researcher and scholars). They were defined for the purpose of incorporating the intended workplace training sessions, and they were constructed and distributed as embedded content of a restricted part of the instantiated artifact (a summary of the modules is shown in Table 27).

<table>
<thead>
<tr>
<th>Module</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative Features for Embedding and Distributing Online Content</td>
<td>The first module was defined to support the first set of workplace training sessions. The module was constructed with content that concerns how to use collaborative features for embedding and distributing learning objects as non-standardized online content of a course site. Thus, the module was defined and constructed to support tutors. Consequently, the module was targeted toward features that are implemented and available for the presentation layer of the platform.</td>
</tr>
<tr>
<td>Administrative Features for Content Production and Coordination</td>
<td>The second module was defined to support the second set of workplace training sessions. The module was constructed with content that concerns the process of producing and coordinating standardized and non-standardized content. Thus, the module was defined and constructed to support content producers and coordinators. Consequently, the module was targeted toward features that are implemented and available for the production layer of the platform.</td>
</tr>
<tr>
<td>System Roles and Responsibilities</td>
<td>The third and final module was defined to support the third and final set of workplace training sessions. The module was constructed with content that concerns extended roles and areas of responsibility among integration workers, with an emphasis on system roles (e.g. admin, super-admin) and descriptions of these new roles. Thus, the module was defined and constructed to support a handful of integration workers that have different roles (tutors, content producers, coordinators). Consequently, the module was targeted toward different levels of features that concern the WordPress Multisite component of the platform.</td>
</tr>
</tbody>
</table>

Table 27. Supportive learning modules for workplace training sessions

The idea was to embed and distribute the modules through the platform, some time before the actual training sessions were held, so that the integration workers could become familiar with the topics and structure of the training sessions. Consequently, the idea was to collect feedback about the modules’ content from the integration workers, so that the representatives from the university could refine the modules if needed. The learning modules were thus distributed two weeks before the training sessions. However, none of the integration workers actually engaged with the learning modules, and as a result, it became difficult for the scholars and the researcher on the ADR team to refine the modules before conducting the workplace training sessions. This issue was diagnosed and addressed as a problem of not fully engaging the practitioners in the process of defining and constructing the learning modules, and thus creating a lack of communication and encouraging participation among the integration workers.

Finally, during this first ADR stage, the principles Practice-Inspired Research and Theory-Ingrained Artifact (Sein et al., 2011, p. 40) were implemented through WiL-relevant literature (e.g. Malloch et al., 2010; Tynjälä et al., 2014) that helped to define, organize, construct, and distribute the learning modules, to capture and share knowledge that can be used by the integration workers. In other words, from a broader perspective, the purpose of sharing the learning modules with the integration workers was to share a structure and content, which they can preserve after the sessions and subsequently re-use for training future employees at the integration center. For this purpose, the researcher on the ADR team revisited literature that focuses on learning and practice (Lave & Wenger, 1991; Wenger, 1998; Malloch et al., 2010; Tynjälä et al., 2014) in order to incorporate the WiL of the integration workers.
The building, intervention, and evaluation stage started through six workplace training sessions, organized and conducted at the integration center in Gothenburg, Sweden, between the beginning of May 2015 and the middle of June 2015 (shown in Table 28). All sessions were incorporated with the learning modules (shown in Table 27). The overall purpose of the workplace training sessions was to incorporate the WiL of the integration workers, through different types of sessions that focused on integrating the relevance of artifact features mapped with the integration workers’ roles and areas of responsibilities. All of the sessions were documented through observations and sound recordings by the researcher on the ADR team.

<table>
<thead>
<tr>
<th>Training Session</th>
<th>Purpose</th>
<th>Participants</th>
<th>Period of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Sessions 1, 2, 3</td>
<td>To demonstrate, test, and learn collaborative features for distributing and publishing non-standardized online-learning content, together with underlying teaching pedagogies that support the features. The scope of these sessions was provided on a very fundamental level, with a simple structure and facts about the nature and purpose of the collaborative features. Participants were encouraged to test the features systematically within the frame of each session and ask questions sporadically when needed. These three sessions lasted for three hours per session.</td>
<td>1 researcher 15 tutors (divided into 5 tutors per session)</td>
<td>May 2015</td>
</tr>
<tr>
<td>Training Sessions 4, 5</td>
<td>To demonstrate, test, and learn administrative features for producing, coordinating, sharing, and maintaining civic orientation content (both standardized and non-standardized). Participants were encouraged to test the features systematically within the frame of each session and ask questions sporadically when needed. These two sessions lasted for two hours per session.</td>
<td>2 content producers 4 coordinators 2 scholars 1 researcher (divided into 1 content producer, 2 coordinators, 1 tutor, and 1 scholar per session)</td>
<td>May 2015</td>
</tr>
<tr>
<td>Training Session 6</td>
<td>To elaborate extended roles of practitioners by introducing and explaining new areas of responsibilities. Here, the participants became familiar with new concepts and words, which help them understand their new responsibilities better. The new roles were introduced as system roles. The session lasted for three hours.</td>
<td>2 content producers 3 coordinators 7 tutors 2 scholars 1 researcher</td>
<td>June 2015</td>
</tr>
</tbody>
</table>

The first three training sessions focused on systematically training tutors and providing them fundamental knowledge about relevant artifact features that support their work with organizing and conducting civic orientation sessions in dual settings (e.g. classroom and digital setting). During the sessions, the researcher demonstrated all of the system features and encouraged the tutors to test and interact with the features continuously. The integration workers were basically provided with a tablet or laptop to interact with the artifact features. The approach of this session was inspired through informing literature (Berge, 2002; Lee, 2010; Malloch et al., 2010; Tynjälä et al., 2014) that promotes direct interaction between participants and
technology, and which advocates an open philosophy for thinking about and discussing input from the participants as a reflective practice (Argyris & Schön, 1978; Schön, 1983). Thus, the participants were encouraged to provide input as they were interacting with the artifact features, and listening to the researcher’s instructions at the same time.

The fourth and fifth training sessions focused on systematically training the content producers and coordinators and providing them advanced know-how about how to produce, coordinate, share, maintain, update, distribute, and publish civic orientation content. At this stage, a dichotomy was made between standardized content and non-standardized content, where standardized content was addressed as the book about Sweden or PowerPoint slides, whereas the non-standardized content was addressed as content that a unique tutor, in collaboration with content producers, can create and implement in their unique course sites. Essential artifact features of this purpose were presented and tested during the sessions. The integration workers were provided with a tablet or computer to interact with and test the features.

The sixth and final training session focused on introducing and explaining extended roles and areas of responsibility. This concerned extending and re-defining the integration workers’ current roles with respect to new system roles, which concern new areas of responsibility for managing and administering the instantiated artifact. The new areas of responsibility included adopting system roles that focus on various aspects of maintaining components of the artifact’s technical architecture, as well as its system layers. The session ended with an open discussion about the organizational implications of introducing new roles, and how such implications may affect the current organizational prerequisites.

During this second ADR stage of the third cycle, the principles Reciprocal Shaping, Mutually Influential Roles, and Authentic and Concurrent Evaluation (Sein et al., 2011, p. 43) were implemented through intervention and evaluation of roles and responsibilities. The integration workers were provided with consequent system roles, such as super-admins, editors, and publishers, responsible for managing the different layers of instantiated artifacts. Furthermore, during and after the training sessions, the integration workers became more and more aware of the artifact’s relevance for their roles and areas of responsibility. Throughout the discussions of the final session, the overall impression was that they appreciated the sufficiency and efficiency of the instantiated artifact. This indicated that the workplace training sessions have helped increase their total artifact awareness through a consequent WiL.

7.3 The Reflection and Learning Stage

In the stage of reflection and learning, a final focus group session was conducted together with the researcher on the ADR team, one of the scholars, six tutors, two content producers, one manager, and four coordinators. The focus group session was conducted in early September 2015 and lasted for three hours. The session started with an open question to all of the practitioners. The question was formulated as: What have you learned during the life cycle of this project? After the question was presented, the participants were encouraged to share their experiences through a roundtable discussion. All input circulated around this fundamental question, but the discussions were dispersed, and thus the moderator of the focus group had to re-establish a good harmony within the group, by encouraging them to continue sharing their individual experiences (rather than general explanations). The scholar was the responsible group moderator during the session, while the researcher was responsible for documenting the session through field notes, sound and video recordings. The outcomes of this resulted in insights about how the integration workers have acquired new knowledge through work activities (e.g. new skills, competencies, roles), and how that has affected the organizational prerequisites for working with civic orientation.

A week after the session was conducted, the researcher of the ADR team used the principle of Guided Emergence (Sein et al., 2011, p. 44) to analyze the gathered data from the focus group session. Open coding was used to transcribe data and excerpts from the analysis revealed mainly three important things:

- **The need of defining adaptable learning:** As a response to the heterogeneity of integration workers (as well as newcomers), the following aspects were identified: learning new technologies, incorporating new roles and areas of responsibilities, as well as learning civic orientation, the
need of defining what adaptable learning means, what significance it has for designing for integration work, and how it has addressed and problematized the aspect of heterogeneity. Through reflection, the researcher learned that the concept of being adaptable had already emerged throughout the previous ADR cycles, and that it now became more and more evident as a general response towards problematizing and understanding the phenomenon of heterogeneity and its bearing on designing for integration work.

- **The limitations of the digital platform:** In order to support other aspects of integration work (such as the social integration of newcomers), one needs to consider transcending the fact-oriented nature of civic orientation content. The instantiated artifact supports civic orientation activities, which in the end focus on providing newcomers facts about society, whereas there are other aspects that concern experiencing social phenomena in society that the civic orientation program does not cover. From this perspective, the current artifact is consequently limited towards providing a worldview of society that is solely limited to explicit knowledge (e.g. laws and regulations)

- **The use of theories:** Through reflection about what kind of theories that this research has incorporated to theorize theoretical contributions, the researcher learned that some of the theories have been purely philosophical, such as Heidegger’s (1962) concept of *Dasein*. During this stage, the researcher started to reflect about whether or not there is a need for proposing a complementary approach toward kernel theories. Because the researcher had planned to incorporate the philosophy of Habermas (1984, 1987) for designing an open learning platform for social integration — as a response to the discovered limitations of the instantiated artifact — the researcher decided to introduce the concept of *Kernel Philosophy* as a complementary approach to kernel theories, which transcend the local nature of kernel theories (e.g. theories that are influenced by local phenomena of a certain discipline) and instead provide a body of knowledge that allows the researcher to step back and fundamentally elucidate and reflect complex phenomena (e.g. phenomenon of heterogeneity) of IS research.

## 7.4 The Formalization of Learning Stage

The third and final ADR cycle ended with the stage of **formalization of learning**. In terms of abstracting, reflecting, and formalizing learning outcomes, this stage was conducted between December 2015 until the completion of the thesis. Hence, a great part of writing the thesis was done as an essential part of this final stage. Additional work was also done to theorize and formalize outcomes into explicit research papers, as well as meta-contributions incorporated as a part of the thesis’ constituting research contribution. I will now go through each outcome of this stage separately below.

### 7.4.1 The Meta-Design of an Open Learning Platform for Social Integration

One of the crucial outcomes of this final stage targeted how Habermas’s (1984, 1987) philosophy can inspire the meta-design of an open learning platform for social integration, which transcends the discourse of civic orientation and focuses on how the process of newcomers’ social integration can be afforded through use of sufficient IT. Meta-design here means the design of a meta-artifact (Walls et al., 1992; Livari, 2015), which addresses a class of problems (in this case, support of social integration) rather than a specific problem. The reason why Habermas’s (1984, 1987) philosophy was chosen as a kernel philosophy for designing an open learning platform for social integration had to do with the initial knowledge about the complex reality of which integration workers and newcomers are a part, in terms of supporting the integration work as well as becoming integrated in society. This knowledge derived from the learning outcomes of digitalizing the civic orientation program, as well as the limitations of the instantiated artifact, which heavily relied on mediating facts about society, rather than mediating experiences of society’s social phenomena (e.g. norms, values, unwritten laws, culture).

In order to profoundly problematize and understand integration work and to theorize the meta-design of an open learning platform that supports social integration, Habermas’s (1987) notion of reality as being a constellation of three worlds was scrutinized and incorporated as follows:
• **The Objective World**: is made up of natural phenomena and facts about reality. An affirmation about facts and happenings refers to the interest of truth. The objective world thus provides a fact-oriented reality, which conforms to phenomena that we as human beings perceive and accept as objective (e.g. natural entities such as trees, water). Actors within the objective world interact with fact-based phenomena such as natural laws, societal laws and regulations. Hence, the objective world transmits the reality in terms of facts that are the same for all actors of the objective world. From this point of view, it is for example reasonable to say that the standardized learning content of civic orientation (e.g. the book about Sweden) belongs to the objective world because the standardized content provides facts about society. Additionally, providing civic orientation through support of e-learning solutions would imply that the future platform is also a part of the objective world, because it will be perceived as available (with a different purpose) for both integration workers and for newcomers.

• **The Social World**: is made up of adjusted rules and social contracts, which emphasize the creation of knowledge and human interests. The social world is thus created through human activities and is of relevance for humans alone (and not to other animals or natural entities). For instance, a creation and being of the social world is the society’s norms, values, and cultural traditions. Actors of the social world interact socially with each other as well as with the social constructs of the reality that extends from being only facts to being social phenomena such as unwritten laws, conventions, rituals, religion, and cultural traditions. Hence, the social world transmits the reality through socially created norms and values, which the actors of the social world share with each other. From this perspective, incorporating WiL for integration workers is arguably something that belongs to the social world, due to the collaborative nature of, for instance, producing learning content (which is then mediated in the objective world), or sharing a common repertoire of teaching exercises that are implemented through engaging dialogues.

• **The Subjective World**: is made up of the individual’s feelings, perceptions, experiences, and own accessibility to his/her own mental world of ideas. The subjectivity of the individual actor is what distinguishes the subjective world from the other worlds (objective and social). The individual actor’s conception of reality, his/her background and established worldview about a reality, forms and provides a subjective input to the other worlds (objective and social). Specific acts within the subjective world are based on how the individual actor affects parts and elements of the other already established worlds. Hence, the subjective world is transmitted through individual actors’ own worldviews in terms of feelings, perceptions, judgments, cultural beliefs, religion, ideas, background, and moral values. From this perspective, it is fair to say that the heterogeneous nature of the knowledge base of the integration workers (as well as the newcomers) is something that belongs to the subjective world, which provides a subjective input to the other worlds. For instance, a tutor from a certain foreign country has his/her own subjective world, which is based on his/her background, culture, norms and values. But when he/she shares his/her experiences about a particular topic (e.g. democracy) with other tutors from other countries, then he/she provides a subjective input to the social world of the other tutors, and thus establishes a reciprocal knowledge exchange with the others (e.g. sharing different views on democracy).

Habermas (1984, p.131) elaborates further by introducing the concept of lifeworld and positioning it within the realms of the unified worlds (objective, social, subjective) as follows:

"The lifeworld forms the horizon of processes of reaching understanding in which participants agree upon or discuss something in the one objective world, in their common social world or in a given subjective world.

In order to move further towards a meta-design of an open learning platform that supports social integration, and which transcends the limitations of the instantiated artifact for civic orientation, Habermas’s Theory of Communicative Action (TCA) was adopted to elucidate a typology of social actions, which informs how social phenomena are illuminated through different kinds of social actions. This knowledge was considered crucial to illuminate in order to design an open learning platform that exhibits social phenomena."
<table>
<thead>
<tr>
<th>Action Type</th>
<th>Orientation</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instrumental Action</strong>: an actor follows technical rules of action and assesses the efficiency of an intervention into a complex of circumstances and events (Habermas, 1984, p. 285)</td>
<td>Success</td>
<td>Objective World</td>
</tr>
<tr>
<td><strong>Strategic Action</strong>: an actor follows the rules of rational choice and assesses the efficiency of influencing the decisions of rational opponent (Habermas, 1984, p. 285)</td>
<td>Success</td>
<td>Objective World (Social World)</td>
</tr>
<tr>
<td><strong>Normatively Regulated Action</strong>: action refers to members of social groups whose actions are informed by commonly accepted norms and values (Habermas, 1984, p. 85)</td>
<td>Success</td>
<td>Social World</td>
</tr>
<tr>
<td><strong>Dramaturgical Action</strong>: an actor evokes in his public a certain image, an impression of himself, by more or less purposefully disclosing his subjectivity (Habermas, 1984, p. 86)</td>
<td>Success</td>
<td>Subjective World (Social World)</td>
</tr>
<tr>
<td><strong>Communicative Action</strong>: actors seek to reach an understanding about the action situation in order to coordinate their action by way of agreement (Habermas, 1984, p. 86)</td>
<td>Understanding</td>
<td>Objective World Social World Subjective World</td>
</tr>
</tbody>
</table>

**Table 29. Typology of social actions (Habermas, 1984)**

Janson and Cecez-Kecmanovic (2005) have introduced Habermas’s types of social action in IS research, arguing that an action is **instrumental** when the actor seeks to reach goals in an efficient fashion employing predictions drawn from physical and behavioral models (Janson & Cecez-Kecmanovic, 2005) and in so doing, the actor refers to things and people who are perceived to be inanimate objects (e.g., newcomers’ characteristics such as age, gender, home countries, family relations, different skills, accommodations, and so on). Moreover, the actor seeks to realize his/her goals by selecting and implementing means that are thought to yield optimal results (e.g., maximize profit; minimize costs) under the prevailing conditions.

**Strategic action** occurs when a success-oriented actor aims to achieve goals by influencing other actors who are perceived to be rational opponents (Janson & Cecez-Kecmanovic, 2005). According to Habermas (1984), strategic action takes place in the objective world. For example, from the perspective of the newcomers’ process of integration, investigation of whether a newcomer (e.g. refugee) applying for asylum has a right to get it, often includes strategic action where the investigator attempts to get the newcomer to tell the whole truth and the newcomer may apply strategic action that he or she expects to increase his/her chances to get a positive asylum decision.

**Normatively regulated action** refers to the behavior of members of a social group, who comply (or violate) mutually accepted norms of the group. The key is that members of the group are entitled to expect from other members the behavior that complies with the norms of the group. Examples of this include unwritten laws and social codes within a society, which a newcomer will become familiar with through experience and orientation to their host society’s embedded phenomena (e.g. norms and values, laws and regulations).

In **dramaturgical action** an actor presents himself or herself in a stylizing fashion to the participants in the interaction monitoring their access to his or her subjective world of intentions, thoughts, attitudes, desires, feelings and so on, to which only he or she has access (Habermas, 1984, p. 86). However, in the case of civic orientation, an integration worker can for instance invite participants of the civic orientation program to enter his/her **subjective world** through dialogue and sense-making about a certain embedded phenomenon (e.g. democracy). As such, the dramaturgical action becomes an intentional act of
perspective making and taking.

In the case of **communicative action**, actors are oriented towards mutual understanding, aiming to achieve their goals by developing an inter-subjective interpretation of a situation as the basis for coordinating individual action plans (Janson & Cecez-Kecmanovic, 2005). This is accomplished by actors making claims concerning the objective world (that something is/is not true), the social world (that something is/is not right or legitimate), and their individual subjective worlds (that the speaker is/is not sincere) (Habermas, 1984, 1987). Finally, a crucial key feature of communicative action is the process of raising, questioning, and defending validity claims, which takes place on the discursive plane (e.g. civic orientation session). To be effective in this regard, the discursive process should be rather equitable and relatively free from power distortions, i.e., if the discursive argumentation approximates the ideal speech situation. While it is an ideal that can never be achieved, the conditions of the ideal speech situation need to be sufficiently addressed for a successful communicative action (Janson & Cecez-Kecmanovic, 2005), for instance by ensuring an equal opportunity for expression and direct experience of social phenomena (e.g. customs, rituals).

The presented ideas of Habermas (1984, 1987) provide conceptual tools to analyze the reality in which integration workers and newcomers of civic orientation are situated, as well as conceptualizing and proposing a meta-design of an open learning platform that transcends the context of civic orientation and supports social integration of newcomers in society. Additionally, Habermas’ philosophical concepts (different worlds, the lifeworld, typology of social action) provide an analytical lens for analyzing and understanding interrelated phenomena (e.g. learning, practice, meaning) of this research.

### 7.4.2 Introducing Kernel Philosophy

As a result of using different types of theories (analytical and kernel theories) for supporting and informing the ADR cycles, it became more and more evident during the stage of reflection and learning that this research has been incorporating philosophy for theorizing crucial research outcomes. In the first cycle, Martin Heidegger’s existential phenomenology (1962) was used to conceptualize the so-called essence of presence in e-learning, by incorporating Heidegger’s (1962) notion of *Dasein (or being-in-the-world)* and introducing the concept of *Digital Dasein* (Haj-Bolouri & Flensburg, 2017). In the third and last cycle, the philosophy of Jürgen Habermas (1984, 1987) was incorporated to inspire the meta-design of an open learning platform for support of social integration (Haj-Bolouri et al., 2016c). Both works were thus inspired by and supported through a kernel philosophy.

I initially propose that the purpose of a philosophical rationale that relies on a kernel philosophy is to transcend kernel theories that first and foremost inform Level 1 or 2 outcomes of DSR (Gregor & Hevner, 2013), and instead focus on raising the abstraction level of Level 3 outcomes and support the design of meta-artifacts (e.g. concepts, principles, design theories), rather than pure instantiated artifacts (e.g. a specific IT system). Additionally, I propose kernel philosophy as a fundamental body of knowledge that transcends the nature and role of kernel theories in DSR, and instead provides the IS researcher with fundamentally profound knowledge that allows her/him to step back, reflect, and grasp the underlying nature or rationale of phenomena. An example of this is the conceptualization of presence in e-learning through *Digital Dasein*, or the use of Habermas’s (1984, 1987) three worlds to conceptualize the reality of integration work as a professional practice. This will be elaborated further in Chapter 9.

### 7.4.3 Adaptable Learning Features

Based on reflections of the conducted ADR cycles, the complexity of designing for integration work — which helps newcomers become integrated in their host society — relies heavily on the aspect of designing solutions that can support the Wil. of integration workers, so that they can conduct their integration work sufficiently with the support of efficient technologies. However, the aspect of heterogeneity among integration workers makes it even more difficult to manage different modes of learning through standardized IT artifacts (e.g. Moodle) or overly framed learning approaches (e.g. traditional e-learning models). Therefore, the need of providing adaptable learning features is crucial in order to support integration work sufficiently. Examples of such adaptable features were for instance elaborated sufficiently within the proposed information systems design theory for adaptable e-learning.
However, e-learning alone concerns only one element of adaptable learning, while there are other elements of adaptable learning that are proposed to address the complex aspect of heterogeneity. These elements are proposed as follows:

- **Adaptable content** copes with the heterogeneity (e.g., age, education, literacy, gender, beliefs, culture, etc.) of newcomers. Examples of such content have been addressed as advanced learning modules of civic orientation; more information about such modules can be found in Haj-Bolouri et al. (2014a). Advanced learning modules allow newcomers to transcend the basic standardized content of civic orientation (the book about Sweden), and learn more about a certain topic through a combination of different types of content (graphics, texts, video).

- **Adaptable mode of delivery** are implemented through face-to-face interaction, online environments such as discussion forums, and blended learning that incorporates the physical space (e.g., classroom) with sufficient modes of e-learning (e.g., videoconferencing). A specific mode of delivery can be chosen by the user (integration worker, newcomer) depending on the endeavor of his/her learning.

- **Adaptable instructions** illustrate the ways in which tutors perform their sessions of civic orientation. Due to the tutors’ heterogeneous approaches (e.g., pedagogical methods) of providing civic orientation, instructions are adapted to their particular group of newcomers (e.g., a group of Iranian newcomers), and not generalized toward each and every group of newcomers. Supporting adaptable instructions through IT would mean supporting different kind of approaches for performing sessions of civic orientation. And because civic orientation is only one instance of how integration work can be organized and implemented, other instances of integration work may require different kind of instructions – which are arguably situated in different types of worlds (objective, social, subjective) depending on the nature and content of the instructions.

- **Adaptable digital modalities** comprise how content is adapted to different modalities such as providing information through audio in the newcomer’s native language, exemplifying complex phenomena through a simple sequence of graphics that explain the phenomena, or animations and interactive exercises. Here, the supportive IT is arguably a mediator for adapting digital modalities towards relevant elements of the newcomer’s heterogeneity (e.g., level of IT literacy).

- **Adaptable infrastructure/platform**: one that supports collaborative production and delivery of a discourse for integration, such as civic orientation. Supportive IT that provides tools for collaboration and delivery is arguably crucial for establishing an adaptable platform such as the platform for civic orientation, where content is available on different access levels (open, restricted) for different kind of users (newcomers, tutors, etc.).

- **Adaptable organization** is the fundamental premise of incorporating other levels of adaptable learning features. If the organization is not adaptable toward changes that require organizational members to learn new technologies, then the organization risks suffering from a great amount of overhead, which decreases the organization’s productivity and sufficiency. Thus, being adaptable toward sudden changes is a prerequisite for being prepared to address and manage sudden changes and not stagnate.

Consequently, the final stage of formalization of learning incorporates the principle of Generalized Outcomes (Sein et al., 2011, p. 44) by addressing adaptable learning as a response to problematizing the phenomenon of heterogeneity as an essential aspect of designing for integration work. Hence, the general class of problems of this research is now addressed as designing for adaptable learning, because designing for integration work is considered a special case of designing for adaptable learning, and in turn, digitalizing the civic orientation program is considered a special case of designing for integration work.
8 SUMMARY OF RESEARCH PAPERS

This chapter starts by presenting an overview of research papers that were produced as findings of the three cycles of ADR. Additionally, the ADR cycles produced a set of meta-contributions to this research.

Not all of the papers shown in Table 30 are part of this thesis, but they are all related to this research in one way or another. Therefore, the papers that are selected as the constitutive part of the research contribution of the thesis will be presented separately together with a short summary that explains their contribution and relevance to this research.

<table>
<thead>
<tr>
<th>Research Paper</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designing a Web-Based Education Platform for Swedish Civic Orientation</td>
<td>Published and presented at World Conference on E-Learning (Haj-Bolouri et al., 2014a)</td>
</tr>
<tr>
<td>Designing for Heterogeneous Groups of End-Users: Towards a Nascent Design Theory</td>
<td>Published and presented at World Conference on E-Learning (Haj-Bolouri &amp; Svensson, 2014)</td>
</tr>
<tr>
<td>Conceptualizing the Essence of Presence in Distance Education through Digital Dasein</td>
<td>1st version published and presented at World Conference on E-Learning (Haj-Bolouri et al., 2014b)</td>
</tr>
<tr>
<td>CollaborGenious: A Framework of IT Tools for Heterogeneous Groups of Learners</td>
<td>Published and presented at the 10th Conference for Design Science Research in Information Systems and Technology (Haj-Bolouri et al., 2015a)</td>
</tr>
<tr>
<td>The Notion of Users in Design Science Research</td>
<td>Published and presented at the 38th Information Systems Research Seminar in Scandinavia (Haj-Bolouri, 2015)</td>
</tr>
<tr>
<td>Introducing PADRE: Participatory Action Design Research</td>
<td>Published and presented at the AIS-SIGPR-4G Pre-ICIS Workshop (Haj-Bolouri et al., 2015b)</td>
</tr>
<tr>
<td>An Information Systems Design Theory for Adaptable E-Learning</td>
<td>Published at the 49th Hawaii International Conference on System Sciences (Haj-Bolouri et al., 2016a)</td>
</tr>
<tr>
<td>PADRE: A Method for Participatory Action Design Research</td>
<td>Published at the 11th Conference for Design Science Research in Information Systems and Technology (Haj-Bolouri et al., 2016b)</td>
</tr>
<tr>
<td>How Habermas' Philosophy Can Inspire the Design of Information Systems: The Case of Designing an Open Learning Platform for Social Integration</td>
<td>Published in the AIS Issue No. 7 and presented as a selected paper at the 39th Information Systems Research Conference in Scandinavia (Haj-Bolouri et al., 2016c)</td>
</tr>
<tr>
<td>Imparting Social Values through eLearning Platform: A Social Learning Approach</td>
<td>Published and presented at the 39th Information Systems Research Conference in Scandinavia (Haj-Bolouri et al., 2016d)</td>
</tr>
</tbody>
</table>
The shading in the table rows of Table 30 indicates the particular ADR cycle in which each paper was produced. The lightest shade is for the first ADR cycle, the next shade is for the second ADR cycle, and the darkest shade is for the third and final ADR cycle.

Out of all papers shown in Table 30, a total of four papers (Haj-Bolouri et al., 2016a; Haj-Bolouri et al., 2016b; Haj-Bolouri et al., 2016c; Haj-Bolouri & Flensburg, 2017) were chosen to represent the research contribution of this thesis. The chosen papers, and a motivation behind why these papers were chosen, will be provided in the upcoming sections. I will then go through each paper, provide a short summary, and explain how and why each paper contributes to this research.

8.1 Paper 1 – An Information Systems Design Theory for Adaptable E-Learning

This paper was written as an outcome of the second ADR cycle of this research. The main contribution of the paper is an Information Systems Design Theory (Walls et al., 1992), which informs the design process of information systems for adaptable e-learning. The background of the contribution is grounded in the landscape of e-learning (Garrison, 2011). More specifically, the question of how to design, implement, and support an information system that incorporates e-learning, not explicitly constrained to the formal context of higher education, is highlighted. The question emerged due to the empirical context of this thesis and the specific issue of organizing and providing civic orientation through e-learning. Thus, the aim of the contribution was to provide a design theory that proposes a set of design principles (Markus et al., 2002; Lindgren et al., 2004), which offers scholars and practitioners (e.g. IT designers) prescriptive knowledge (Gregor, 2006) that informs the design and support of underlying information systems for adaptable e-learning. The ADR methodology was used to distill data from the design process of CollaborGenous (Haj-Bolouri et al., 2015a) and use it to structure and formulate a design theory, which follows the guidelines of Walls et al. (1992). Kernel theories were used to inform the practice of the application domain (Lave & Wenger, 1991; Wenger, 1998), to inform the design process through an agile philosophy (Highsmith & Cockburn, 2001; Larman, 2004), and to inspire a need adaptable to e-learning solutions (Jones, 2004; Lee-Post, 2009; Jones, 2011). The class of problems (Walls et al., 1992; Sein et al., 2011) which the design theory addresses, is referred to as design paradoxes of designing information systems for adaptable e-learning. The design paradoxes emerged throughout the second ADR cycle as a part of the data analysis from in-depth interviews and workshops together with the integration workers of civic orientation. For further, more detailed information about the paper, please see Haj-Bolouri et al. (2016a) in the appendix.

8.1.1 Contribution to the Thesis

The paper contributes to the thesis by stressing the necessity of incorporating e-learning as adaptable towards its situation of use. For instance, the design theory’s advocate functionality that is adaptable to change, platform independence, use of Internet, and other widely accepted standards, maximizing the choice and flexibility provided to heterogeneous group of users, such as the participants (newcomers) and integration workers of civic orientation. In so doing, online time can be minimized, and the requirement of new skills to use the technology can be minimized. The contribution of this paper is thus a theoretical contribution which informs the design process of designing for integration work, with a particular emphasis on technologies that support e-learning that is adaptable to its context of use and its target group of heterogeneous users (integration workers and newcomers).
8.2 Paper 2 – PADRE: A Method for Participatory Action Design Research

This paper was produced as an outcome of the second ADR cycle. Essentially, the paper proposes an alternative version of the ADR method, with an explicit emphasis on incorporating a participatory philosophy that fosters principles from Participatory Design and Participatory Action Research. In the paper, the suggested methodology is addressed as PADRE (Participatory Action Design Research), and the features of PADRE are utilized and grounded in the case of digitalizing civic orientation. Thus, the foundation of PADRE is partially based on empirical insights of using ADR in the digitalization case, and partially based on incorporating an underlying philosophy that governs iterative cycles of planning, implementation, evaluation, and reflection of design research activities, as well as activities that support workplace learning through formalized education (such as the workplace training sessions implemented in the third ADR cycle of this thesis). Furthermore, PADRE stresses learning as a nexus of planning, implementation, evaluation, and reflection on design activities in iterative cycles. Learning thus becomes a crucial and continuous outcome of each and every stage of PADRE (e.g. planning, implementing, etc.). Figure 18 depicts the implementation of PADRE into three of the original ADR stages. For further, more detailed information about the paper, please see Haj-Bolouri et al. (2016b) in the appendix.

![Figure 18. The Implementation of PADRE](image)

8.2.1 Contribution to the Thesis

PADRE provides a methodological contribution to this thesis by addressing its research question: How to do design supportive IT for integration work? Additionally, PADRE contributes to the design science community by elaborating ADR as a deriving methodology. More essentially, PADRE demonstrates how to involve heterogeneous groups of practitioners (such as integration workers) to act as active and engaged participants through iterative stages of reciprocal planning, implementation, evaluation, and reflection of design and learning activities. Furthermore, as opposed to the original ADR methodology, PADRE stresses the idea of implementing formal education, in a loop that operates parallel to other PADRE activities (planning, implementation). Outcomes from the PADRE stages are incorporated into the learning nexus, which can for instance be a common knowledge base, or a shared repertoire of integration workers’ work-integrated learning. Thus, through a cycle of PADRE, the integration workers can gradually advance their skills and share knowledge with each other through iterative stages of planning, implementation, evaluation, and reflection, which establishes a reciprocal space for interaction and knowledge creation, iteratively. Finally, PADRE is considered a general method for design-based work-integrated learning, because it incorporates Participatory Action Research as a suitable way to approach
WiL in general, which is also aligned with the Scandinavian school of IS design (e.g. participatory design) as well as providing a focus on a continuous process of learning and formalization of learning outcomes.

8.3 Paper 3 – How Habermas’ Philosophy can Inspire the Design of Information Systems: The Case of Designing an Open Learning Platform Social Integration

This paper was produced during the third and last ADR cycle of this research. The paper addresses the limitations of CollaborGenous (Haj-Bolouri et al., 2015a), in terms of scope and generalizability towards support of integration work in general, by stressing the idea of supporting the social integration of immigrants through use of an open learning platform. The paper incorporates Habermas’s (1984; 1987) philosophy to inform the design of the open learning platform. More specifically, a focus is on adopting Habermas’s (1987) notion of three worlds (objective, social, subjective), the concept of lifeworld, and the theory of communicative action (Habermas, 1984) and typology of social actions. Based on this, a conceptualization of features is elaborated, to show how an open learning platform can afford different types of social actions, which help immigrants experience dimensions of social integration (Asselin et al., 2006). Requirements of the open learning platform are identified through functional affordances (Markus & Silver, 2008) to encompass which social actions are to be afforded by the open learning platform. From a broader perspective, the open learning platform is defined to incorporate Habermas’s (1987) three worlds into a virtual environment where immigrants can use/apply content of the platform, as well as provide content through authentic interaction with other immigrants. Finally, the overall purpose of the open learning platform is to override the limitations of only learning facts about a society, to actually experiencing embedded phenomena of society (e.g. democracy, laws and regulations) through expression of social actions. In the end of the paper, virtual reality technologies are suggested as a possible solution for realizing the open learning platform.

8.3.1 Contribution to the Thesis

This paper provides a theoretical contribution (meta-artifact) to this thesis, by emphasizing a wider dimension of how IT can support integration work. Essentially, lessons learned from the case of digitalizing civic orientation were used to incorporate an empirical understanding about the limitations of only providing facts of a society, as a means for learning. The main argument of this contribution is that one needs to experience various phenomena in society in order to become socially integrated into the host society. Social integration is thus regarded as a crucial ingredient of integration in general (Asselin et al., 2006; Martinovic et al., 2009). Another contribution that this paper makes concerns the aspect of using philosophy to inspire IS design, as opposed to the traditional ways of using philosophy to understand information systems (Lyytinen & Klein, 1985; Lyytinen & Hirschheim, 1988; Janson et al., 2000).

8.4 Paper 4 – Conceptualizing the Essence of Presence in Distance Education through Digital Dasein

This paper was initially produced during the first ADR cycle, but then revised during the second ADR cycle, as a theoretical contribution that emphasizes the phenomena of presence in distance education. The paper elaborates on different notions of presence in e-learning (Gunawardena, 1995; Gunawardena & Zittle, 1997; Garrison & Anderson, 2003; Shea et al., 2012, 2014) and discusses their limitations in terms of how contemporary models of presence are purely pedagogical with higher education as context of use, whereas an experience of learning is crucial from the point of view of non-traditional learners (e.g. newcomers as opposed to students). Insights from the case of digitalizing the civic orientation program brought perspectives about how e-learning needs to support different modes of presence that foster and augment an active and problematizing participation among the newcomers. Thus, different modes of presence in distance and network contexts are elaborated through Heidegger’s (1962) concept of Dasein to transcend previous models of presence, and thus reveal the so-called essence of presence for a more translucent form of e-learning. Additionally, the term being-in-learning is introduced as an element of the proposed concept of Digital Dasein, which essentially problematizes the different forms of being, which
Dasein undertakes in a combination of physical and digital settings. At the end of the paper, an instance of practically realizing Digital Dasein is elaborated as an example of how Digital Dasein can be projected into the lifeworld of newcomers, tutors, and producers of civic orientation.

### 8.4.1 Contribution to the Thesis

The main contribution of this paper elaborates on the various modes of presence and how these modes are comported through supporting technologies, whether it is in social media, via videoconferencing, discussion forums, virtual reality, online lectures, etc. The paper argues that human presence is manifested and revealed differently throughout space and time, making a conception of what presence is or not, a complex notion of *being-here, being-there, or being-anywhere* (shown in Table 31).

<table>
<thead>
<tr>
<th>Technology</th>
<th>Asynchronously</th>
<th>Synchronously</th>
<th>Being-Here</th>
<th>Being-There</th>
<th>Being-Anywhere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerecorded Online Lectures</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video-conferencing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatting</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion Forums</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Virtual Reality</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Social Media</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Table 31. Different modes of presence and being

Table 31 illustrates how different kind of technologies can support different modes of presence and being, which are relevant for the context of e-learning. Insights about challenges of elucidating and supporting different modes of presence in e-learning were addressed as insights about how to support different modes of presence in the context of supporting and providing civic orientation through various e-learning technologies. An understanding about Digital Dasein thus helps understand how to design artifacts for adaptable learning, which addresses and incorporates various modes of presence for e-learning that are adaptable to different modes of presence and being.

### 8.5 Paper Topic Summary

The four papers that comprise this thesis covered a variety of research topics. In order to elucidate the research topics covered by the research papers, Table 32 presents a short summary of the specific, primary topics addressed in each of the four papers that constitute and support this thesis’ body of knowledge. The topics are elements of this thesis’ research context (domains of WIL and IS) and essential findings.

<table>
<thead>
<tr>
<th></th>
<th>Paper 1</th>
<th>Paper 2</th>
<th>Paper 3</th>
<th>Paper 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Support of Integration</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

85
8.6 Research Contributions

The presented findings of this thesis provided results for the subsequent research contributions:

- The first paper offers prescriptive knowledge and guidelines for how to design information systems for adaptable e-learning, which is considered an essential part of organizing and implementing civic orientation through e-learning. The research contribution is a design theory along with design principles for informing the design process. Hence, this contribution addresses the what question of this research (What makes designing for integration work significant?), in terms of the quality of the design solutions (e.g. digital platform of civic orientation, adaptable e-learning features) that support adaptable learning, as well as the class of problems.

- The second paper provides a methodological research contribution that derived from the use of ADR with a strong emphasis on fostering a participatory philosophy, which engages and involves integration workers as equal participants of activities concerning design, intervention, knowledge development, and learning. The paper also contributes to implementing the design theory of the first paper, by offering a methodology that supports the design process as well as WiL. Hence, this contribution addresses the how question of this research (How to do design for integration work?), in terms of the quality of the design research methodology and design method, elaborating ADR toward a more participatory methodology that supports adaptable learning.

- The third paper shows that philosophy can be used to inform the conceptual design of an open learning platform for social integration. The paper derived from the limitations of the instantiated artifact (CollaborGeneous), and suggests that the integration of immigrants needs to incorporate dimensions of social integration, and not only facts about society (as is mainly done in the civic orientation program). Furthermore, the paper provides implications for how different social actions can be afforded through technological features, to illuminate and mediate experiences of embedded phenomena in society. Finally, the contribution addresses the why question of this research (Why designing for integration work?) in terms of incorporating Habermas’s (1984, 1987) TCA to guide the design and to achieve an open learning platform that affords desired communicative actions for social integration.

- Finally, the fourth paper provides a contribution about different modes of human presence in e-learning, and how these modes need to be taken into consideration, when designing supportive technologies for integration work. Consequently, the paper introduces the concept of Digital
Dasein, to elaborate on the complexity of different modes of presence in e-learning. The contribution also addresses the why question of this research (Why designing for integration work?), in terms of identifying the long-term effect of designing for integration work as an endeavor to create a community where participants become integrated through engaged presence and adaptable high-quality content, which is supported by flexible design solutions. These are ultimately guided by the concept of Digital Dasein as a bridge between different worldviews, vision, and actual use experience.
9 Discussion

This chapter provides a discussion about the findings of this thesis from the perspective of their relevance for the research questions of this thesis, the limitations of its findings, and a discussion about future research. Furthermore, throughout these discussions, the concept of adaptable learning will be elaborated and discussed.

9.1 Designing for Integration Work

The main research question of the thesis is, how to do design for integration work? Although Paper 2 explicitly addresses the how question, I argue that the other papers also address the question. For instance, the proposed design theory in Paper 1 is based on two cycles of building, intervening, and evaluation of the digital platform for civic orientation. The civic orientation program in turn is considered to be a special case of the integration work in Sweden. Thus, the design theory informs the design process of technologies that support integration work in general, and the civic orientation program in particular. Additionally, the design theory puts a specific emphasis on designing information systems (considered as a synonym for IT artifacts) for adaptable e-learning, through design principles as guidelines that address issues such as:

- **Bridging levels of distribution**: From the perspective of supporting civic orientation through e-learning, it became evident that e-learning content needs to be distributed on various levels of availability and managed by different users with different roles. For instance, content producers are responsible for producing content, which coordinators and tutors of civic orientation regulate and distribute on a certain access level. In other words, features need to support both content at an open level (open for the public), as well as on a closed level (internally within the organization).

- **Differentiated use of content**: Adaptable features for implementing already known content (standardized) as well as content that is creatively created and implemented (non-standardized content) by individual tutors for their unique course sites.

- **Space for reciprocal interaction**: Elements of a community of practice (Lave & Wenger, 1991; Wenger, 1998) such as meaning, practice, community, and identity, inform and elucidate the purpose of learning civic orientation, from a wider perspective than only being present for 60 hours and getting a certificate. Rather, the elements put focus on preserving dialogue as a crucial form of interaction and prerequisite for establishing meaning in practice and to foster engaging activities where societal issues are highlighted reciprocally between tutors and newcomers, as an understanding of being a member of society as a larger community. Supportive e-learning solutions thus need to create proper meaning for reciprocal interaction, without losing the atmosphere of inclusion and evolvement among the participants, as well as the tutors.

- **Support for multimodal and large variation of IT literacy**: Due to the extreme heterogeneity among newcomers and integration workers, different cultures, worldviews, and levels of knowledge meet and collide. But because the tutor has the role of mediating facts about society, a common ground for dialogue is established through content and meaning making (dialogue). However, due to the large variety of IT literacy and languages, the supporting e-learning must provide support at different levels of engagement and heterogeneity. This include newcomers that are scholars, illiterates, university students, graduate students, traumatized war victims, and more. Learning strategies and technology features are thus required to be adaptable towards multimodal and large variation of IT literacy and levels of engagement, as well as future possibilities of course evaluation/exam.

Judging by the above presented issues, features of e-learning need to be adaptable to the heterogeneity among integration workers and newcomers. In the case of the civic orientation program, however, there are no formal objectives that lead to an evaluation or examination of participants’ learning outcomes. Rather, the only requirement is that the participants are physically present for 60 hours of civic orientation sessions. However, due to the implementation of e-learning solutions, various modes of presence (physical,
digital, social, or a combination) and being (being-here, being-there, being-anywhere), make it difficult to use traditional e-learning models (e.g. Garrison & Anderson, 2003) that solely support e-learning in higher education. This was illuminated in Paper 4 as the complexity of being – as explicated by Heidegger (1962) – and that the physical being and presence of newcomers cannot guarantee that the participants are engaged and/or learn explicit knowledge about society. In turn, this discovery implied an understanding about what presence means for integration work and the civic orientation program, and how e-learning can support various modes of being and presence. Here, thoughts emerge about whether the participants are actually learning anything at all, besides absorbing instruction based on facts about society; or if they only are present for the sake of being there (at the civic orientation sessions) physically, because they are obligated by law to be in order for them to accomplish their establishment program.

The second aspect of addressing the question of how to design for integration work was answered by solely focusing on the how part of the question. Paper 2 addresses the how part, by offering a methodological contribution that supports activities of design, knowledge development, and learning. From this perspective, the design process is no longer dichotomized in terms of designing technologies versus learning how the technologies work. Rather, through encouraging cycles of engagement and participation, the integration workers learn how supportive technologies work, by being involved in activities (e.g. workshops) that encourage them to share ideas and reflections that shape and re-shape their knowledge awareness in conjunction with shaping the ensemble artifact. Mutual exchange of knowledge and perspectives is thus taken and created through barrier breakdowns, where designers and researchers are no longer considered dictators of the design process. Rather, they facilitate involvement and foster knowledge development among participants of a design cycle in a space of reciprocal interaction and understanding.

The PADRE methodology thus embraces and incorporates such participatory philosophy, and helps designing for integration work through a work-integrated learning approach through iterative cycles of planning, implementation, reflection, and evaluation of subsequent outcomes. Essentially, the underlying philosophy of PADRE is aligned with the Scandinavian school of IS design (Ehn, 1988; Greenbaum & Kyng, 1991; Bodker, 1996; Kensing, 2003; Bodker et al., 2004; Bratteteig & Wagner, 2012) and DSR approaches (e.g. Markus et al., 2001; Cole et al., 2005; Sein et al., 2011) that belong to the second DSR strategy (Iivari, 2015). Additionally, PADRE extends the participatory component of ADR by incorporating an explicit notion of WiL as an ingrained prerequisite of establishing a continuous learning process, which is interconnected with iterative cycles of planning, implementation, reflection, and evaluation of design and research activities. Hence, PADRE provides an additional contribution to how WiL can be incorporated through the design process and vice versa, and how the Scandinavian philosophy resonates with the underlying philosophy of pragmatism in DSR.

Furthermore, the integration workers, and their heterogeneous worldviews (Habermas, 1987), played a crucial role for understanding how to design for integration work. Their heterogeneous worldviews (e.g. beliefs, expectations, vision) offer knowledge about their practice and the reality of their practice, which is situated in a composite of objective, social, and subjective worlds (Habermas, 1984, 1987). Here a distinction is made between their practice, and the reality of their practice, because the practice of integration work in general is shaped by the reality in which it is situated. In the case of civic orientation for instance, the integration workers’ practice is situated in a reality that follows certain objectives (e.g. conveying facts about society to newcomers), which are formulated locally for the Swedish society. Thus, in order to design for adaptable learning as a class of problems of designing for integration work, a set of meta-artifacts need to be validated through a range of realities that comprise integration work wider than only the reality of the civic orientation program. From this perspective, Paper 4 elaborates the need of transcending the digital platform for civic orientation, and not only mediating facts about society, but also affording experiences through social actions that support social integration of newcomers. This implies that features of an open learning platform need to be adaptable to the reality (context, situation, environment, people, etc.) which the platform shall support (the practice of integration workers).
9.2 ORGANIZING AND IMPLEMENTING INTEGRATION WORK THROUGH SUPPORTIVE IT

The instantiated artifact (CollaborGeneous) of the second ADR cycle addresses the issue of how to organize and implement integration work through supportive IT, by offering an instantiated solution that provides IT tools for organizing and implementing integration work. Governing activities of organizing and implementing the civic orientation program through various modes of delivery (face-to-face, blended, online modules) are supported through commonly available IT tools, which address different roles and their responsibilities. For instance, content producers can now share a set of common tools for producing content as well as storing and updating content through shared repositories for civic orientation content (texts, video, graphics). Others such as the tutors can easily upload and embed their personalized content into their unique course sites, without having to learn each and every aspect of the artifact in detail.

Rather, different sets of technologies (e.g. cloud services, publishing tools) are integrated to incorporate different tasks and responsibilities of integration work. Learning such technologies (e.g. cloud services) requires knowledge about a certain class of technologies, meaning that the knowledge integration workers acquire in order to organize and implement integration work through supportive IT, is knowledge which they can arguably re-use in other contexts outside their work. For instance, knowledge about how to publish content online through a technology such as WordPress, is knowledge that is generalizable toward the use of other similar publishing tools (e.g. Joomla, Drupal). Thus, their acquired knowledge becomes relevant and applicable in a wider sense than only being applicable toward a specific instantiation of technologies.

Furthermore, integration work is, from a general perspective, a practice that relies on knowing at work (Vesterlind, 2016), using a heterogeneous knowledge base that differs from one integration worker to another. This implies that activities of organizing and implementing integration work need to be addressed and supported by adaptable IT features. However, because the activities may vary from one context of integration work to another, the supportive IT cannot be too stiff and framed, as was the case of considering standardized CMS, as an inappropriate choice for organizing and providing civic orientation through support of e-learning. Therefore, the level of how adaptable the supportive IT is or is not, may become crucial in terms of supporting integration work successfully. Especially due to the different levels of skills and competency the integration workers have, a standardized system such as Moodle would force the integration workers to re-adjust parts of their practice towards the criteria of a standard closed system, as opposed to vice versa, where adaptable IT features augment and support present criteria of how integration workers organize and implement their integration work within their community of practice.

Through a community of practice (Lave & Wenger, 1992; Wenger, 1998), the integration workers engage in WiL activities that foster participation and involvement to a degree, where they gradually evolve as members of the community. The methodology presented in Paper 2 encourages such philosophy through early iterations of learning and reflection, concerning issues such as learning new IT for work, acquiring new roles and responsibilities, reinforcing the acquired knowledge to other members of the community through a shared repertoire of resources (e.g. common repositories of information), and establishing boundary crossing through activities that share common interests, but cause integration workers to step outside and extend their pre-defined roles with more expertise – for instance, tutors that learn how to organize and implement a session of civic orientation through support of e-learning. However, tensions do exist in such circumstances, especially when a heterogeneous group of practitioners’ worldviews collide and are intertwined into different interpretations about how IT can be used to organize and implement integration work. For instance, the findings from Paper 1 show implicitly how design paradoxes arise due to contradictory voices among members of a community, over time. Thus, a consequence of applying a participatory philosophy to design-oriented IS research may arguably create tensions between different visions and opinions of practitioners or end-users.

As a result, outcomes of such tensions affect how the IT is designed and how the IT supports organizing and implementing a certain practice. This was also the case with this research, where design paradoxes emerged due to tensions between the different ideas and visions of integration workers. Therefore,
supportive IT needs to offer features that are learned through adaptable modes of instructions, which personalize the instructions and target sudden changes of the technology due to contradictory visions of different voices.

Ideally, supportive IT for integration work is highly adaptable to personalized roles and responsibilities. CollabGenuine is an instance of such technology, which offers features and functionality that is adaptable to the practice of integration workers. But still, the limitations of such instantiation are rooted in the reality of civic orientation and the activities of organizing and implementing integration work. This makes CollabGenuine a valid level 1 DSR output (Gregor & Hevner, 2013), which provides a proof of concept that demonstrates an instance of IT that supports organizing and implementing integration work. From a wider perspective though, a profound understanding about the different realities of integration work is needed, in order to design a class of artifacts that is applicable to multiple contexts of integration work. Therefore, the question of why to design for integration work, becomes a relevant question to discuss further.

### 9.3 Why to Design for Integration Work

On a broader level, the question of why to design for integration work, is a question that inevitably arises because it is implicitly addressed by the findings of this research. Additionally, the question is raised due to the lack of empirical research within the intersections of IS research and WiL. This research does however show that it is possible to support integration work through design of supportive IT and sufficient WiL. This is of course common sense from the point of view that technology must support its users and the application domain in which it is implemented, but because the domain of integration work has been a rather unknown territory for conducting design-oriented IS research, little knowledge has (historically) been provided about how to design for integration work (for instance, lack of design guidelines) and more importantly, why to design for integration work. The how question has already been discussed in 9.1, so in this section, I will turn to the adopted concepts of Habermas (1984, 1987), to discuss the why question of this research.

If we consider the reality of integration work as constituted by an objective, social, and subjective world, then the reality of, for instance, the civic orientation program, would emphasize the following:

- **Objective World:** From the perspective of integration workers, their objective world is constituted by roles and responsibilities that cooperate towards the goal of orienting newcomers into Swedish society. Here, the integration workers use content that relies heavily on explicit knowledge about Swedish society, in terms of facts. Thus, facts about Swedish society belong to an objective world, which, through sessions of civic orientation, are projected into the lifeworld of newcomers. From the perspective of newcomers however, their objective world relies on previous encounters from their former host societies. These encounters and experiences vary greatly due to the newcomers’ heterogeneity, meaning that their objective world is not compatible in an objective sense. But rather, their objective world becomes a world that is situated to the worldview of their current host society (Swedish society). Learning facts thus becomes facts that are embedded in an objective world, which is temporary – because newcomers can move to another country, which affords a different objective world of the society. Taking all this into consideration, supportive IT for integration work would then need to incorporate an objective world that is temporal depending on which society it belongs to. In the case of the civic orientation program, the objective world of Swedish society is supported by providing explicit knowledge about society through facts about that society. Thus, the digital platform for civic orientation belongs to the objective world, because it is implemented based on conditions that are required to be sufficiently mapped with governmental objectives that govern the essence of civic orientation as a program that orients newcomers in society through facts about society.

- **Social World:** In the social world however, the worldviews of integration workers and newcomers intersect through social interaction, which overrides the constraints of the objective
world. But here, the social actions that are taken are not purely based on an exchange or bridging of worldviews. Rather, in the case of the civic orientation program, they are grounded and constrained by the content through which knowledge is mediated. For instance, the newcomers may want to get a job as soon as possible, in order to support a family. During a session of civic orientation, general facts are provided by the tutor to the participants about how to apply for a job in Sweden. But after the session, the newcomer describes his situation to the tutor and gets his attention from a personal perspective, which leads the tutor to help him outside the context of a civic orientation session, because the tutor has also been in a similar situation when he/she moved to Sweden, and thus sympathizes with the newcomer’s situation. In such a scenario, the objective facts about how to apply for a job in Sweden are transcended through the social action of the newcomer, as well as the reaction of the integration worker. Habermas’s (1984, 1987) typology of social action thus provides an analytical lens for addressing such social action as a dramaturgical action, which is comported through the newcomer’s desire to get a job as soon as possible, and supported through the sympathetic reactions of the tutor. Supporting such kinds of actions through supportive IT would require an understanding about what kind of real-life scenarios there are, or may be, which are revealed through such actions. Arguably, an experience of such a scenario would provide knowledge about social actions and what consequences the actions generate.

- **Subjective World**: The subjective worlds of both integration workers and newcomers are very heterogeneous in the sense that they originate from different worldviews. Through knowledge of a common language, tutors can for instance communicate and understand the newcomers’ worldviews. Here, communicative actions are oriented toward creating a reciprocal understanding between the tutors’ and newcomers’ subjective world. If IT shall support actions in this world, then the features of the IT need to incorporate a common linkage (e.g. language) and interest between different group of individuals. An example of this can be to offer a forum in which members of an immigrant community can discuss challenges of different aspects of their experiences in society, and form a consensus view for dealing with similar experiences. Such an idea stretches beyond the scope of civic orientation, however, and into an extended form of supporting integration work through supportive IT.

The discussion above illustrates why to design for integration work, namely to bridge heterogeneous worldviews and incorporate integration through engaged presence or being-in-the-world (Dasein). Judging by the nature of the civic orientation program, it is fair to say that the limitations of CollaborGeneous belong to the objective world, where facts are focused on as a means for learning about Swedish society. Experiencing embedded phenomena of society belongs to the social and subjective world, where social actions are afforded through an interplay of individuals’ intentions, beliefs, norms, and so on. In order to support such complexity through supportive IT, the IT cannot be constrained to the idea of only providing facts, rather than experiencing phenomena that are related to facts (e.g. breaking a law). Therefore, as stressed in Paper 3, supporting integration work through IT is possible – as illustrated through CollaborGeneous – but supporting integration work through IT calls for different kinds of technologies, which put the experience of relevant phenomena in focus, rather than the facts about social phenomena.

Designing efficient IT requires a sufficient understanding about the heterogeneous worldviews of newcomers and integration workers, and how to support their learning endeavors by addressing them differently – integration workers need to gain new knowledge that supports their work, while newcomers need to learn how to become integrated in society. Arguably, a fundamental prerequisite for incorporating the integration of newcomers in society is that the integration workers are prepared and equipped with sufficient knowledge that support their practice. Otherwise, the quality of their work may become flawed and stagnate due to obsolete planning and strategies for organizing and conducting integration work. In this research, it has clearly been indicated that active participation and involvement of integration workers (of the civic orientation program) in subsequent ADR stages are sufficient for incorporating the work-integrated learning of integration workers. This includes learning new technologies that support their different roles and responsibilities, acquiring pedagogical knowledge that is supported through e-learning.
solutions extending current roles into new roles that comprises new areas of responsibilities, and more. Supporting WiL through ADR has thus been an implication of this research, which I will discuss further in the next section.

9.4 Supporting Work-Integrated Learning through Action Design Research

According to Sein et al. (2011), the participatory nature of ADR encourages practitioners and researchers to collaborate and acquire knowledge through subsequent ADR stages, with a particular focus on incorporating a continuous and iterative process of reflection and learning for the ADR team. Through such iterations, practitioners of an ADR team (such as the integration workers) are allowed to collaborate with a team of researchers, which enables them to acquire new skills and competency that is informed through scientific knowledge, and projected directly into the practitioners’ domain of work. An ADR project is thus by default intended to be organized and executed within a specific organization together with practitioners, rather than being solely executed, detached from the organizational setting of practitioners (Sein et al., 2011). This way of reasoning turned out to be highly relevant and efficient within the case of digitalizing the civic orientation program, where the ADR methodology enabled integration workers to participate in subsequent ADR cycles and acquire new knowledge (e.g. IT skills). The ADR cycles were thus executed within the organizational setting, together with the integration workers (rather than without them), and sufficiently afforded and supported the work-integrated learning of integration workers. Excerpts from the focus group sessions support this statement. For instance, on the question of What have you learned during the life cycle of this project? some of the respondents answered as follows (the answers are anonymized due to ethical agreements):

Many things… I have for instance learned technologies that I can use outside the context of my work, as well as for my work activities… this is a bonus… and I have learned that I can learn more from others through dialogues that we usually don’t have.

I did not know that one could easily combine so many technologies to support different roles among us integration workers… and I learned all this during this project and the workshops and training sessions… now I know more than I did before.

I really liked that we had specific moments for reflecting and reasoning about relevant things in the project… on one occasion, I felt that I am learning more now about technologies, concepts such as e-learning, videoconferencing tools, and how I can use these for my work… I felt that this makes the workshops more relevant to attend.

It felt really good to be a part of providing input and feedback that influenced the building of the digital platform… I learned that my voice counts in terms of taking decisions that affect the design of the digital platform… and now when I have used the platform for my work, I can see the results of my ideas and thoughts as implemented in the platform.

I learned more than I thought that I would learn, by being involved and participating in the workshops and the training sessions… I learned for instance new technologies that were directly relevant to my work activities… I learned how to conduct session on a distance… I learned theoretical concepts such as the meaning of ‘learning objects’ or ‘e-learning’… I learned plenty… it feels like this project was an education relevant for my professional role, as well as being an education held at my workplace.

The excerpts above indicate that the work-integrated learning of the integration workers was sufficiently facilitated through participation and involvement in subsequent activities (e.g. workshops, meetings) within the life cycle of the project. Subsequently, the project was organized through ADR stages with a particular focus on incorporating a participatory philosophy that integrates learning through engagement, reflection, and participation (Lave & Wenger, 1991; Wenger, 1998, Billett, 2001). One can argue that such an incorporated approach, together with its subsequent outcomes, is not unique to this research but that it is rather typical for any PD project (e.g. Kraft & Bansler, 1994; Bjerknes & Bratteteig, 1995; Bratteteig &
Wagner, 2012). However, due to the nature of integration work as being constituted by a large dose of heterogeneity among both integration workers and newcomers, this particular research cannot be considered a typical PD project. Rather, this research incorporated the aspect of heterogeneity in light of WiL as a prominent way of problematizing and supporting the design process, while ADR provided a framework (or structure) for populating subsequent ADR stages with a participatory philosophy.

Through an active and iterative process of engagement, reflection, and participation, the integration workers were encouraged by the academics to reinforce their reflection into their practice, and thus exercise a double loop learning (Argyris & Schön, 1989) by questioning their own ideas and thoughts throughout each cycle. Organized workshops and meetings facilitated this process, while organized workplace training provided the integration workers with a repertoire of new skills and extended roles. Hence, I identify the following as a key aspect to why ADR supports WiL:

- Engagement, reflection, and participation are all key factors of integrating a practice-inspired research approach that supports the WiL of practitioners (such as the integration workers) through reflection-in-action. The participatory philosophy of ADR thus incorporates WiL sufficiently through a continuous learning process among the ADR team as an integrative component of ADR stages and activities (e.g. design, evaluation, reflection, learning, etc.)

A second argument for why ADR supports work-integrated learning emphasizes the utility of subsequent ADR principles: *Practice-Inspired Research* (Sein et al., 2011, p. 40) in the first ADR stage of identifying and formulating the problem; *Reciprocal Shaping, Mutually Influential Roles, and Authentic and Concurrent Evaluation* (Sein et al., 2011, p. 43) in the second ADR stage of building, intervention, and evaluation; and finally, the principle of *Guided Emergence* (Sein et al., 2011, p. 44) in the third ADR stage of reflection and learning. All these principles share a common trait, namely the trait of promoting a reciprocal space of shared engagement and participation among members of an ADR team. This trait is explicitly elaborated and highlighted in Paper 2 (Haj-Bolouri et al., 2016b), where iterative activities of engagement, participation, and learning are interplayed with practical relevancy (e.g. problem solving, design activities).

Consequently, I argue that such process is similar to solving *wicked problems* (Rittel & Webber, 1984; DeGrace & Stahl, 1990) in terms of interleaving a version of the IT artifact (e.g. early alpha version) with an interpretation of the workplace setting, and thus motivating a heuristic sense-making process about how the artifact contributes to its workplace setting, as well as how the workplace setting influences the shaping and re-shaping of the artifact (e.g. re-shaping into a beta version). An example of this was illustrated in the second ADR cycle of this research, where juxtaposing design visions among the integration workers emerged as a result of early testing and evaluation of the digital platform. Here, the integration workers made a transition from their original vision of wanting an open-ended platform that is available online for the public (the alpha version) to a restrictively designed platform (the beta version), which is now only accessible for authenticated users. Another example of this is incorporated through PADRE, as being proposed as a design research methodology that inherently incorporates work-integrated learning through its participatory action component. Hence, I identify the following as a second key aspect to why ADR supports work-integrated learning:

- The iterative nature of ADR is arguably a key factor that supports the WiL of practitioners through repetitive activities of practice-inspired learning, which in turn incrementally fuels the practitioners’ sense-making process, as well as enabling them to practice their critical mindset towards a problem-solution space through continuous testing and evaluation of prototype versions. In turn, such iterative nature facilitates a continuous shaping and re-shaping of prototype versions, and thus creates a balance between sense-making of artifact use and artifact design.

Another argument for why ADR supports WiL concerns the interwoven nature of the ADR stages. For instance, throughout the course of this research, the ADR stages enabled the ADR team to facilitate design, testing, and evaluation, as attached activities within the workplace setting of the integration workers, together with them iteratively. So by interweaving the different ADR stages into the practice of
integration workers, and by populating each stage with consequent activities that create meaning for the integration workers’ practice, the ADR methodology enables the ADR team to interconnect crucial activities of WiL (e.g. reflection in practice, workplace training) into a repetitive pattern of practice, reflection, and learning. The progression of the practitioners’ WiL cannot therefore be considered a linear one, because each ADR cycle enables the ADR team to iterate from one stage to another, identifying and addressing unique problems exploratively, whereas a linear progression would follow a pre-determined scheme of problems that are hypothesized before initiating an ADR cycle – as proposed by traditional stage-gate models of DSR (Nunamaker et al., 1991; Peffers et al., 2008). Hence, I identify the following as a third key aspect for why ADR supports WiL:

- The cyclic nature of ADR affords repetitive patterns to be organized and conducted iteratively, without repeating and producing the same learning outcome from one cycle to another. Rather, the stages are interwoven to enable the ADR team to populate each stage with unique activities, which instantiate a new set of repetitive pattern of WiL activities and thus produces unique learning outcomes for each cycle. In turn, the learning outcomes from one cycle can be used as insights that incorporate the entry point of another cycle.

Even though ADR is justified as a methodology that supports work-integrated learning, one may still ask: so what if ADR supports work-integrated learning, if the outcomes of work-integrated learning per se are experienced by practitioners as having less meaning for their work? Essentially, such a question boils down to whether or not it is possible to create meaning for learning and practice through work-integrated learning. I argue that it is possible to create meaning for practitioners’ learning and practice through work-integrated learning, regardless of whether the practitioners experience their learning outcomes as having meaning or no meaning for their work, because a sense-making of meaning can evolve over time and is thus not pre-determined through original experiences only, as it for instance did with the integration workers’ sense-making about the meaning of the instantiated artifact (in terms of being open-ended or not).

9.5 Creating Meaning through Work-Integrated Learning

With Habermas’s (1984) typology of action in mind, different types of social action govern different types of meaning for the individual who executes one or more of the actions. Additionally, the meaning of each action is oriented towards one or more types of world (objective, social, subjective) (Habermas, 1987), whether it is an instrumental action that is oriented towards success (e.g. achieving certain goals) in the objective world — through a selection and implementation of purposeful means that yield optimal outcomes — or whether it is a communicative action that is oriented towards understanding (e.g. mutual understanding of a problem in a given action situation) in all three worlds. Here, both success and understanding are addressed as meaningful outcomes of each type of social action, and thus they create meaning for the individual. From the Habermasian (1984) perspective, it is thus reasonable to say that meaning per se, is oriented towards truth in action, rather than being a purely philosophical semantic construct that derives from theories of reference that distinguish the experience of meaning from intellectual expressions of meaning (as for instance advocated by Quine, 1970), or semantic theories that address meaning from a purely linguistic perspective (e.g. Montague, 1973). The Habermasian notion of meaning is therefore more oriented towards the pragmatic notion of meaning in general, where the meaning of something (e.g. learning) is to be found in the practical consequences of accepting it, and that impractical ideas are to be rejected (Stuhr, 1999; Shook & Margolis, 2006). Such a pragmatic notion of meaning is a fairly valid and relevant one for creating local meaning outcomes that transcend into a continuous process of WiL.

Arguably, meaning in relation to WiL does not exist in a vacuum nor does pertain to an intrinsic value that is detached, or independent, of human activities, because it is directly targeted towards the work-related activities of practitioners in organizations (Billett, 2001; Malloch et al., 2010). Nor do I consider meaning, from the perspective of learning and practice, as an essence of purely intellectual endeavors that are characterized by properties of professional needs (e.g. academic publishing competition) or desires.
(e.g. climbing the academic ladder and gaining power, status) of academia. Rather, meaning for practice and learning is, and shall be, attached to the lifeworld (includes workplace, worldviews, knowledge interests) of practitioners, with an emphasis on acquiring knowledge (e.g. skills, competency) that resonates sufficiently with the interests of their work (e.g. roles, responsibilities, tasks). Creating such meaning thus requires actions within activities that generate an added value for the practitioners’ knowledge domain (e.g. integration work), such as creating meaning through applicable skills and competency (Billett, 2004; Fenwick, 2001). However, finding meaning in skills or competency is something that practitioners (as well as organizations) experience over time as a gradual process of expertise development (Dreyfus & Dreyfus, 1986; Lave & Wenger, 1991; Wenger, 1998), as for instance the integration workers of the civic orientation program did concerning their original roles and their extended professional roles. Henceforth, practitioners and organizations need to adapt to an evolving understanding of meaning by confirming change as an integral part of a continuous process of sense-making, which is integrated with work-relevant activities rather than being solely an isolated activity. Otherwise, a non-adaptable attitude towards change and meaning-creation may grow and thus generate a reasonably detrimental working culture that does not resonate sufficiently with inevitable workplace phenomena (e.g. digitalization).

This way of reasoning resonates well with the purpose of promoting learning at work through a participatory culture, which fosters a pursuit of knowledge development through work-integrated learning activities of engagement, inclusion, and affordances of sense-making, among practitioners (Fenwick, 2001; Billett, 2001, 2004; Vaughan, 2008). An interplay between work and learning thus becomes an important facilitator for creating purposeful meaning as a truth that corresponds with the utility of acquired skills and competency among practitioners. In other words, if the learning outcomes of work-integrated learning are not applicable for the work of practitioners, then the learning is not sufficiently integrated with their work and thus projects a lack of meaning for their practice. However, as mentioned above, meaning per se varies over time, implying that the sense-making of whether learning outcomes have meaning or not is a matter of interpretation over time. For instance, during all three ADR cycles of this research, active participation and engagement among members of the ADR team contributed sufficiently to an iterative sense-making of problems, solutions, design, learning, and reflection outcomes. Some of these outcomes, and their bearing on how work-integrated learning created meaning for integration workers’ learning and practice, are illustrated as follows:

- **Decision making**: Through an iterative process of sense-making, the integration workers became more and more comfortable with orienting their decision-making towards instrumental and strategic actions. For instance, as mentioned before, after the first ADR cycle, the integration workers decided to restrict the digital platform from being open-ended to only being accessible for authenticated users (users that are allowed to use the platform). The meaning of this transition derived from the idea of selling civic orientation content to other municipalities, rather than sharing the content for free, making their understanding about the practical utility of the digital platform as being an artifact that supports instrumental or strategic actions. This example illustrates a reasonable way of how work-integrated learning creates meaning towards practitioners’ learning outcomes, and how that meaning provides an added value towards practitioners’ iterative sense-making process and decision making, as well as enabling them to make and take perspectives from each others’ experiences and learning outcomes.

- **Perspective making**: Throughout the ADR cycles, the integration workers were able to integrate their learning into their work through development of a commonly shared repertoire that accumulates new skills and competencies, including learning a set of common IT tools for collaboration, production, and distribution of civic orientation content; development of new roles and areas of responsibility that incorporate skills about how to organize and provide sessions of civic orientation through support of e-learning; pedagogical methods that support civic orientation sessions through e-learning; the benefits of promoting a participatory culture at the workplace and building collaborative relationships through a mutual engagement. From these perspectives, a shared space for reciprocal interaction (e.g. through workshops, meetings) among the integration workers enabled them to discuss the relevance of developing a common repertoire towards their domain of knowledge (e.g. roles, responsibilities, skills, competency), and thus
create meaning in their actions at work through a perspective making of a commonly shared repertoire.

- **Continuous learning**: Creating meaning through situated knowledge and learning (Lave & Wenger, 1991; Wenger, 1998) was an essential part of establishing a continuous learning process that incorporated the integration workers’ work-integrated learning. For instance, through continuous and iterative workshops, the integration workers were enabled to create a shared understanding of what binds them together in their community of practice, and how their extended roles contribute to their community. Another aspect of their continuous learning process concerned the dual relevancy of work-integrated learning: (1) acquiring knowledge through work-related activities at work; and (2) applying the knowledge at work and outside work. For instance, through workplace training sessions, the integration workers learned new concepts (e.g. e-learning, distance education, flipped classroom), technologies (e.g. videoconferencing, collaborative online tools), pedagogies (e.g. how to perform civic orientation in the classroom through e-learning), and insights about their new extended roles and areas of responsibilities. This was situated at their workplace and integrated into their practice. However, the content of their learning was highlighted as being relevant outside their work as well, thus making their acquired knowledge meaningful and applicable outside their working domain (e.g. using cloud technologies for private use). This was an implication of incorporating a continuity of the integration workers’ learning process through cycles of iteration and integrating their learning outcomes as being relevant for their work, as well as for other relevant activities outside their work.

The above points motivate work-integrated learning as a phenomenon, which shares a dual characteristic of learning as being something continuously sufficient for work-related activities that occur at the workplace as well as outside the workplace. In other words, an individual may for instance learn technologies outside the realms of work activities, but still use those skills within his/her workplace, and the other way around. Hence, work-integrated learning not only has the trait of creating meaning for learning and practice as a delimited event and outcome of learning that occurs at work, but it also enables learning through everyday activities, which is meaningful for individuals’ continuous learning, work, and potentially life in general. The meaning of learning outcomes thus need to be considerably adaptable towards time, its truth in utility, its context and sense of purposefulness, and its intended orientations (e.g. success, understanding, both) that are situated within different contexts (e.g. the objective world, the social world).

An understanding of such phenomena can be analyzed and discussed at various stages, including a more philosophical one, which supposedly illuminates essential elements of how work-integrated learning has been adapted towards a heterogeneous group of practitioners’ (integration workers) learning and work, and how a subset of DSR (the ADR methodology) has supported this process. And although these phenomena have been elucidated throughout this research, there are still important issues of work-integrated learning that need to be discussed further in order to gain more knowledge about the relation between adaptable learning and work-integrated learning, as well as other dimensions of work-integrated learning that are more specifically attached to the empirical horizon of this research.

### 9.6 Adaptable Learning as an Integral Part of Work-Integrated Learning

Arguably, a practitioner in general needs to be extremely skillful in order to detach learning from his/her work, especially if we consider learning as a human activity that is performed continuously through everyday life (Engeström, 2014). Additionally, practitioners (being human beings) are more or less oriented towards professional survival in their domain of work. They are urged to be able to adapt to change and progression at work in general, and develop competencies that are mapped towards the growth of a digital landscape at work. In turn, subsequent organizations may also consider how to encourage their practitioners’ sufficient usage of IT in ways that promote time for learning, opportunities for knowledge sharing, and effective collaboration (both physical and virtual). However, it is complicated for organizations to quickly form an ad hoc group of practitioners that possesses necessary combinations.
of competencies and skills, because of heterogeneity among professional roles (e.g. tutors, content producers) and responsibilities. Furthermore, the competencies and skills possessed by practitioners go beyond their IT literacy (e.g. efficiently manipulate information, construct ideas, achieve strategic goals through use of IT) towards development of other skills as well (Colbert et al., 2016). For instance, tutors of the civic orientation program learned — throughout the subsequent ADR cycles — that they can combine different IT tools to organize and perform their sessions, as well as use the same tools for private use outside the scope of their work.

This phenomenon of transcending the use of situated knowledge (e.g. relevant skills for work activities), to knowledge that is applicable in the life-space continuum of practitioners, has been studied in various constellations of research, stretching from research about how online video games can help professionals develop leadership and strategic skills (Yee, 2014), to research about how efficient IT literacy influences job performance and career progression across a range of professions (Glen et al., 2014; Brown & Martin, 2015). Even though one may argue that such skills and competencies are still situated in the context of their use, the complexity of how and when one can (or may) use acquired skills and competencies, is not explicitly confined to a particular situation only. In other words, the lines between work and non-work domains, along with applicable and relevant knowledge, have become more and more blurred due to use of IT in general (Ramarajan & Reid, 2013; Reyt & Wiesenfeld, 2015), allowing practitioners to integrate IT usage for doing work as well as providing easy access to family, friends, online shopping, online reading, and other non-work purposes while at work (Cisco, 2008). Furthermore, IT makes it possible for practitioners to remain connected to work when they are away from their office space (Boswell & Buchanan, 2007; Perlow, 2012). Henceforth, the use of IT enables work and learning at various places, making it inevitable for practitioners to learn while working, or work and learn simultaneously, and thus integrate work with learning (or vice versa).

In light of such a holistic picture of work and learning as being an integrated whole through practice, rather than being dualistic conceptual entities, being adaptable to work and learning in different contexts and situations (which afford work-integrated learning) becomes a relevant issue for supporting work-integrated learning. First, it has been shown throughout this research that fostering an adaptable organization is a fundamental premise of incorporating adaptable learning toward sudden changes (e.g. changes of roles or areas of responsibility) and interventions of technologies. Second, facilitating and equipping practitioners with an adaptable mindset toward their success-oriented attitudes at work (e.g. focus on solving role-specific problems only), enables them to cross boundaries and to transcend their original roles and areas of responsibilities toward other domains of work. The example of how the integration workers of the civic orientation program extended their original roles and areas of responsibility is a sound example of this. Third, the learning part of work-integrated learning is considered in this research a continuous process that is performed iteratively in cycles of activities and interaction between practitioners, their environment, and IT. The latter (IT) however, is only a tool for facilitating learning, rather than being the dominant reason for why learning gets integrated with work. Establishing an adaptable learning toward use of technologies thus becomes a reasonable question of whether or not it is worthwhile for the practitioners to spend energy and time on learning new technologies at all. In other words, if the technologies do not produce an added value for practitioners’ work, then the practitioners will not feel encouraged to learn the technologies.

If, however, the technologies do produce an added value for the practitioners’ work, then the practitioners will find a meaning to learn new technologies. Therefore, being adaptable to yet unforeseen opportunities of acquiring knowledge (e.g. practitioner do not know for certain the value of learning new technologies) is a subtle part of work-integrated learning, which may only be taken for granted in theory and not practice. In practice, practitioners act, interact, and react continuously through their work, through their being-in-the-world, and by being situated in domains that are interrelated with their working interests. It would therefore be rather confusing to actually disconnect learning from work (or vice versa) in practice, unless organizations are supported through educational arrangements that detach the practitioners’ learning outcomes from their work activities (e.g. formalized courses that are not coherent with the content of practitioners’ work). Being adaptable (both individually and collectively as an organization)
toward change and continuity in practice, is thus a necessity in order to advocate learning activities as coherent with work. However, from the perspective of Heidegger’s (1962) existential thoughts concerning the being of human beings and their constant ways of comporting themselves in situations, being adaptable is arguably an integral part of Dasein (being-in-the-world) which is already manifested in the situation of which the coping of something particular (e.g. learning, work) is going on (activities of work-integrated learning). In order to understand this reasoning further, and what bearing it has on the understanding of adaptable learning as an integral part of work-integrated learning, in the next section I will discuss a duality of being adaptable and work-integrated learning from the perspective of Heidegger’s (1962) concept of Dasein (being-in-the-world).

9.7 Being Adaptable Towards Work-Integrated Learning

In order to elaborate on why adaptable learning is proposed as an integral part of work-integrated learning, I will discuss the significance of being adaptable towards work-integrated learning. The meaning of adaptable learning is thus to be discussed for the perspective of what it means to be adaptable (or what being adaptable means). However, being as a term and concept relies on a rather complex notion of what it means to be a human being, which ultimately is a question that existential philosophers have wrestled with. Although it is not the task of this research to illuminate the nature of being, it is the task of this research to provide an interpretation of being adaptable and what bearing it has on work-integrated learning. And because this research has incorporated Heidegger’s (1962) existential phenomenology with a particular emphasis on Dasein, which essentially focuses on questions of Being, I will thus discuss being adaptable from the perspective of Dasein to analyze and explicate the significance of being adaptable towards work-integrated learning. First, however, I will discuss the meaning of Dasein from the perspective of its relevance to this research, with respect to Dasein’s activity (e.g. work, learning) and possible modes of being (e.g. being adaptable). Heidegger’s (1962) concept of Dasein has had a leading role in Paper 4, where the concept of Digital Dasein was conceptualized and introduced.

According to Heidegger (1962), the significant trait of being human is Dasein, because Dasein immerses human beings into always being situated in the world with which they are coping. Heidegger (1962) argues that Dasein is not the subjective consciousness of human beings, but rather it is the same as considering the human being as the actual activity they are engaged with. For instance, when a human being is driving a car, the individual becomes identical with the driving situation (the activity), so that being-in-the-world is actively being the situation in which the directed activity is ongoing. Here, Dasein does not stop and rationalize each and every action, but rather, Dasein’s activity (driving the car) becomes the being of Dasein. A similar reasoning can also be found in the learning model of Dreyfus & Dreyfus (1986), where the so-called expert transcendence on rules and instead intuitively grasps the situation based on a deep and tacit understanding. Furthermore, Dreyfus (1990, p. 15) himself comments and explicates the essential trait of Dasein’s activity as follows:

* Dasein’s activity – its way of being – manifests a stand it is taking on what it is to be Dasein.

In order to understand Dasein’s activity, Dreyfus (1990) explicates Dasein’s relation to practice and situation through Heidegger’s (1962) terminology (shown in Table 33) about various investigations and understandings which Dasein poses.

<table>
<thead>
<tr>
<th>What is investigated</th>
<th>Kind of investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ‘who’ – a being with the character of Dasein (e.g. that exists)</td>
<td><strong>Ontic (concerns beings)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Ontological (concerns ways of being)</strong></td>
</tr>
<tr>
<td></td>
<td>Possible ways to be (e.g. being a tutor, being a coordinator, being a newcomer)</td>
</tr>
</tbody>
</table>
A ‘what’ – a being of any other kind (e.g. IT for adaptable learning) Properties (e.g. being adaptable) and structures thereof (e.g. design theory for adaptable e-learning) Categories and structures thereof (e.g. quality of designed IT for adaptable learning, quality of learning outcomes)

Table 33. Heidegger's terminology of various investigations of Being (adopted and modified from Dreyfus, 1990)

With the term ‘ontic’, Heidegger means a description that is characteristic for a particular thing (and the facts of its existence). For instance, the factual elements of a human being’s physicality (e.g. brain and its neurons) is considered ontic. On the other hand, Heidegger uses the term ‘ontological’ to address the process of investigating and understanding the concept or nature of being. For instance, when an individual reflects and discusses the concept or nature of being in practice, his/her experience of being becomes the ontology. Ontology is thus, from the Heideggerian perspective, considered meta-knowledge about the ways (or modes) of being.

In addition to Heidegger’s terminology of various kinds of investigating Dasein, Heidegger (1962) provides two distinct kinds of understanding Dasein: (1) Existential understanding, which is addressed as a ‘worked-out’ understanding of the ontological structure of existence, that is, of what it is to be Dasein; and (2) Existentiell understanding, which is addressed as an individual’s understanding of his/her own way to be, that is, of what he or she is. However, Heidegger’s (1962) terminology is purely philosophical and reasonably ambiguous for the common reader to grasp and understand. Hence, a synthesis and rationale of Heidegger’s terminology is provided with contextualized examples concerning this research, in Table 34.

<table>
<thead>
<tr>
<th>Kinds of Understanding</th>
<th>Example and Rationale</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existential Understanding</td>
<td>If the integration worker or newcomer does fundamental ontology (e.g. investigates their ways of being – what does it mean to be a integration worker) – then the understanding is considered to be existential</td>
<td>Helps understand the significance of being adaptable towards change and, due for instance to adopting multiple roles and areas of responsibilities at work, as an implication of work-integrated learning</td>
</tr>
<tr>
<td>Existentiell Understanding</td>
<td>The integration worker’s (e.g. tutor) understanding of his/her own role is existentiell</td>
<td>Helps understand the significance of work-integrated learning as an implication of being adaptable for instance to adopting new roles and areas of responsibilities</td>
</tr>
<tr>
<td>Neither Existential nor Existentiell Understanding</td>
<td>The integration workers’ understanding of their heterogeneous practice (e.g. roles, responsibilities) is ontic (e.g. the role of a tutor versus the role of a content producer)</td>
<td>Helps understanding the aspect of heterogeneity as a raison d'être and an asset for being adaptable towards work-integrated learning, rather than neglecting heterogeneity as an hindrance or obstacle for integrating learning with work</td>
</tr>
</tbody>
</table>

Table 34. A rationale for contextualizing Heidegger’s terminology

Using Heidegger’s terminology for elucidating different kinds of investigation and understanding about Dasein helps in understanding the meaning of being from an existential perspective, concerning the ways (or modes) of practitioners’ being with respect to their heterogeneity, roles, areas of responsibilities, professional goals, etc. Being adaptable is thus, from the Heideggerian perspective, a particular mode of being, which deserves a particular discussion of its own (which will not be fully covered in this thesis). However, in relation to work-integrated learning, adaptable learning becomes first something ontic (an
integral part of work-integrated learning), when the practitioner is being adaptable towards change and friction (or other reasons that require the mode of being adaptable). In turn, change and friction are reasonable aspects of the learning process faced by practitioners, when their worldviews collide and/or when they cross professional boundaries (e.g. extending original roles to new ones).

However, I do not consider being adaptable as something that one establishes by pushing an ‘on-off’ button. Rather, from the perspective of Dasein, being adaptable is an already incorporated (active) mode of Dasein, because Dasein is always oriented towards the future doing something (working, learning). This implies that being adaptable is a natural trait of responding to the circumstances of the situation with which Dasein copes. An example of this was illustrated throughout the ADR cycles of this research, where integration workers were actively engaged and involved in the subsequent ADR stages. They were constantly oriented towards activities with which they were not initially familiar, but through inclusion and participation, work-integrated learning was incorporated and they became more and more adaptable to unknown domains of knowledge (e.g. ideas about e-learning, design concepts).

Another example concerned the focus group sessions, where the integration workers were asked to reflect on and discuss their work-integrated learning outcomes. Here, they did — in Heidegger’s terminology — fundamental ontology by speaking about what their learning outcomes mean with respect to their extended roles, and how that has affected their previous conceptions about themselves as integration workers. Being adaptable to work-integrated learning as something sufficient for their practice is thus considered an implication of their Dasein with emphasis on their continuous involvement and active participation in the work-integrated learning activities (e.g. participatory workshops, workplace training sessions) of the ADR cycles. Therefore, using Heidegger’s terminology and concept of Dasein as a theoretical lens for discussing what being adaptable to work-integrated learning means, helps in understanding adaptable learning as an integral part of work-integrated learning from the following two perspectives:

- **Being adaptable as an implication of work-integrated learning** considers work-integrated learning as a methodology for fostering Dasein’s adaptable mode of being, which evolves through participatory activities that encourage practitioners to work with researchers (or vice versa) in a reciprocal space of involvement and interaction (e.g. a context of relevance such as the context of digitalizing the civic orientation program). Being adaptable thus becomes an implication of being engaged in work-integrated learning activities on a continuous basis, as was done for instance through iterative cycles of ADR. Subsequently, I argue that adaptable learning becomes an integral part of work-integrated learning through Dasein’s ways of being adaptable to the situation and activity with which he/she already is coping (or will cope with), for instance, being adaptable to a new task or practice (as a consequence of crossing boundaries in a community of practice), or being adaptable in conjunction with learning new technologies as an implication of intervention.

- **Work-integrated learning as an implication of being adaptable** considers Dasein’s mode of being adaptable as a prerequisite for accepting the idea of participation and involvement as a sufficient means and facilitator for enabling work-integrated learning in situ. Here, work-integrated learning is thus seen as an outcome of being adaptable (both on the level of Dasein as well as on an organizational level) rather than being a prerequisite for being adaptable. Situations that afford this order are when work-integrated learning becomes an outcome of being adaptable through a continuous interplay between knowing the already known (e.g. being expert within one’s own domain of practice, such as tutoring) and learning the yet unknown (e.g. acquiring relevant knowledge for one’s own domain of practice). Learning the latter is however something that Dasein is not aware of until he/she has embodied the knowledge to the level where he/she can practice its relevance to work-related activities and tasks. Being adaptable to situations that cause change and which are afforded through active participation (e.g. in workshops, in the stage of building, intervention, and evaluation of technologies) is thus considered a necessity in order to generate a work-integrated learning outcome.
In light of this discussion, a duality of being adaptable and work-integrated learning incorporates the idea of adaptable learning as an integral part of work-integrated learning because adaptable learning is key to enabling and unifying work with learning (or vice versa). And by using the philosophical terminology of Heidegger (1962), an understanding of what work-integrated learning is, and how adaptable learning is related to it, is provided on an abstract level that completes the more practical insights of work-integrated learning in this research (e.g. supporting work-integrated learning though the ADR methodology). The philosophical discussion of this section not only demonstrates how concepts borrowed from Heidegger can be used to understand a duality of being adaptable and work-integrated learning, but also opens up for a discussion about kernel philosophy, which principally was presented as an outcome of this research’s third and final ADR cycle. I will thus in the next section elaborate further on the concept of kernel philosophy and discuss what bearing it has on the knowledge contribution of this research.

9.8 The Essence of Kernel Philosophy

Although philosophical theories (e.g. Habermas, 1984, 1987) can be used in IS research to analyze and make sense of technologies and their social impact (Lyttinen & Hirschheim, 1988; Ngwenyama & Lee, 1997; Janson & Cecez-Kecmanovic, 2005; Te’eni, 2011), they can also be used to inform humanly executed activities, such as design of information systems (Ehn (1988); Heng De Moor (2003)). In the case of this research, I have used philosophical theories (Habermas, 1984, 1987; Heidegger, 1962, 1977) to both analyze and discuss the relationship between adaptable learning and work-integrated learning (as provided in sections 9.5 and 9.6), inform the design process (Paper 3), and conceptualize presence in e-learning (Paper 4). I term such a body of knowledge as kernel philosophy, and in this section I will explicate the essence of this concept (what makes it significantly unique) from the perspective of its role and bearing on DSR in IS.

The concept of kernel philosophy was formalized as a learning outcome of the third and final ADR cycle of this research. Initially, I proposed the concept as a transcending body of knowledge that moves beyond the traditional notion of kernel theories (or justificatory knowledge) in DSR (Walls et al., 1992; March & Storey, 2006; Gregor & Jones, 2007), and which instead proposes philosophical theories that inform the design process of meta-solutions (e.g. constructs, design principles, design theories) in DSR. This was the initial proposal of kernel philosophy and its bearing on DSR in IS in particular. However, by considering how the philosophical theories of Habermas (1984, 1987) and Heidegger (1962, 1977) have been used for this research, as well as how other IS researchers (e.g. Ehn 1988; Ngwenyama & Lee, 1997; Heng De Moor 2003; Janson & Cecez-Kecmanovic, 2005; Te’eni, 2011) have incorporated philosophy in their research, it is reasonable to say that philosophy can be adopted and used sufficiently within IS research in general. Nevertheless, science and research in general cannot detach its enterprise and endeavors from incorporating an underlying philosophy (ontological and epistemological), whether it is positivism, interpretativism, pragmatism, phenomenology, eclectic combinations, etc., that governs subsequent research. Of course, one can argue that one hasn’t deliberately chosen a specific philosophy that governs his/her line of research, but that does not mean there is no underlying philosophy that incorporates his/her research, whether this concerns methodological and/or theoretical choices. Therefore, I argue that kernel philosophy is more than just philosophical theories that inform and support the design process of meta-solutions in DSR. Rather, I propose that the essence of kernel philosophy is constituted by three essential characteristics, depicted in Table 35.

<table>
<thead>
<tr>
<th>Essential Characteristic</th>
<th>Explanation and Rationale</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informing the design process of meta-solutions</td>
<td>Philosophical theories and concepts that inform, inspire, and motivate the design process of DSR artifacts on a meta-level, such as supporting the design process of meta-solutions (e.g.</td>
<td>Acknowledges that future uses and problems cannot be completely anticipated in the design process of instantiated artifacts (e.g. IT artifact). Rather, a meta-design (e.g. conceptualization) of meta-solutions (e.g. conceptual framework) enables a pre-stage design process that is informed by kernel philosophy and which</td>
</tr>
<tr>
<td><strong>Elucidation of significant traits</strong></td>
<td><strong>Providing an underlying rationale</strong></td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Philosophical theories and concepts that can be used for reflection and analysis (sense-making) of socio-technical phenomena, IT artifacts, and/or activities</td>
<td>A foundation of philosophical theories and concepts that constitutes an ontological and epistemological grounding for subsequent IS research</td>
<td></td>
</tr>
<tr>
<td>Helps clarify essentials (e.g. properties, features, mechanisms) of a particular artifact (instantiated or conceptual), such as an IT system or a design methodology, resulting in justifications of knowledge such as models or schematics (as for instance explicated by Hirschheim et al., 1996; Te’eni, 2011)</td>
<td>Provides an explicit and fundamental set of facts which help uncover justifications of why for instance a certain research approach was chosen to address a particular research phenomenon, or what the relations between chosen set of methodologies and theories are (as for instance incorporated by Sjöström, 2010)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 35. The essential characteristics of kernel philosophy**

The essential characteristics of kernel philosophy proposed in Table 35 not only address an alternative source of knowledge that moves beyond kernel theories in DSR, but also address more fundamental issues such as providing an underlying rationale for subsequent IS research or elucidating crucial traits of an artifact. In the case of the latter, prior research within IS (e.g. Ngwenyama & Lee, 1997; Janson & Cecez-Kecmanovic, 2005) demonstrate the use of philosophy in order to elucidate significant traits of IT systems through a process of sense-making. As an extension, philosophy can also be used to elucidate a significant trait of other kinds of artifacts, such as a particular methodology or theory. For instance, one of the significant traits of PADRE (described in Paper 2) is the trait of incorporating learning activities iteratively, through stages of planning, design, reflection, etc. Here, ‘iteration’ is thus considered as a significant trait of PADRE (as well as ADR for that matter) because it enables a repetitive development of knowledge, which is evaluated and tested through instantiated cycles of PADRE activities (e.g. reflection, evaluation).

The trait of providing an underlying rationale, on the other hand, emphasizes the foundational logic of a research project with respect to its ontological and epistemological enterprise. For instance, in the case of this research, I exhibited early on (in chapter 1) what the foundation of this research is, with an emphasis on its underlying philosophy as an eclectic combination of pragmatism and existential phenomenology. The foundation of this research is thus based on a rationale that exhibits the relationship between for instance pragmatism and DSR in IS, or phenomenology as an ontology for implementing in-depth interviews. Of course, from a pragmatic point of view, one is not fully obligated to choose a particular philosophy that justifies selections of theories or research methodologies. However, by providing a rationale, one creates transparency and logically justifies the research design, its underlying philosophy, and thus opens up for falsification of outcomes from a broad perspective. Sjöström (2010) exemplifies this issue clearly by explicating how a philosophical rationale affects the design process and design outcome.

Additionally, a philosophical rationale captures and provides centuries of ideas and thoughts concerning contemporary research phenomena, which have fundamentally shaped contemporary notions of for instance knowledge, learning, or design. Therefore, whether one chooses to deliberately provide a philosophical rationale or not, one is implicitly already relying for selections of methodologies, theories, etc. on prior ideas that stem from philosophical perspectives. An example of this is the ADR methodology, which relies on Action Research and Design Science Research, which in turn, relies on socio-cultural perspectives and pragmatism.
Finally, the first trait of kernel philosophy (informing the design process of meta-solutions) is a direct contribution to the DSR discourse. Through philosophical theories and concepts, meta-solutions (described thoroughly by Iivari, 2015) are informed through a meta-design that is supported by conceptual tools such as levels of abstraction, diagrams and topologies, or emerging thought experiments that are verified on a conceptual level. Examples of kernel philosophy that utilize this trait can be found in the first and last ADR cycle of this research, where the existential phenomenology of Heidegger (1962, 1977) and the pragmatic philosophy of Habermas (1984, 1987) were incorporated to conceptualize presence in e-learning (Paper 4), and to offer a meta-design for an open learning platform (Paper 3). Both contributions incorporated this research, which from a holistic perspective is research that contributes to the paradigm DSR in IS (among other domains of knowledge such as work-integrated learning).

A problematic perspective of this trait, however, concerns the actual process of incorporating philosophical ideas and theories into the design process of meta-solutions. There are no strict formulas that inform the process, partly because the issue of kernel philosophy has not been addressed by seminal DSR literature (e.g. Walls et al., 1992; Hevner et al., 2004; Gregor & Jones, 2007; Peffers et al., 2008), whereas other DSR literature (e.g. March & Storey, 2008; Sein et al., 2011; Gregor & Hevner, 2013; Iivari, 2015) has discussed the constraints of kernel theories in DSR. Kernel theories in DSR are per se constrained to inform the design of what Gregor & Hevner (2013) term Level 1 artifacts (e.g. instantiated IT systems), whereas an overarching need for informing the design of meta-solutions is becoming more and more relevant due to the increasing production of meta-artifacts in DSR (Iivari, 2015). Therefore, kernel philosophy is proposed in order to address this gap and offer a complement to kernel theories in DSR, which captures and problematizes problems from a fundamental meta-perspective and thus helps cast specific problems into a class of problems.

In order to demonstrate the use of kernel philosophy, I contextualize how it is used to inform the process of designing for adaptable learning (depicted in Table 36).

<table>
<thead>
<tr>
<th>Essential Characteristic</th>
<th>Explanation and Rationale</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informing the design process of meta-artifacts</td>
<td>- Typology of social actions (Habermas, 1984, 1987) - The notion of <em>Dasein</em> (Heidegger, 1962, 1977; Dreyfus, 1990)</td>
<td>Informed the design process of an open learning platform for social integration (Paper 3). Informed the process of conceptualizing <em>Digital Dasein</em> as a way of understanding and problematizing the essence of presence in e-learning (Paper 4)</td>
</tr>
<tr>
<td>Elucidation of significant traits</td>
<td>- Being adaptable - Iterative participation</td>
<td>Elucidated the mode of <em>being adaptable</em> as an implication of work-integrated learning and vice versa. Elucidated iterative participation as an essential trait of continuous learning that is supported through cycles of ADR (as illustrated in Paper 1 and Paper 2)</td>
</tr>
<tr>
<td>Providing an underlying rationale</td>
<td>- An eclectic combination of pragmatism and existential phenomenology</td>
<td>Shaped the epistemological and ontological grounding of this research and helped motivate crucial decisions concerning the selection of research approach, methodology, sufficient theories, as well as affecting the design process (both the design of meta-artifacts and instantiated artifacts)</td>
</tr>
</tbody>
</table>

Table 36. Kernel philosophy of designing for adaptable learning

One additional aspect to the kernel philosophy of designing meta-artifacts for adaptable learning concerns the actual design process, which has been governed through a philosophy that integrates learning with
work through iterative cycles of design and research activities. This particular philosophy combines (1) the Scandinavian tradition of design in IS research (e.g. Bjerknes et al., 1987; Ehn, 1988; Greenbaum & Kyng, 1991; Kensing, 2003) with (2) the underlying pragmatism of DSR in IS, through use of the ADR methodology (Sein et al., 2011). From the perspective of (1), active involvement of integration workers in subsequent ADR stages, has been a key aspect to establish sufficient work-integrated learning, which fosters a participatory culture (similar to what Billett, 2001 writes about) that defines learning as a socio-cultural process. And from the perspective of (2), iterative cycles of building, intervention, and evaluation of the instantiated artifact enabled distilling prescriptive design knowledge and learning outcomes into normative constructs of knowledge such as design guidelines, an information systems design theory for adaptable e-learning, and a methodological contribution that supplements the ADR methodology with a stronger emphasis on participation as a key component of PADRE (described in Paper 2). It is thus reasonable to conclude that the common methodological denominators for designing meta-artifacts (as well as an instantiated artifact) for adaptable learning, are based on an underlying philosophy that incorporates participation and iteration as essential traits that enable adaptable learning among heterogeneous groups of individuals (both practitioners and learners).
10 CONCLUDING REMARKS AND FUTURE RESEARCH

This research has contributed knowledge about designing for adaptable learning. One central conclusion that this research draws, is that designing for adaptable learning essentially means designing artifacts that support the learning processes of individuals that have heterogeneous worldviews with regard to each other and in correlation with society. By designing supportive artifacts, together with the individuals, rather than only for them, different worldviews intersect and exchange knowledge and ideas through engaging participation and involvement.

Additionally, this research has elucidated that consequences of fostering a participatory philosophy toward activities of design and research create tensions and paradoxes between colliding visions, which can be addressed through sufficient IS research and WiL.

Furthermore, this research has highlighted that it is essential to provide involved practitioners early insights about how new IT works and how it is relevant for their roles and responsibilities. Through sufficient WiL, the practitioners learn new IT as part of their evolving communities of practice, where domains of knowledge are gradually created through shared repertoire of resources and continuous process of learning.

Consequently, different knowledge can be shared between practitioners and researchers, through iterative cycles of design-oriented IS research. Sharing knowledge is also what this thesis does, by offering a methodological contribution, as well as a proof of concept that demonstrates how an instantiated artifact for integration work is designed and implemented to support adaptable learning.

The theoretical contributions of this research address the aspects of designing for adaptable learning, how to design for integration work, what makes designing for integration work significant, why to design for integration work, how to incorporate heterogeneity among practitioners and end-users through adaptable learning, and how to override constraints and limitations of integration work through alternative solutions that focus on mediating rich experiences of social phenomena.

Another contribution of this research concerns kernel philosophy. This research clearly shows the relevance of philosophy for IS research in general (through prior research) as well as the added value which philosophy offers for understanding complex phenomena of designing artifacts for adaptable learning. Furthermore, by incorporating kernel philosophy that provides an underlying rationale, subsequent activities of design and research are illuminted from their ontological and epistemological perspectives, which offers subsequent community of researchers a knowledgeable transparency and research foundation. Finally, this research clearly justifies philosophy as a sufficiently relevant discipline from which to adopt knowledge.

This research has several limitations that need to be mentioned and discussed further:

- First of all, one of the limitations of this research concerns the contribution of an information systems design theory for adaptable e-learning (Paper 1). The design theory is an outcome of one case only and is therefore not tested in multiple contexts or settings.
- Another limitation concerns the instantiated artifact: it has only been implemented in one organizational context of integration work, that is to say in the context of the civic orientation program. In order to validate the generalizability of how well the artifact addresses and supports challenges of integration work, the artifact needs to be tested in other realities of integration work.
- Another more crucial limitation has to do with the limitation of supporting integration work through civic orientation, which is heavily based on mediating facts about society. In order to address this limitation for future research, different kinds of technologies that support newcomers’ experiencing embedded phenomena of society (e.g. acts of democracy), need to be taken into consideration. In one of the additional papers (Haj-Bolouri et al., 2016d) that was produced during the second ADR cycle of this research, the idea of imparting social values of a
In order to realize such process of learning, Paper 4 stresses the need for designing open learning platforms that mediate situated experiences of relevant societal phenomena. By situated experiences, the authors (Haj-Bolouri et al., 2016c) mean experiences that are bound to the worldview of a specific society (e.g. Swedish society). Understanding the worldview through experiences of its embedded phenomena thus becomes a task for the designer to build proper prerequisites for. In the paper (Haj-Bolouri et al., 2016c), virtual reality technologies are identified as proper technologies to offer immersive experiences of society’s lifeworld, from a richer perspective than only providing facts through static content (e.g. text). The conceptual design of such an open learning platform is described in the paper (Haj-Bolouri et al., 2016c).

But in order to build solutions, future research needs to take essentially one major element into consideration, and that is the element of heterogeneity, which has, throughout this research, been proven to be an essential element of designing artifacts for adaptable learning. Additionally, in order to mediate experiences of society’s embedded phenomena — rather than only providing and discussing facts — immersive technologies such as augmented/mixed/virtual reality technologies are considered an appropriate choice for addressing the element of heterogeneity. Because experiencing a phenomenon comprises the possibilities of integrating and operating several modes of content, then only the current ones are illustrated through CollaborGeneous. Nevertheless, human beings are, as Heidegger (1962, 1977) argues, *Dasein* or *being-in-the-world*, meaning that we are always comporting ourselves through various modes of being and presence, in situations that are mediated and facilitated through everyday technologies. Additionally, considering human beings as not being heterogeneous, would be a mistake for humanity in general, because *Dasein* is evolving through its being all the time (e.g. aging, learning continuously, etc.). Therefore, designing artifacts for adaptable learning, means essentially to design supportive technologies for learning that are adaptable to the heterogeneity of human beings.

With the previous discussions in mind, along with the total work of this thesis, several questions for further research arise and may deserve further investigation.

- **Significance for other arenas of integration work**: How can the results of this thesis support other arenas of integration work? And how sufficiently would CollaborGeneous help integration workers that are situated in other arenas, organize and implement integration work?
- **Implementing adaptable e-learning**: Would it be possible to implement the design theory for adaptable e-learning for support of e-learning in higher education? What would the implications of such implementation mean for e-learning in higher education?
- **Practical implications**: This thesis has empirically exemplified that artifacts can be designed to support integration work, but does it support the actual integration of newcomers in their host society or not? And how can this research inspire adaptable learning in workplace settings other than the one provided in this thesis?
- **Methodological implications WiL**: How can other researchers from other interrelated disciplines of WiL use PADRE incorporate WiL-related research?
• **Philosophical implications:** In what ways does this research inspire further IS research to incorporate kernel philosophy? How does this research motivate further IS research to combine DSR in IS with philosophical contours of the Scandinavian school of IS research?
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Appendix
Kravspecifikation videokonferensverktyg

Projektet Närhet och distans utvecklar infrastruktur för distansundervisning i SO.

§ Ett videokonferensverktyg ska användas så att SO-lektioner kan ges via datorn. Deltagare på olika platser ska kunna se, höra och även själva delta muntligt i lektionen.

§ En informatör hos oss leder lektionen, som startar vid en schemalagd tidpunkt och sänds via webben för de deltagare som är anmälda till kurstillfället. Tillfället inleds med att man kontrollerar att alla hör och ser och är närvarande.


§ Alla deltagare ska kunna se och höra varandra under hela lektionen. (Olika stora fönster, om det är en eller flera i bild..?)

§ Powerpoint-slides, filmer, webb ska kunna visas samtidigt/växelvis som informatören pratar till deltagarna. Informatören styr vad som visas, antingen stor bild på honom/henne eller stor bild för slides/filmer.

§ Då och då ges tillfälle för deltagarna att diskutera en viss fråga (eller att göra en muntlig övning). Deltagare ska även kunna ställa frågor under lektionens gång ("raise your hand").

§ Informatören befinner sig i en studio/ ett tomt klassrum och pratar till kameran. eller

§ Informatören befinner sig tillsammans med några deltagare fysiskt närvarande i klassrummet, samtidigt som lektionen webbsänds.

§ Lektionen i sin helhet finns inspelad och tillgänglig för deltagarna att se efteråt som en repetition. Lektionen finns tillgänglig en viss tid, så länge kursen pågår för deltagarna i fråga.

§ Ett alternativ är att en lektion spelas in i korta (10-minuters) sekvenser, där innehållet är strukturerat så att det passer för ett antal delsekvenser. I detta fall spelas lektionen in enbart med informatören utan deltagare. Lektionssekvenserna kan användas för individuella självstudier och kompletteras med diskussionsuppgifter och övningar som kan göras on-line, antingen på egen hand eller lett av en informatör.

§ Även studiebesöksaktörer kan spelas in med videokonferensverktyget.
Hur sker närvarokontroll och godkännande av deltagande på lektion – enbart om deltagit i realtid?? Hur vi ska använda inspelade föreläsningar får vi ta ställning till.

I plattformen ska inloggning till videokonferensverktyget finnas (inbäddat?). Man ska ha tillgång till so-kursens alla delar och verktyg på samma ställe.

**Use cases** (användningsfall). Detta är ett mindre formellt och icke tekniskt sätt att samla krav i form av korta scenarier som beskriver hur användaren interagerar med systemet och hur detta förväntas bete sig i olika situationer. Dessa användningsfall bryts sedan ned i specifika krav (t.ex. kan ett enda användningsfall ge upphov till ett tiotal krav, både funktionella och icke funktionella).

- **Funktionella krav**
  - Informatören leder och styr distanslektionen, har kontakt med varje enskild deltagare. Informatören ger ordet till den som vill säga något och styr vad som visas i bild.
  - Informatören/klassrummet: Webbkamera (för både informatör och deltagare), konferenshållare (högtalare/mikrofon), bra belysning, projektor och skärm
  - Deltagare: Dator med webbkamera och mikrofon (headset). Konferenshållare (högtalare/mikrofon), projektor och stor skärm för grupp.
  - Chatfunktion?
  - Tillräcklig uppkopplingshastighet

- **Icke-funktionella krav (kvalitetskrav)**
  - Användarvänlighet: ovana dataanvändare ska kunna delta, liksom analfabeter.
  - Kapacitet: 5 distanslektioner per vecka, 3 timmars lektioner (kursen 60 tim totalt enligt förordningen) även för webblektioner?
  - Underhållbarhet?
  - Tillgänglighet?
Input från två första workshopen

Innehåll för fördjupningsmoduler

Under workshopen delades deltagarna in i två olika grupper för att definiera innehåll för bägge fördjupningsmoduler. Sammanlagt var vi 10 st deltagare, varav 8 st som delades upp i två olika grupper, med ytterligare en fördelning i varsin grupp, vilket resulterade i sammanlagt 4 olika grupper med 2 st personer i varsin grupp. Det bör även nämnas att olika deltagare hade olika uppfattningar kring användningsområdet av fördjupningsmodulerna. Vissa hade uppfattningen av att modulerna skulle användas som stöd i klassrumsmiljön tillsammans med informatörer, och övriga hade en distanssyn på modulerna, dvs för bruk av distansutbildning. Följande input samlades in under workshopen enligt den ovanbeskrivna fördelningen:

1. Grupp 1 & 2 – Fördjupningsmodul 1 (”Arbetsmarknaden – vägen till jobben”)
   a. **Hur når jag dit? – Söka jobb**
      i. Filmer där personer berättar om hur de sökte jobb och fick jobb.
      ii. Exempel på var jag hittar jobb (AF), samt hur jag använder hemsidan (AF)
   b. **Ansökningshandlingar**
      i. CV/Meritförteckning
      ii. Brev – hämta dit CV
      iii. Spela in din ansökan på film och skicka den
   c. **Skriv på ditt bästa språk**
      i. Att öva sig på att skriva CV
      ii. Exempel på CV
      iii. Exempel på brev
      iv. Text om förhållningssätt till CV
   d. **CV/Meritförteckning**
      i. Mina starka sidor (övning) – Man väljer 5 olika
egenskaper från en lista, därefter sparar man valen och ber systemet att profilera fram ett jobb

e. **Hur når jag dit? – Söka utbildning**
   i. Vad krävs för utbildning för olika yrken – länkar
   ii. Hur söker jag utbildning, olika vägar och olika skolor
      1. Länkar till hemsidor
         a. Antagnings.se
         b. Folkhögskola
         c. SFI
         d. Komvux
         e. Andra utbildningar
         f. Yrkesutbildningar
   iii. Vart vänder jag mig för att validera mina betyg och översättning av betygen.

f. **Vad vill jag jobba med?**
   i. Egenskapsprofilering – en funktion som profilerar olika yrken genom typiska egenskaper för dessa yrken
   ii. Gör intressetext genom olika språk
   iii. En deskriptiv illustration på hur en dag på jobbet kan se ut, där man efter illustrationen beskriver vad som krävdes för att få just det jobbet (utbildning, personliga egenskaper etc), samt varför man vill jobba med det jobbet (argument för och emot)
   iv. Filmer som visar olika yrken
   v. Mina kunskaper och erfarenheter, ambitioner samt praktiska tillvägagångssätt för att uppnå målen
      1. Verktyg för att systematisera ovannämnda
   vi. Andra erfarenheter som språk, datorkunskap, körkort
   vii. Formulär för att skriva mina utbildningar & yrkeserfarenhet, genom det språket som används (översättningsfunktion)

g. **Att förverkliga sina mål**
   i. Dela upp huvudmålet (det långsiktiga målet) i delmål (kortsiktiga mål som hänger ihop med det långsiktiga)
      1. Beskriva hur ett mål hänger ihop med ett annat, t.ex. studier och jobb, hur de hänger ihop, samt vad det finns för stödresurser som
kan hjälpa till för att realisera målen (t.ex. komvux, SFI, YH, Högskola, studievägledare etc)

ii. Arbeta med process-scheman för att mäta samt utvärdera hur mycket av sina mål man har realiserat (t.ex. en progressbar som indikerar antalet procentenheter man har klarat av)

2. Grupp 3 & 4 – Fördjupningsmodul 2 (“Föräldrarrollen“)
   a. Synen på barn historiskt i Sverige
   b. Barnets uppföstran och utveckling
   c. Familjen och samhället
   d. Rättigheter och skyldigheter – Lagstiftning
   e. Möjliga kulturkrockar för familjen i Sverige
   f. Barnets uppföstran och utveckling
   g. Barnuppföstran i Sverige och hemlandet
      i. Ppt-presentation (för specifikt detta tema Barnuppföstran i Sverige och hemlandet)
      ii. Bikupefrågor
         1. Vad vet ni om barnuppföstran i Sverige
         2. Fler frågor...
      iii. Diskussionsfrågor
         1. Vad betyder uppföstran för dig?
         2. Skillnader och likheter i Sverige kontra hemland?
         3. Osv..
      iv. Film om barnuppföstran i olika länder från Va’ med!

h. Barnets utvecklingsfaser
   i. Ppt-presentation om de olika faserna under barndomen
   ii. 4-hörnövningar
      2. Vad tycker du är viktigast att föräldrar ger sina barn när de är tonåringar? 1. Frihet och
självständighet 2. Kärlek och ömhet 3. Att de får det de vill ha (t ex en kärleksrelation, resa med kompisar, iPhone) 4. Eget förslag

iii. Strategier för olika beteenden hos ditt barn eller ungdom

1. Bikupefrågor/diskussionsfrågor
   a. Om ditt barn är aggressivt – slåss och bräkar – vad kan göra?
   b. Om ditt barn är blygt och inåtvänt – vad kan du som förälder göra?
   c. Osv..

2. Film: Vilka uppfostringsmetoder får jag använda i Sverige?

   i. FN's Barnkonvention
   j. Socialtjänstlagen
   k. Anti-agalagen
   l. Föräldrabalken
   m. Direktlänk till specifika lagar
   n. 4-hörns övning
   o. Skyldigheter som föräldrar, vårdnad, trygghet och gränssättning
   p. Likheter, skillnader mellan fostran i Sverige och hemlandet

q. Vem är ansvarig för god uppfostran?
   i. Föräldrar
   ii. Skolan
   iii. Samhället

r. Samhällets stöd till barnfamilj
   i. Socialtjänst
   ii. Förskolan
   iii. Skolan
   iv. Försäkringskassan
      1. Barnbidrag
      2. Föräldrapenning
      3. Bostadsbidrag
Definiera fördjupningsmodul

**Arbetsmarknaden**

Modulen består av utbildningsmaterial från de block som behandlar temat “Arbetsmarknad – Vägen till att få jobb i Sverige”. Tanken är att användaren skall kunna få arbeta med kunskapsrelaterade frågor som har med temat att göra. Detta genom specifikt utmålade scenarion och illustrationer som är förankrade i fenomenet. Konkreta frågor kopplade till specifika scenarion skulle kunna vara:

1. Hur skriver man ett CV?
   a. Förutsätter att man vet vad ett CV är för något.
   b. Länkar till befintliga webbresurser som beskriver detta.
   c. Länkar till befintliga webbresurser som illustrerar detta grafiskt med hjälp av bilder och videoklipp.

2. Varför är vissa CV:en ”bättre” än andra?
   a. Exempel på ”bättre” och ”sämre” utformade CV:en.
      i. En narration på hur ett ”bättre” CV ser ut, med en förklaring till varför.

3. Vad gör man med det färdigskrivna CV:et??
   a. Distribuerar det på webben
      i. Sociala medier
      ii. Arbetsförmedlingen
      iii. Referenser

Ovannämnda frågor och scenarion, skulle man kunna skapa ett logiskt flöde för, och illustrera interaktivt i fördjupningsmodulen. Med ett logiskt flöde menar jag att man kan exemplifiera hur processen ser ut. Till exempel så har man olika stationer med enskilda uppgifter. ”Stationerna” skulle kunna vara realistiska abstraktioner på processen ”att söka jobb i Sverige”. Naturligtvis finns det ju olika vägar att gå, men samtidigt kan man exemplifiera processen genom ett flöde med tillhörande övningar. Till exempel:

"Jag vill söka jobb"

Respektive block representerar en ”station”. ”Stationen” inkapslar relevant information med

**Use Case – Skriva och distribuera CV**

**Exempel – Skriva CV:** X vill skriva ett hållbart CV och distribuera det för att söka jobb. I fördjupningsmodulen finns det interaktiva övningar som stöder den här aktiviteten. X har dels tillgång till relevanta resurser för hur X skriver ett CV, och dels hur X distribuerar det. X vill dock uppleva hur man skriver ett CV, därför är X också intresserad av vad som är ett ”bättre” – respektive ”sämre” – CV. Fördjupningsmodulen tillhandahåller färdiga exempel på hur ett ”bättre” CV ser ut, i förhållande till ett ”sämre”. Med denna grundinformation tillhands, vill X nu skriva ett CV:

- **Scenario 1:** Verktyget tillhandahåller en mall i med obligatoriska fält som X måste fylla i för att CV:et skall bli godkänd.
- **Scenario 2:** Verktyget låter X skriva ett CV, för att sedermera bedöma kvaliteten på den.
  - I bedömningsfasen så visar man vad som var ”bättre”, respektive ”sämre”.
- **Scenario 3:** Verktyget uppmanar X att använda befintliga CV-mallar på webben för att skriva ett CV.
  - Länkar till CV-mallar

Genom att engagera användaren med hjälp av scenarion, kan också systemet ge klara bekräftelsen på användarens insats. Till exempel tänker jag mig att, systemet skall kunna utifrån användarens insats, bedöma vad han/hon bör förbättra på när han/hon skriver ett CV.

**Exempel – Distribuera CV:** Nu när X är färdig och nöjd med sitt CV, så vill X distribuera det för att söka jobb. Så därför undrar X hur X skall gå till väga för att nå ut till potentiella arbetsgivare. Grundinformation om de olika tillvägagångssätten illustreras i modulen genom befintliga webbresurser (t.ex. arbetsförmedlingen) Fördjupningsmodulen uppmanar X att göra övningar i detta:
• **Scenario 1:** Verktyget låter X distribuera sitt CV via sociala medier som exempelvis LinkedIn.
  o Stöd i *hur* man gör det illustreras i nåt format (video, bilder..).
  o Det här tillvägagångssättet exemplifierar även vad sociala medier är för något, samt vilken funktion de har i det här sammanhanget.
  o Man behöver inte specifikt låta användaren att distribuera sitt CV via LinkedIn eller liknande. Utan man kan skapa en miljö med tillhörande funktioner, för att illustrera själva processen.

• **Scenario 2:** Verktyget låter X distribuera sitt CV via arbetsförmedlingen sida, genom att låta denne söka ett fiktivt jobb.
  o Även här kan man ju undra ifall man vill söka ett jobb på riktigt, eller ifall verktyget ska tillhandahålla en miljö som exemplifierar flödet i hur man distribuerar CV:et.

Viktigt tror jag är att stolpa upp enskilda etapper i processen, så att tillvägagångssättet blir strukturerar och enkelt att följa för den nyanlände. På så vis kan skapa ett logiskt flöde i processen som är övningsorienterad.
<table>
<thead>
<tr>
<th>Innehåll för Fördjupningsmodul</th>
<th>Frågeställning/Innehållsfältet</th>
<th>Innehålförslag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hur är jag idag? - Sök jobb</td>
<td>Filmer där personer om hur de ville jobba och fick jobb</td>
<td>Exempel på var jag har jobbat (år), samt hur jag samlade erfarenhet med hjälp av aktuella erfarenheter och idag</td>
</tr>
<tr>
<td>Utvärderingsunderlag</td>
<td>År och årsperiod (till exempel: tidigare jobb eller studier) samt vilka ställen som kan bidra till en förverkligning amén</td>
<td>Per serietid bröv</td>
</tr>
<tr>
<td>Skriftlig beskrivning</td>
<td>Att se på på ett aktivt CV</td>
<td>Exempel på CV</td>
</tr>
<tr>
<td>Övning</td>
<td>Övning där man arbetar med en sista idag och att samlar och se på ett jobb som passar till en som valen</td>
<td>Exempel på CV</td>
</tr>
<tr>
<td>Vad vill jag jobba med?</td>
<td>Hur siktar jag utbildning i tid till aktuella eller antagande, se, fölibplikta, etc.</td>
<td>Vad värderar jag för att välja insättning och innehåll av beräkningen</td>
</tr>
<tr>
<td>Att förverkliga sina mål</td>
<td>Dela upp i mål med en detaljerad beskrivning hur man ska nå målet (t.ex. jobb och studier) samt vilka ställen som som kan bidra till att förverkliga målen</td>
<td>Arbetar med prosscheman för att mota samt utreda och erhållande av nya mål som man har redan ett</td>
</tr>
</tbody>
</table>
Anteckningar - Möte med innehållsproducent på enheten för Samhällsorientering

Del 1
Innehållsproducenten (IP) berättade idag att IP – tillsammans med tre personer till på enheten – ansvarar för innehållet av utbildningsmaterialet. Dock så är det IP som har arbetat mest med det och har den större rollen bland alla fyra. IP berättade att IP tidigare har arbetat som flyktinghandläggare, och fick jobbet som innehållsproducent genom att en av IP’s chefer ringde IP våren 2011 för att arbeta med dåvarande upplagan av boken “Om Sverige”. Det var upplaga 2 som IP tillsammans med Länsstyrelsen i VGR arbetade mest med. Som IP beskrev det så finns det material i olika format. Nedanstående bild visar kortfattat vilka format det finns idag:

- “Om Sverige ref. material” – det här materialet arbetar IP och Länsstyrelsen med. Dock så arbetar de från sitt håll och inte tillsammans, vilket gör att både enheten på SO och Länsstyrelsen äger det här materialet ihop. Det här materialet
är även det materialet som är tillgängligt digitalt och åtkomligt via inloggning. Boken släps vid slutet av året.

- **“Om Sverige kursboken”** – det här materialet samverkar också IP tillsammans med Länsstyrelsen om. Kursboken är i det här fallet den analoga versionen (fysiskt format) det som delas ut årsvis. Därför är det viktigt att innehållet är up to date innan de publicerar något. Rent praktiskt kollar IP på relevant statistik gällande något fenomen (ex. arbetslöshet, antalet ensamstående föräldrar) och korrigrar beroende på hur pass aktuell informationen i boken är och inte. Detta gör IP genom att titta på statistik från webben, alternativt kontaktas kunniga personer som kan ge IP de korrekta svaren. Boken släps vid slutet av året.


- **“Powerpoint-material”** – det här materialet sitter IP mest med och uppdaterar. Uppdateringar görs vid behov och inte systematiskt kontinuerligt.

Priomässigt är det kursboken som har prio gällande innehåll därför att det är tillgängligt för alla. Så därför måste den alltid vara uppdaterad innan den publiceras. Detta innebär också enligt IP att PPT-materialet måste vara synkad med innehållet i kursboken, och idag är det inte alltid så. Det sker med andra ord inga automatiska uppdateringar i det ena formatet i samband med uppdateringar i det andra.


**Del 2**
IP och jag satte oss ned för att prata om projektet, och IP’s roll i det hela, men också IP’s förväntningar och tankar kring det framtida systemet. Ett starkt önskemål som IP (inklusive andra har gällande systemet) är att man skall ha ett lagringsutrymme för utbildningsmaterialet (kursboken, ppt-materialet och bakgrundsmaterialet). Konkret så vill man inte distribuera materialet i olika foldrar på olika klienter. Utan man vill ha en källa att arbeta i, uppdatera och kollaborera kring materialet. Vidare så talade vi om administratörernas roll i systemet – där även IP kommer att ingå – och deras uppgifter. Till exempel så pratade vi om önskemål kring att de själva ska kunna administrera utbildningsmaterial och publicering av det i systemet. Och då kom vi in på definitioner kring systemet, samt antalet lager som eventuellt systemet kommer att bestå av, och administratörernas roll I det hela. Nedan beskriver jag de olika lager (som även vi i HV-gruppen har pratat om) som vi pratade om:

- **Första lager** – kodning och systemering av gränssnitt i systemet. Det här lagret berör i första hand oss som levererar systemet, därför att det är vi som skapar en grundstruktur i systemet.

- **Mellanlager** – administration och publicering av sidor. Det här lagret interagerar administratörerna med, där de skapar instanser av sidor utifrån befintliga mallar. Man kan tänka sig att varje sida tillhandahåller relevant utbildningsmaterial för informatörerna som de sedan använder för deltagarna. Detta skapar krav för stöd i kommunikationsprocessen mellan informatörer och administratörer i systemet.

- **Tredje lager** – det sista lagret är lika med gränssnittet utåt gentemot deltagarna. Detta är med andra ord själva resultatet av det som administratörerna instansierar.

Med ovanstående som bakgrund kring det vi pratade om, så poängterades det dock extra mycket att det vore väldigt tacksamt ifall de som är involverade i uppdateringsprocessen av utbildningsmaterialet, kan interagera med materialet i ett och samma lagringsutrymme, och inte flera.
En tidig systemvision

Nedan följer nu en del konceptualiseringsförslag på den "systemvision" som vi (projektgruppen) tagit fram. Konceptualiseringen är på en abstrakt och övergripande nivå, där jag mer eller mindre gör en ansats i att förklara hur de olika delarna i visionen hänger ihop, men också vilken roll respektive del har för sig. Jag börjar med att presentera x-antal definierade användargrupper och systemelement, som modellen sedermera skall kunna inkapsla och tillhandahålla stöd för.

Användargrupper
- Samhällsinformatörer (SI)
- Utbildningsdeltagare (UD)
- Contentmanager (innehållsproducent) (CM)
- Verksamhetsenheter

Systemelement
- Administrationsgränssnitt (ADMINGUI)
- Användargränssnitt för utbildningsdeltagare (USERGUI)

Användarfall/Genomförandemodell
1. Klassrumsundervisning
   o Stöd av IT
2. Distansundervisningsmodeller
   o Videokonferens
   o Inspelade videoföreläsningar
3. Frivillig fördjupning
   o Fördjupningsmoduler
Use Cases

**Exempel 1:** SI undervisar UD i block 7 & 8 som handlar om "Arbetsmarknaden i Sverige". SI använder digitala medel för att exempelvis illustrera hur en person i Sverige går tillväga när han/hon skall söka jobb. I det här fallet blir IT-artifakten ett stöd för att illustrera scenarion som har med arbetssökande att göra. IT-artifakten kan till exempel illustrera scenariot via:

- Inspelade videoklipp
- Bildspel
- Interaktiv miljö
- Internet

**Exempel 2:** En grupp UD är intresserade av att fördjupa sig själva i block 7 & 8. UD surfar till gränssnittet där de kommer åt modulen. Gränssnittet instansieras utifrån en definierad mall med avsedd utbildningsmaterial för UD. Utbildningsmaterialet – som kan vara en fördjupningsmodul, tematiserade block etc. - kommer sedermera UD åt via gränssnittet. Detta tillvägagångssätt ställer krav på följande premisser:

- Befintligt utbildningsmaterial för block 7 & 8 bör finnas och vara up to date.
- En request från UD om att de vill ha tillgång till
fördjupningsmodul bör behandlas.

- Request behandlas av till exempel SI, som instansierar ett gränssnitt utifrån en befintlig mall, med en definierad struktur för utseendet.
- UD får sedan tillgång till gränssnittet via användaruppgifter.

Exemplet ovan ställer krav på en systemmodell som är flexibel och öppen (till skillnad från slutna system). En flexibilitet mellan hur aktörer (samhällsinformatörer, systemadmin..) skall kunna hantera och kollaborera kring utbildningsmaterial bör systemet finna stöd för. Till exempel kan man tänka sig att övriga aktörer också på sikt vill ha tillgång till samma kollaborationsyta som de lokala aktörerna. Dels för att gynna principen av återanvändning, men också för att komplettera befintligt. En konceptualisering med tillhörande element av det här tänket skulle på en övergripande nivå se ut som följande:

Portalen tillhandahåller två stycken huvudsakliga gränssnitt. Ett för administratörer av den informationen (blockmaterial, fördjupningsmoduler etc) som exempelvis SI använder och kollaborerar kring. Samt ett gränssnitt för slutanvändaren, som i det här fallet är lika med en deltagare.
Utvärdering av CollaborGeneous

1

Övergripande

1. Har du använt systemet?

1.1 Om Nej, Varför har du inte använt systemet?

Jag har hursomhelst använt systemet väldigt lite. Just nu har jag ingen grupp.
Har testat systemet och Planerat att använda den efter studiebesök veckor.

2. Upplever du att systemet uppfyller dina förväntningar

Följdrågor

2a. Vilka funktioner i systemet bidrar till din upplevelse?

a. Ja fullt ut 5 36%
b. Ja lite grann 6 43%
c. Vet ej 1 7%
d. Bristfällig 2 14%
e. Absolut inte 0 0%

Ja 13 93%
Nej 1 7%
N/A 0 0%
Eftersom jag är inte van att använda programmet hela tiden så har jag inte höga förväntningar av portalen....
Att det skall vara lätt användbar eftersom det är nyanlända som är huvudanvändare. alla funktioner bör utgå från det pedagogiskt och didaktiskt som redskap Liknar den gamla Powerpoint program som används just nu.
Kommunikationen i olika ställe samtidigt översättningsfunktionen är kass och skapar förvirring och missförstånd hos den som använder informationen Allt som finns under Information om Sverige. Roligt att se att det finns något på spanska, på "riktig" spanska.
När jag behöver söka information om ämnet som jag föreläser om så går det fort och enkelt.
Det är inte färdigkonstruerat och påfyllt med innehåll ännu De hjälper mig att jag hittar svaret i några frågor via systemet Det kan man lägga till nya sidor och spela in nya filmer.
Det är tydligt men lite för litet utbud, bör finnas med fler bilder, fler länkar, mer kommentarer, chatforum mm.

2b. Tror du att systemet kommer att uppfylla dina förväntningar?
Det tror jag. Det kommer att bli ett mycket användbart verktyg.
Om inte skapas en bättre översättningsfunktioner då det är bara det svenska som lämpligt att använda.
Det kommer att uppfylla.
Jag hoppas det, behöver nog använda den mer för att lära mig mer om detta.
JA
Ja
Ja så småningom uppfylls mina förväntningar
Ja.
ja

2d. Vilka funktioner saknar du i systemet?
Det att hur man sparar filer...
just vet ej. Måste använda några gånger i klassen!
länkar till funktioner i plattformen bör förbättras utifrån en pedagogiskt perspektiv vilket kräver närmare samarbete med varandra.
Inga just nu då jag bara har hunnit använda systemet en gång.
Det är svårt att svara på frågan. För mig är det bara begynnelsen. Jag önskar mig uppdaterad information som är enkel att förstå.

Det är för tidigt att bestämma sig nånting.
ja måste ha mer filmer
Vet ej
Ja det är bra att man har korta filmer

2e. Hur skulle systemet ha konstruerats istället?

inga kommentar.

Just nu vet jag inte

Jag vet inte.

Just nu kan jag inte lämna några kommentar. Skicka gärna samma enkät om ett par veckor efter användning.

det är bra

3. Hur har du använt systemet?

Koordinator 2 14%
Informatör 8 57%
Administratör 2 14%

Dina erfarenheter

Beskriv din erfarenhet av IT-system och datorer rent generellt

Hög 5 36%
Normal 8 57%
Lite 1 7%
Vet ej 0 0%

Beskriv dina tidigare erfarenheter av IT-system som stöd för lärande
Hög 5 36%
Normal 6 43%
Lite 3 21%
Vet ej 0 0%

Övriga synpunkter

Jag hoppas att det ska funka mycket bättre i framtiden.

Bra. Förväntar mig att det kommer att bli ett bra verktyg.

Det fungerar jätte bra med det

Ja jag är nöjde med den systemet

Några enstaka samhällsinformatörer som jobbar mycket här samt som har kunskap och erfarenhet inom IT borde varit med redan från början för att delge sina synpunkter. Om man kan koppla SODA till Portalen på något sätt vore det bra, t.ex. så att samh.info kan se sina scheman när de loggar in.
Utvärdering av CollaborGeneous

2

Övergripande

1. Har du använt systemet?
1.1 Om Nej, Varför har du inte använt systemet?
Har inte fått någon grupp i systemet

2. Upplever du att systemet uppfyller dina förväntningar

Följdrågor

2a. Vilka funktioner i systemet bidrar till din upplevelse?

a. Ja fullt ut 2 33%
b. Ja lite grann 3 50%
c. Vet ej 1 17%
d. Bristfälligt 0 0%
e. Absolut inte 0 0%

Ja 5 83%
Nej 1 17%
N/A 0 0%

Vet ej

2b. Tror du att systemet kommer att uppfylla dina förväntningar?
Jag tror det kommer att bli mycket bättre när vi jobbar vidare med det.
Tvetsamt. Det är inte mina förväntningar som ska uppfyllas, utan samhällsinformatörernas (som ska använda det), och där tror jag det blir mycket arbete för väldigt lite.
Vet ej
Ja, se ovan.
ja, det tror jag
Ja, från det jag har sett är systemet mycket bra.

2d. Vilka funktioner saknar du i systemet?
Bättre översättningsfunktion
Inga som jag kan komma på nu.
Samlingsställe för allt material.
vet ej

2e. Hur skulle systemet ha konstruerats istället?
Användarbaserat. Mer som en mindmap där undervisningens olika delar hänger ihop.
vet ej
Det vet jag inte.

3. Hur har du använt systemet?
Dina erfarenheter

Beskriv din erfarenhet av IT-system och datorer rent generellt
Beskriv dina tidigare erfarenheter av IT-system som stöd för lärande

Övriga synpunkter

Oerhört rörtig ang. vad som ska göras, vem som ska göra det, hur, när och varför.
Det saknas t.ex. beskrivning av HUR samhällsinformatörerna ska använda plattformen.
Bra jobbat!
Koordinator 2 33%
Informatör 2 33%
Administratör 2 33%
Hög 2 33%
Normal 4 67%
Lite 0 0%
Vet ej 0 0%
Hög 2 33%
Normal 3 50%
Lite 1 17%
Vet ej 0 0%
Tidigare avhandlingar – Arbetsintegrerat lärande

1. THOMAS WINMAN Transforming information into practical actions A study of professional knowledge in the use of electronic patient records, 2012.

8. ANNIKA ANDERSSON In case of emergency Collaboration exercises at the boundaries between emergency service organizations, 2016.

9. MARIE WESTERLIND Knowing at work A study of professional knowledge in integration work directed to newly arrived immigrants, 2016.


14. MONIKA HATTINGER Co-constructing expertise competence development through Work-Integrated e-Learning in joint Industry-University Collaboration, 2018

Designing for Adaptable Learning

This thesis invites the reader to experience an intriguing journey about designing for adaptable learning. A body of knowledge is consequently produced and provided to guide the reader into the particular widths and depths of designing for adaptable learning. Designing for Adaptable Learning ultimately means, designing solutions that address and incorporate the heterogeneous worldviews of human beings and society. Challenges of designing for such endeavor are embedded within the tension field of understanding the aspects of designing for integration work. In turn, integration work is a professional practice that aims to support the integration process of newly arrived immigrants in society. The empirical inquiry of designing for adaptable learning is thus situated within the context of designing for integration work. Consequently, designing for integration work is addressed as a special case of designing for adaptable learning in general.

In order to problematize and illuminate the aspects of designing for adaptable learning, this thesis situates and operationalizes design as a process of bridging practical inquiries with an academic body of knowledge, which in turn, enables work-integrated learning and thus facilitates integration work as a professional practice.

Additionally, this thesis adopts the philosophical ideas and theories of Jürgen Habermas and Martin Heidegger, to mediate an epistemological and ontological inquiry about the interrelated phenomena of designing for adaptable learning. Such phenomena include presence, heterogeneity, being adaptable, learning, work, worldviews, and their bearing toward designing for adaptable learning.

A word of advise to the reader is thus to, smoothly approach the essential story of this thesis from the outlined perspectives above, and understand the core contribution of this thesis as a body of knowledge that essentially contributes to the research domains of Information Systems and Work-Integrated Learning. Finally, I encourage the reader to enjoy this intellectual journey and contemplate a reflective learning experience that enriches a unique understanding about the meaning of designing for adaptable learning.

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