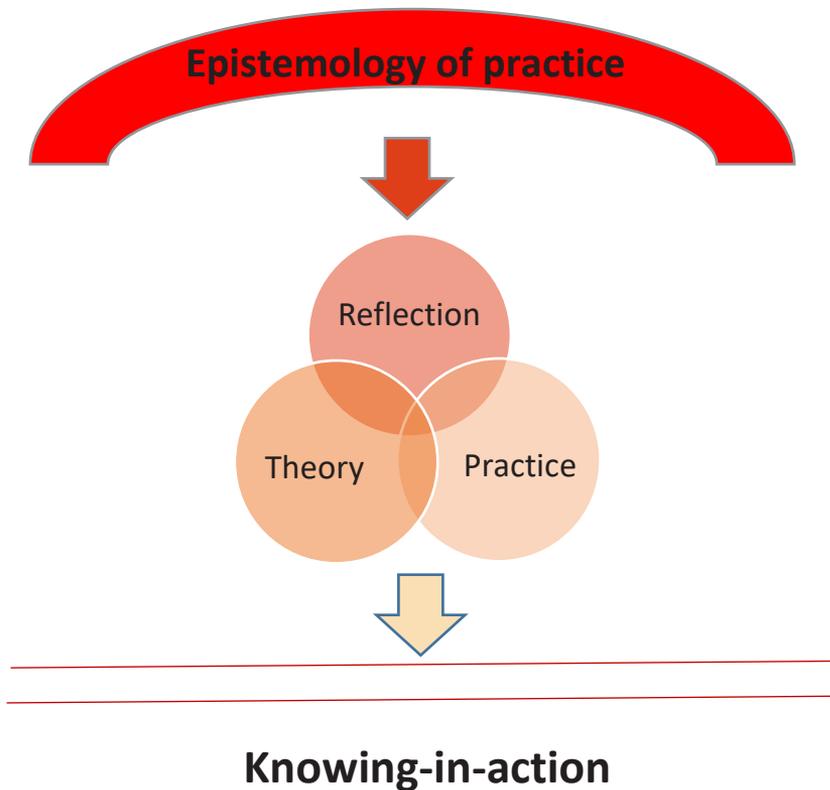


Epistemology of practice and its consequences in practice

Educating for knowing-in-action in working life

Marie Moström Åberg



Mälardalen University Press Dissertations
No. 343

**EPISTEMOLOGY OF PRACTICE AND
ITS CONSEQUENCES IN PRACTICE**

EDUCATING FOR KNOWING-IN-ACTION IN WORKING LIFE

Marie Moström Åberg

2021



School of Health, Care and Social Welfare

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Akademisk avhandling

som för avläggande av filosofie doktorsexamen i arbetslivsvetenskap vid Akademin för hälsa, vård och välfärd kommer att offentligen försvaras fredagen den 29 oktober 2021, 10.00 i Delta samt via Zoom, Mälardalens Högskola, Västerås.

Fakultetsopponent: Professor Camilla Thunborg, Stockholms universitet



Akademin för hälsa, vård och välfärd

Abstract

Education and competence development are of increased interest in today's society and organizations, to increase the wellbeing, lifelong learning, and mobility of the labor force, and contribute to companies' global competition. As a consequence, formal and informal education is growing. However, there are dilemmas when developing professional competence e.g. bridging the gap between theory and practice, trying to increase employability in higher education, and the degradation of professionals' knowledge. These dilemmas can partly be due to epistemology and the difficulty to act in accordance with one's epistemology. Previous research has presented Technical Rationality (TR) as the cause of the problems and an epistemology of practice as an alternative approach.

The aim of this thesis is to contribute to a deeper understanding of a holistic epistemology, i.e. what an epistemology of practice is, and its consequences for the view of professional competence and educational design in different contexts. Beyond this, the aim is also to analyze the quality of learning needed to reassess one's epistemology. The theoretical framework is based on Schön's work on epistemology of practice, the competence of a professional i.e. knowing-in-action, and educational design i.e. the reflective practicum. Mezirow's theory of Transformative Learning (TL) is used to analyze the quality of learning.

The four included studies are used as examples of different educational situations in different contexts; in Studies I and III how managers in a research intervention learn to become enabling managers, in Study II, how pupils in a vocational school are learning to minimize work environment risks in their future work, and in Study IV how HR students learn to foster collective learning within organizations.

The results show the importance of being aware of one's epistemology, and to act according to it. From an epistemology of practice approach, the overall conclusion is that adding practice is not enough, it is important to balance theory, practice, and reflection to enable knowing-in-action. The role of the teacher/supervisor to handle both theory, practice and reflection using reflection-in/on-action and coaching strategies such as joint experimentation, follow me and hall of mirrors to enable knowing-in-action is emphasized. The design of an education needs to be adapted to the participants' former experiences and access to work practice. To enable reassessment of epistemology, TL is proposed, since a quality of learning which enables deep learning is needed.

To my family

List of Papers

This thesis is based on the following studies, which are referred to within the text as “Study” followed by the relevant Roman numeral.

- I Backström, T., Moström Åberg, M., Köping Olsson, B., Wilhelmson, L., & Åteg, M. (2013). Manager’s task to support integrated autonomy at the workplace: Results from an intervention. *International Journal of Business and Management*, 8, 20–31
- II Andersson, I., Gunnarsson, K., Rosén, G., Moström Åberg, M. (2014). Knowledge and experiences of risks among pupils in vocational education. *Safety and Health at Work*, 5(3), 140-146
- III Wilhelmson, L., Moström Åberg, M., Backström, T., Bengt, K. O. (2015). Enabling transformative learning in the workplace: An educative research intervention. *Journal of Transformative Education*, 13(3), 219-238.
- IV Åberg, M. M., (2021). Contextual preconditions to foster transformative learning: A recursive process, activity and core elements. *Journal of Transformative Education*, (In press)

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Abbreviations

TL	Transformative Learning
TR	Technical Rationality
WIE	Work Integrated Education
WIL	Work Integrated Learning

Introduction

This thesis concerns epistemology, in other words the theory of knowledge. Epistemology studies what knowledge is, the sources of knowledge and its structure (Steup & Ram, 2020). There are different types of epistemologies and in this thesis the focus is on epistemology of practice: firstly, its consequences for our view of what professionals' competence in working life consists of, here termed knowing-in-action or discretion; and, secondly, what consequence an epistemology of practice has for the design of formal education to develop professional competence in different contexts.

With its focus on learning and working life, this thesis is written within the context of work life science, which studies work as a technical and social process, and the conditions and opportunities in working life from the perspective of the individual, workplace, organization, and society. Work life science is an interdisciplinary subject and this thesis uses mainly a working life pedagogical perspective. Working life pedagogic focuses on learning in working life, e.g. competence development, leadership development, and learning in working life (Ellström et al., 2005; Gustavsson & Thunborg, 2016; Nilsson, 2003; Söderström, 2011).

The research problem and rationale of the thesis

During the recent decades, there has been an increasing interest in learning and development in organizations, from individual, organizational and societal perspectives. From an individual perspective, opportunities for development and learning, as well as the experience of competence, are important for well-being (Eriksson & Dellve, 2020; Åteg et al., 2004). From a work environment perspective, learning was highlighted as an important factor for sustainability for both the individual and the organization (Abrahamsson & Johansson, 2013). From an organizational perspective, the starting point was Senge's (2006) call for a learning organization in 1990, and since then research about learning within organizations has continued to grow both as a research area and an important issue for organizations (e.g. Cuffa & Steil, 2019; Dixon, 2017; Döös et al., 2015; Ellström & Ellström, 2018; Gustavsson & Thunborg, 2016; Lyman et al., 2019; Tynjälä, 2013). From a societal perspective, the term lifelong learning has since the 1990s been used to emphasize the need for continuous learning throughout an individual's lifespan (c.f.

Ellström et al., 1996; European Parliamentary Research Service, n.d. ; Swedish National Agency for Education, 2000). Lifelong learning includes adult education which occurs in the regular education system e.g. higher education and municipal adult education (European Parliamentary Research Service, n.d.), and outside the regular system such as competence development organized by private educators. Learning can also take place informally at the workplace (Statistics Sweden, 2018; Swedish National Agency for Education, 2000). On a national level, lifelong learning and adult education has been a focus for the Swedish Government and the Parliament (SOU 2000:28; Swedish Ministry of Education, 2017/18:204, 2020) to increase mobility and lifelong learning of the labor force and contribute to companies' global competition. For example, today in Sweden, the social partners, i.e. trade unions and employer associations, have agreed on the suggestion for a new support organization for education and competence development (Ds 2021:16) and for a new system of financial support for studies (Ds 2021:18). The focus on learning is visible in higher education where the increasing number of students graduating from a Swedish university has gone from 5,277 in 1960 to 84,142 in 2020 (Statistics Sweden, 2020).

In this context where learning and education are of increasing interest, there is a concern about the gap between theory and practice, the requirement of employability, and degradation of professionals. Regarding the gap between theory and practice, during the last 50 years a trend to make professional education more theoretical at the expense of practice has been seen. This has resulted in a gap between the expectations of academics and practitioners which in turn affected the quality of education (Josefson, 2011). To bridge this gap, a new university law came into force in Sweden in 1992 (SFS1992:1434). It was declared that university education would have a scientific *or* artistic foundation and proven experience. However Josefson (2001) argues that proven experience was never properly defined and it appears not to have been evaluated; thus, the impact of the introduction of the concept seems uncertain. Josefson (2001) questions whether the universities' view of knowledge needs to be developed to create a context where different forms of knowledge could meet. This gap between theory and practice has been discussed and formed the basis for many research approaches, e.g. in Swedish thesis writing (Broberg, 2014; Gustavsson & Thunborg, 2016; Sigrell, 2006), and under the umbrella of Work Integrated Learning (WIL). WIL is an international movement focusing on overcoming the gap between theory and practice with the aim of integration (Billett, 2011; McRae & Johnston, 2016; Patrick et al., 2008; Zegwaard et al., 2019).

Improving employability was one of the original prioritized goals in the Bologna process (European Higher Education Area, n.d.), and a prioritized goal within the period 2011-2020 where the proposal to meet this requirement was by offering workplace practice within education programs (Swedish Council for Higher Education, 2021, Mars 19; Working Group on

Employability, 2009). Earlier, Riksrevisionen (Swedish National Audit Office, 2009), had reviewed a number of universities in Sweden and concluded that the connection to working life was not ensured as there were great differences between educational programs and shortcomings in internal follow-ups. Further, students received insufficient information about working life, and the responsibility for guidance was unclear (Swedish National Audit Office, 2009). To enhance employability is also a goal within WIL where several studies have focused on graduates' competences (Coll & Zegwaard, 2006; Purdie et al., 2013; Rowe & Zegwaard, 2017).

Concerning degradation of professionals' knowledge, as early as the 1980s the alarm was raised concerning the competence of professionals being downgraded within organizations and that that competence was reduced to the application of theoretical knowledge. This view came from Technical Rationality (TR), where the only knowledge which counts came from randomized studies i.e. quantitative, statistically generalizable knowledge (Schön, 1983). According to several references, this degradation seems to be relevant even today but within other contexts. Today, the blame is not on TR, but on New Public Management (NPM) which argues for the following of routines, checklists, and standardization (Alm, 2015; Bejerot et al., 2015; Björk et al., 2013; Evetts, 2009; Lauri, 2016; Ponnert & Svensson, 2016), but also in some ways on the requirement for evidence-based practices which could result in a degradation, where one risk is that professional discretion could be negatively affected (Johansson et al., 2015; Lauri, 2016). Regarding evidence-based practice, there seems to be different views of what this is; on the one hand, accepting only knowledge from randomized studies as in TR, and on the other hand that this knowledge should be combined with other sources of knowledge such as experiences of practitioners and clients (Johansson et al., 2015). For example, the National Board of Health and Welfare (Swedish National Board of Health and Welfare, 2020) describes evidence-based practice as the conscious and systematic use of the best available knowledge, combined with a person's experiences and wishes, a person's situation and contextual circumstances, and the expertise of the professional. At government level, it is noticeable that there is a desire to upgrade professional competence which is most clearly seen in the Trust Reform, where trust-based governance is proposed (SOU 2018:38; SOU 2019:43).

The questions about the theory-practice gap, the requirement of employability, and degradation of professional competence can all be connected to epistemology, the theory of knowledge, and especially the hitherto dominant epistemology of TR. However, there are different epistemologies with different views of what professional competence is and how education could be designed to enable this competence. As an alternative, an epistemology of practice, was developed (Schön, 1983) which aims to bridge the theory-practice gap, increase employability and upgrade professional competence. Schön developed a holistic theory including epistemology, the view of professional

competence and education design (Schön, 1983, 1987) which has been followed by others (e.g. Corradi et al., 2010; Gherardi, 2011; Kinsella, 2009; Raelin, 2007). However, after Schön, there are few or no examples of research and theory development with this holistic view. Regarding epistemology, among the followers the focus has often been on philosophical discussion about epistemology (e.g. Kinsella, 2009; Molander, 2015; Raelin, 2007; van Manen, 1995), with few empirical studies (e.g. Cook & Wagenaar, 2012; Grisham, 1992; Thomson et al., 2014). When empirical studies were conducted, they were case studies, with no possibility to compare different cases. Regarding the view of professional competence, the line of thinking that professional competence is more than just theoretical knowledge is emphasized also by work-life researchers (e.g. Göranson, 1983; Göranson, 1991; Göranson et al., 2006), philosophers such as Bornemark (2018, 2020) who argue for a revival of *omdöme* (in English: discretion) which Molander (2011) describes as *skön*, pedagogues such as van Manen (1995) who call it *pedagogical tact* within teachers. When it comes to education design, Schön's thoughts about the reflective practicum, a realistic intermediary place where the student is able to practice in a safe place in reality but still in the classroom (Schön, 1987), little is explored. Instead, the focus has been on work-based practice (Patrick et al., 2008) and reflection (e.g. Anderson, 2019; Fragkos, 2016; Griggs et al., 2018; Korkko et al., 2016). However, the connection to epistemology is weak (e.g. Gray & Siegel, 2014; Rico et al., 2012; Zhu, 2011). Further, work-based practice is resource intensive and during the COVID19 epidemic the difficulties with finding workplaces has increased leading to the need for alternatives (Kay et al., 2019; Zegwaard et al., 2020).

In recent decades a call for an epistemology of practice has increased (Alsterdal et al., 2009; Corradi et al., 2010; Raelin, 2007; Russell & Martin, 2017). However there are indications of situations where the stated vision is an epistemology of practice, but in practice one acts according to the opposite (Birbirso, 2012), or uses the concepts or methods from an epistemology of practice but without integrating the whole meaning (Corradi et al., 2010; Geiger, 2009; Ng et al., 2015). This indicates that it may be hard to change one's epistemology. However, there are few studies which examine the quality of learning needed to enable a change of epistemology which are also expressed in action.

In this thesis, I have studied three educational situations in different contexts: a university course for HR students with the aim of learning to foster collective learning within organizations; pupils at vocational schools with the aim of learning to reduce work environment risks; and, managers in a research intervention with the aim of learning how to act as an enabling leader. In all these educational situations, the focus has been on learning competences which could be used in practice. However, the courses have different preconditions, different contexts, and different conscious or nonconscious methods to bridge the gap between theory and practice. Therefore, in this thesis, I will

use these studies as examples of educational situations which in different ways and contexts have tried to bridge the gap between theory and practice and increase employability.

Structure of the thesis

This thesis consists of six sections. The next section presents the aim of the thesis. This is followed by a presentation of previous research regarding epistemology of practice, the view of professional competence, the consequences of the epistemology for educational design and pedagogical theories which show why it may be difficult to change the epistemological perspective. Thereafter, the conceptual framework is presented, and the analysis tool is developed: epistemology of practice, pedagogical methods in line with an epistemology of practice, and adult learning theories. This is followed by the empirical studies, i.e. a discussion of methodological considerations together with a summary of the included studies and their specific contributions to the thesis. Next, the results from the included studies are analyzed through the conceptual framework of the thesis. Finally, the analysis is discussed, and conclusions drawn in the form of a “thought model”.

Aim of the thesis

Overall aim

The overall aim of this thesis is to contribute to a deeper understanding of a holistic perspective on epistemology, i.e. what an epistemology of practice is, its consequences for the view of professional competence in working life and for how education may be designed in different contexts. The aim is also to contribute to a deeper understanding of what quality of learning is needed to change the practice in line with the epistemology.

Specifically the aims of the included studies are:

- I. To analyze if training first line managers in the enabling managerial task may lead to changes in the work of subordinates.
- II. To identify the knowledge and experiences which pupils of vocational school gather concerning potential work environment risks in their future employment.
- III. To discuss the potential of an educative research intervention to influence the quality of the learning outcome in the workplace as interpreted from the perspective of adult learning theory.
- IV. To deepen the understanding of how teachers can create contextual preconditions to foster Transformative Learning (TL).

Definitions

In this thesis, there are some concepts which need to be defined to clarify the content.

Concepts concerning formal and informal education

Education can be divided into formal and informal where formal education involves courses in the regular education system (i.e. the university, vocational university, municipal adult education or folk high school), and informal education which are organized outside the regular education system, e.g. by

private education organizations, employers or consultants (Statistics Sweden, 2020). Compared to this, Nilsson (2003) divides between adult pedagogics within the education system and working life education and training in working life which is located at the workplace but also includes what Statistics Sweden (2020) calls informal learning i.e. consultants and private education. A narrower definition of staff development is to only include education and learning in working life which lack overall objectives set at a national level, do not have any uniform control instruments such as curricula, are not subject to supervision, and are financed in varying ways (Nilsson, 2003). In addition, there are different concepts describing what kind of education is being undertaken: adult pedagogics, adult education, adult learning, skills development, skills training, human resource development, staff development, vocational training, vocational education. It is also problematic when translating these concepts, since there are in some cases different meanings and values of the words in different languages.

In this thesis three different forms of education are investigated, and are defined as follows:

- Studies I and III: A research intervention for managers defined as informal education as it does not have any unified objectives or curriculum and it is financed by a research funder. I will use the concept competence development in this case.
- Study II: Vocational education at upper secondary level defined as a formal education, and I will use the concept vocational education. I am aware that this should not be counted as adult education as it is at high school level. However, in this thesis I will use it as an example of practice-based education.
- Study IV: A university course for HR-students also defined as a formal education, and in this case I will use the concept adult education.

Pupils, students, or participants

Different concepts are used to describe the participant in different forms of education. In compulsory and vocational schools they are called pupils, in universities students and in informal education e.g. participants. In this thesis I will use the following concepts.

- *pupil* when discussing the participants in Study II, since they are in vocational school
- *student* when referring to the participants in the university course in Study IV

- *participant* when referring to participants in Studies I and III, and when referring to participants in formal or informal education in general, including pupils and students

Previous research

The subject of this thesis is broad and previous research which contributes to the understanding of epistemology, the view of professional competence, education design and quality of learning is found within several academical subjects. In this Section previous research will be summarized, using the themes epistemology of practice, the competence of a professional, education design and why it may be hard to change one's epistemology. Each theme ends with a summary of the theme and research needs.

Epistemology of practice

One of the first and most cited authors on epistemology of practice is Schön (1983). He discussed it in relation to degradation of professionals, argued for the competence of professionals which he called knowing-in-action, and described how to educate reflective practitioners using the reflective practicum (Schön, 1983, 1987). The distinctive aspects of Schön's theory are two: that he contrasts the epistemology of practice with what he sees as the opposite, the technical rationality; and, that he creates a wholeness in his theory from his epistemology of practice, by describing knowing-in-action, i.e. the competence of a practitioner, to the reflective practicum i.e. how to educate the reflective practitioner.

Schön is considered the father of epistemology of practice and in later years several researchers from different fields have also argued for an epistemology of practice, e.g. within education (Garrick & Rhodes, 1998; Geelan, 2000; Grisham, 1992; Russell, 2017; van Manen, 1995; Whitehead, 2000), within organizations (Cook & Brown, 1999; Cook & Wagenaar, 2012; Corradi et al., 2010; Dirks, 2008; Gherardi, 2011; Lalonde et al., 2010; Raelin, 2007; Rennstam & Ashcraft, 2014), within health care (Kinsella, 2007a, 2009; Thomson et al., 2014), and social work (Scott, 1990).

Today, there are several large movements based on or related to epistemology of practice, e.g. Gherardi writes about "the practical turn" in sociology and organizational studies (Corradi et al., 2010; Gherardi, 2009, 2011), in Australia there is a movement concerning professional competence as integrated and holistic (Beckett, 2000, 2008; Beckett & Hager, 2000), in Sweden Södertörn's university established the Centre for Practical Knowledge in 2001

focusing on research and courses to promote practical knowledge (Alsterdal et al., 2009).

Unlike Schön, most of the articles which develop epistemology of practice are mainly theoretical or philosophical (cf. Beckett, 2000, 2008; Garrick & Rhodes, 1998; Kinsella, 2009; Molander, 2015; Raelin, 2007; van Manen, 1995). There are few concrete examples of implications in practice, Raelin (2007) is one of the few who gives advice on implications for education, even if the advice is very concise in comparison with Schön's (1987). There are a few studies which support their thoughts with empirical data (Cook & Wagenaar, 2012; Grisham, 1992; Thomson et al., 2014). There is one study analyzing how different epistemologies affect the osteopathic practitioner's practice (Thomson et al., 2014). This study shows differences in how the osteopaths think and act in their work, differences which could be connected to different views of knowledge. There are no studies found which include epistemology, the view of professional competence, and how to design education in line with this.

Epistemology of practice is mainly used in line with Schön's thoughts but there are examples of development (e.g. Beckett, 2008; Cook & Wagenaar, 2012) although with weaker impact. An interesting thought is about individual epistemology, i.e. that individuals have their own epistemology and that this epistemology needs to be developed in line with the epistemology of the context, e.g. an epistemology of practice held in a course, to enable the expected learning (Billett, 2009, 2011, 2015).

There are some critics to Schön's epistemology of practice. Kemmis (2005) questions if we need a new epistemology of practice, instead he emphasizes the need of "...more open communication between universities and other sites and associations where practice is nurtured, sustained and developed" (Kemmis, 2005, p. 422), and about what is needed to develop practice. Björck and Johansson (2018) argue that using the dichotomy of theory and practice allows it to be maintained and maybe even creates it.

My conclusions regarding epistemology of practice are that Schön's work is a useful base since the dichotomy which Schön uses is helpful for understanding the differences between TR and an epistemology of practice, and the theory gives a wholeness by including epistemology and its consequences for the view of professional competence and education design. More research is needed which focuses both on theoretical and empirical perspectives, i.e. implications for practice which includes the wholeness Schön describes. The idea of an individual's epistemology was found interesting since this could be a key to enabling change.

The competence of professionals

According to Schön (1983), the view of the competence of professionals is based on epistemology. The core of an epistemology of practice is that the

professional practitioner has a competence which goes beyond that of just applying theoretical knowledge. Several researchers confirm this, e.g. Göranson (1983) who, when comparing computers and human skills, came to the conclusion that the professional's competence was too complex and rested on professional judgment which made it impossible to transfer in its entirety to computers.

There are different concepts to describe this competence. Schön (1983) calls this knowledge *knowing-in-action*, but he also uses the concept *knowing-in-practice* Molander (2015) discusses Schön's thoughts and uses *practice of knowing and knowing in practice* as the book title; however, within the text a more common expression is *knowledge in practice*. An argument for using *knowing* is to emphasize the process, that it is dynamic compared to knowledge which is seen as static. Another way of describing this practical competence is by van Manen who writes of the teacher's *tact*, i.e. the virtues learned, internalized, situated, and evoked pedagogical practices, needed to interpret the specific situation (van Manen, 1995). Bornemark (2018, 2020) argues for *omdöme* (in English: discretion) and Scott (1990) for *practical wisdom*, the repertoires or cognitive schemata which practitioners create out of their experiences.

The theories underlying the view of the professional's competence are also different. Schön is the only one who clearly relates *knowing-in-action* to epistemology, and especially the epistemology of practice (Schön, 1983). Göranson (1983, 2007) relates the competence instead to the concept *tacit knowledge* by Polanyi and Sen (2009). In the context of WIL, Billet (2001a) combines cognitive psychology with social and cultural theories as Lave and Wenger (cf. Lave & Wenger, 1991; Wenger, 1998) which are different to Schön's *knowing-in-action* as they focus knowing as "an active and reciprocal process engaging with the world beyond the physical self and drawing together both knowledge "how" and knowledge "that"" (Billett, 2001a, p. 433). Bornemark turns to the medieval philosopher Cusanus and the concept Ratio and Intellectus (Bornemark, 2018, 2020), which emphasize calculating versus reflecting or not-knowing. Today, she argues that Ratio has taken over, yet both are needed and therefore she argues for discretion which is an intellectus practice.

The competence of professionals has been studied in different ways. Schön based his theories on analyzing architects at work (Schön, 1983). From a methodological standpoint, Schön argues for an action research approach when dealing with questions about the reflective practitioner and knowing-in-action, due to the fact that we need to engage with the practitioner to be able to come close to their knowing (Schön, 1995). Other researchers with the same approach include Kemmis (2005, 2009) who argues that action research is a research method for researching practice. This is also in line with McNiff and Whitehead who argue for teachers as researchers when researching their own

practice (McNiff, 2013; Whitehead & McNiff, 2012). Göranson (1983) studied work and how professionals' skills could be transferred to computers. Another way of approaching the competence of professionals is by using a phenomenographic method, describing often hierarchically different ways of understanding one's competence (Larsson et al., 2003; Röing et al., 2018; Sandberg, 2000). The different understandings have been related to different epistemologies (Sandberg & Targama, 2007), with the conclusion that lower levels of understanding could be related to an epistemology of technical rationality, and higher levels of understanding to a more understanding epistemology, which seems similar to an epistemology of practice (Sandberg & Targama, 2007). Another approach from the WIL framework is to define what capacities students should gain from higher education. Billett (2015) suggests that beyond technical and social knowledge for the selected occupation, other aspects are also needed: an understanding about the world of work for their occupation, a canonical knowledge of the occupation, understanding how that knowledge is manifested in the particular workplace, and the ability to manage their own learning needs (Billett, 2015).

The conclusions drawn regarding the competence of professionals is that, in this thesis, I have chosen to use Schön's theory also concerning this theme. Regarding the concept describing professional concepts, I have chosen *knowing-in-action* for two reasons. First, using *knowing* is a way of emphasizing the process, that it is not about knowledge as a noun but as a verb. Second, by using *action* the focus is directed away from the concept of *practice*, which is colored by the devaluation which often takes place in relation to theory. *Action* is a more neutral word in this case. With the concept *knowing-in-action* I mean the know-how and understanding, conscious or nonconscious, a practitioner has and acts on in a unique situation. Another conclusion is that action research could be a suitable and interesting method in this context, due to its closeness to practitioners.

Education design to enable knowing-in-action

There seems to be consensus that practical experiences and reflection are important to enable knowing-in-action. The overall goal with practical experiences and reflection is to bridge the gap between theory and practice. The differences are about how this practice could be designed, whether the practicum could be an intermediary one within a classroom setting or at a "real" workplace. A simplified summary is that Schön (1987) emphasizes the reflective practicum which is an intermediary practicum within formal education. This is in contrast to WIL (Billett, 2011; Patrick et al., 2008) which advocates practicum outside of formal education, even if intermediary activities are also proposed. The concepts used to describe the practicum differ and within a WIL context the most common model is the supervised placement, also

termed internship, clinical placement, teaching practicums, industry placements, etc (Billett, 2011); program types are called applied research, cooperative education, sandwich education, practicum, internship, etc (McRae & Johnston, 2016). In the following I will use *reflective practicum* to denote Schön's in the classroom practice and *work-based practice* regarding practice at a workplace. Beyond practicum, reflection in itself is emphasized by Schön's concepts of the reflective practitioner, reflection-in-action and reflection-on-action.

Schön's reflective practicum

Schön, in line with his epistemology of practice, made a comprehensive proposal describing reflective practicum as an intermediary or virtual world where the students are able to train, receive feedback and learn to reflect on their actions in a safe classroom environment (Schön, 1987). However, when searching for research referring to Schön's *reflective practicum*, there are surprisingly few hits (about 40 articles within ERIC Proquest, ERIC Ebsco and Web of Science), and within these only a few referred to intermediary practicum which Schön emphasizes (Bissett & Saunders, 2015; Bruno & Dell'Aversana, 2018; Cosgrove & O'Reilly, 2018; Linder et al., 1997; Slovak et al., 2017); others referred to workplace practicum (Appleton, 1994; Baird, 1996; Birbirso, 2012; Cubero-Perez et al., 2019; López-de-Arana Prado et al., 2019; Saiz-Linares & Susinos-Rada, 2020). With a broader search, using only practicum, there were thousands of hits. This indicates that Schön's ideas about reflective practicum, the practical part of Schön's work, seem to be lost (Slovak et al., 2017).

Studies about reflective practicum have been conducted in different contexts such as teacher education (e.g. Bruno & Dell'Aversana, 2018; López-de-Arana Prado et al., 2019), education for healthcare professionals (e.g. Baird, 1996; Linder et al., 1997), engineer education (e.g. Cosgrove & O'Reilly, 2018), and management (Bissett & Saunders, 2015). The studies were mainly qualitative case studies, with empirical data from a unified context, or discussions of a course structure in line with the reflective practicum (Cosgrove & O'Reilly, 2018; Slovak et al., 2017). Only one study was found with a quantitative method (Bruno & Dell'Aversana, 2018). None of them compared different contexts.

The reflective practicum was supposed to solve problems such as integrating theory and practice where new demands from working life highlight the need to handle complex problem solving (Bissett & Saunders, 2015; Cosgrove & O'Reilly, 2018), or to avoid a memorization approach to learning (Linder et al., 1997). Regarding the outcome of the different practicums, the conclusions were that the reflective practicum promotes reflection, which in turn promotes the expected learning (Bissett & Saunders, 2015; Bruno & Dell'Aversana, 2018).

The above mentioned studies emphasize the combination of experience, practice and reflection (Slovak et al., 2017). In the studies where the practicum took place at a workplace it was supplemented with related seminars in the classroom, where students practiced reflection-on-action together by reflecting over their practice using theory to reach a deeper and broadened understanding. In these cases, the work-based practice was often a combination of periods in the classroom and periods at a workplace, where the students participated in the work. The conclusion was that the seminars were the core of the education, where theory and practice met, and that the seminars fostered reflection (López-de-Arana Prado et al., 2019; Saiz-Linares & Susinos-Rada, 2020). In both practicums, in the classroom and at workplaces, reflection was emphasized as a crucial issue to foster learning and create practical knowledge from a practical situation. Tools to enhance reflection in addition to the seminars include different kinds of reflective journaling, diary-keeping, and dilemma analysis (Birbirso, 2012; Cubero-Perez et al., 2019). Further, the focus in several articles was on fostering reflection, and one conclusion was that reflection does not appear by itself, instead the teacher must use different methods and practical situations as triggers to promote reflection (Birbirso, 2012; Saiz-Linares & Susinos-Rada, 2020; Slovak et al., 2017).

The role of the teacher was particularly analyzed in some of the studies, and the importance of a more horizontal relationship with the students was emphasized (Saiz-Linares & Susinos-Rada, 2020). In several studies the focus was on how the teacher or tutor could foster reflection with importance given to engaging the students, helping them to interpret, explore and connect to the theory (Cubero-Perez et al., 2019). That is, to create a dialogue and a climate which benefits learning (López-de-Arana Prado et al., 2019). Slovak et al (2017) argue for the importance of being able to capture the reflection in the moment it happens. However, there are critics against Schön's view of the teacher, arguing that the teacher becomes authoritarian (Mewburn, 2012), that using an expert is the only way to learn (Tannebaum et al., 2013; Zeichner & Liston, 2013), and that it is too individualistic i.e. not taking social aspects into account (Kotzee, 2012).

The work-based practice

Concerning research about work-based practice, the WIL framework is the most prominent today. WIL emphasizes the integration of theory and practice, which should indicate an epistemology of practice (Billett, 2011; Patrick et al., 2008). However, the theoretical grounding for WIL seems to be diverse. A starting point is said to be Dewey's thoughts about a new model for education and a constructivist orientation is emphasized following theorists such as Kolb, Schön, and Mezirow (McRae & Johnston, 2016). In addition, social cultural theorists such as Lave and Wenger and critical theorists such as Freire

and Engeström, with his activity theory (McRae & Johnston, 2016), are referred to. I have not found any deeper descriptions of Schön's epistemology of practice within WIL articles. WIL rather emphasizes an epistemology of experience or a connection to Lave and Wenger's theory (Billett, 2001a; Ferns & Moore, 2012; Jackson, 2015; Maseko, 2018).

Unlike Schön, WIL contributes with several models and concepts related to the higher education curriculum. Billet (2012) emphasizes the importance of practice-based experiences within today's higher education to enable employability; that practice is not enough, there is also a need to help the student integrate the experiences with what they learn in their courses (Billett, 2015). Billet (2019) defines two concepts to clarify the relation between the individual and the curriculum: for him, WIL concerns the individual's learning and how they construct their knowledge from their experiences; while Work Integrated Education (WIE) concerns the curriculum, the structure and organization of a course. The importance of separating them is because of the difference between learning and education (Billett, 2019). Beyond WIE and WIL, integration could be enhanced by focusing on three parts: within the education, at the workplace, and within the student (Billett, 2011). Concerning education and WIE, but which also touches on the student, Billet discusses three forms of curriculum: the intended, enacted and experienced curriculum (Billett, 2011). The first two count as WIE, and the last as WIL. The intended curriculum emphasizes aspects such as to clarify goals, align content with practice, and organize a gradual engagement in practice. The enacted curriculum is what the teachers do. Here the teacher's own interest in practice learning, to coach and engage in practice shapes the outcome, but these are affected by available resources and student readiness (Billett, 2011). The experienced curriculum concerns the personal process of WIL, how the student experiences, engages in and constructs their learning by comparing, sharing and contrasting their experiences (Billett, 2019).

To integrate practice-based experiences within a course, the three key moments before, during and after the practice-based experience, are emphasized (Billett, 2012). Before the practice-based experience it is important to orient the students to the requirements of the task; clarify the purpose, their responsibility and what they may require; prepare them to be active; prepare them with specific skills; and prepare for confrontations which might occur. During the experience the students should engage with and learn from more experienced workers, identify and intentionally engage in activities which enhance their learning, interact with peers to inform, consolidate and extend their learning. After the practice-based experiences, it is important to share their experiences and what they learned with other students and so learn from each other. This could increase the understanding of diversity and differences between workplaces and assist students who have less optimal experiences (Billett, 2011, 2012).

Regarding work placements, much has been written about how the workplace could provide learning possibilities both for students and for employees (e.g. Billett, 2001b, 2002; Billett & Choy, 2012). On the one hand, Billett argues that this is needed to capture the authentic context and norms at a workplace, and that simulations and role-plays where student practice on each other are not enough (Billett, 2012). On the other hand, supervised placements are resource intensive, and other models are needed such as using students' part-time work experiences, or using simulations and observations. As an effect of the COVID19 pandemic, the search for other alternatives has become more important and there is a need to understand more about what exactly a workplace-based experience adds when searching for alternatives (Kay et al., 2019; Zegwaard et al., 2020). Newer models of WIL are e.g. micro-placements, online projects or placements, competitions and events, incubators, start-ups and consulting (Kay et al., 2019).

Within WIL, Billett (2012) argues that it is difficult for higher education teachers to prepare students for the multiplicity of different work-practices, for several reasons. For example, since educational science and practice-based elements are relatively new, the understanding of what knowledge is to be learned is still under debate, the field of concepts about e.g. theory and practice is undeveloped or even false, research knows little about what experiences lead to what knowledge, and, finally, education science is to a large extent focused on children and not adults as learning at workplaces is seen as informal and not handled (Billett, 2012).

A criticism based on the view that learning is situated, is that learning which has taken place in one situation cannot be transferred to another, e.g. what one learns in the classroom, from a practicum or internship cannot be transferred to the world of work (Winman, 2014). Another critique is whether it is possible to force reflection e.g. within a course where reflection could be treated as an aim instead of a tool (Winman, 2014). Govender and Vaaland (2020) identify five major gaps in WIL projects which concern a lack of institutional support, mentoring and assessment capabilities, student readiness, relevant curriculum, and finally a lack of host-firm motivation.

Reflection

Schön's reflective practicum is not so well known, rather his thoughts on reflection are seen as his greatest contribution. Schön (1983) argues that knowing-in-action is developed by reflection-in-action and reflection-on-action, and that the professional therefore is a reflective practitioner. Schön based his thoughts on Dewey (Schön, 1983) although reflection is a common theme among learning researchers (e.g. Brookfield, 2017; Mezirow, 1990). Schön's focus is on the connection to the practitioner and knowing-in-action (Schön, 1983), not as a tool for learning in general. Some studies use the concepts of

reflection in relation to an epistemology of practice and the reflective practicum (Anderson, 2019; Cosgrove & O'Reilly, 2018; Saiz-Linares & Susinos-Rada, 2020), and some are independent of it (Gray & Siegel, 2014; Rico et al., 2012; Zhu, 2011). Ng et al (2015) draw attention to the risk of turning reflection into just another method for assessing learning relative to expected outcomes, in line with a reductionist perspective, a risk which others have also pointed out (Birbirso, 2012; Fragkos, 2016). Instead, they argue for treating reflection as a theoretical orientation, an epistemology of practice and critical social inquiry.

The concepts reflection-in/on-action and the reflective practitioner have had a large influence in many fields, especially within teacher education (e.g. Anderson, 2019; Korkko et al., 2016; Zhu, 2011), followed by different health educations (e.g. Fragkos, 2016; Ziebart & MacDermid, 2019), and there are arguments for the need of critically reflective leadership and management (Gray, 2007; Griggs et al., 2018; Reardon et al., 2019). At the same time, even if reflective practice seems to be well-known and widespread, there are also indications that it is not a priority in certain education areas, e.g. within public relations education (Mules, 2018).

From previous research it could be concluded that reflection promotes professional development (Korkko et al., 2016), increases self-awareness, stimulates criticality and reflective mindsets, and expands understanding of new content (Kis & Kartal, 2019). At the same time, even if the overall result supports the importance of reflection, the picture could be uneven and complex, where some participants in a course practice a simple level of reflection and others a more transformative level (Griggs et al., 2018).

Studies show that there is often more focus on reflection-on-action, and that reflection-in-action is rarer and could therefore be developed (Korkko et al., 2016; Zhu, 2011). Reflection-in-action is also criticized, for instance that teachers are not able to reflect-in-action because of their complex work situation with many students in the classroom. They argue that it is not possible to take pauses as in architectural education (Tannebaum et al., 2013; Zeichner & Liston, 2013). Molander (1996, 2015) proposes the use of the concept attention-in-action instead.

Previous research presents a variety of methods to enable reflection, e.g. video recordings (Hepplewhite, 2014; Powell, 2016), creation of wikis (Wegner et al., 2017), and computer simulation (Söderström et al., 2019). These methods can promote reflection, but well-planned procedures such as individual and supervised reflection and well-thought-out exercises are required. Some circumstances may hinder reflection, e.g. that students need to learn how to reflect and to receive support in this learning (Kis & Kartal, 2019; Korkko et al., 2016; Zhu, 2011). This takes time (Kis & Kartal, 2019), and it can be hard to teach reflection (Eaton, 2016). Further, time pressures may inhibit reflection (Kis & Kartal, 2019).

Schön has been criticized for being unclear about the concept of reflection. Clarà (2015) tries to clarify what reflection is based on Dewey, Schön and Wertheimer, and summarizes that reflection is a descriptive notion, referring to spontaneous, common and real thinking, and it gives “coherence to an initially incoherent and unclear situation” (Clarà, 2015, p. 270). Little is known about how reflection works but an assumption is that it “works as a continuous interplay between inference and observations”, it works “as a conversation between the subject and the situation to be clarified, in which the situation talks to the subject and reacts to the modifications (real or virtual) that the subject introduces in it” (Clarà, 2015, p. 270). Five aspects of the interplay can be distinguished: the unclear situation, the problem, the idea, the observation, and the reaction. Some reflections lead to immediate action (reflection-in-action), others to a conclusion (reflection-on-action). Finally, three assumptions need further research and these are the assumptions “that reflection is a decision-making process”; “that reflection consists of linking theory and practice”; and “that reflection consists of a sequence of consecutive steps” (Clarà, 2015, p. 270).

An education design based on reflection was developed by the former National Institute for Working Life as early as the 1970s, and later further developed at Södertörn University’s Centre of Practical Knowledge. The method arose from Göranson’s research about tacit knowledge and how practical knowledge could be expressed and reflected (Alsterdal, 2009; Göranson, 1991; Göranson et al., 2006). The aim was to contribute to professionals developing their practical knowledge, to capture their proven experience (Alsterdal, 2009; Josefson, 2011), and to create a bridge between the different forms of knowledge – theory and practice (Josefson, 2001). The method consisted of reflective writing and dialogue seminars conducted as a course for professionals. In the beginning of the course the professionals described a dilemma; during the course, with help from teachers, co-students, and literature, they challenged and deepened their understanding of their dilemma through continuous reflective writing (Alsterdal, 2009; Josefson, 2011). The teacher’s role in these courses was to foster dialogue, encourage reflection, and continuous questioning. It was a risk to perceive the task of writing an essay about a dilemma as normative, to search for answers, general answers, how to do. However, the characteristic of these examples was that there were seldom any general answers. Instead, the goal was to be able to see the dilemma from different perspectives. “Instead the task becomes to linger in the problematic situations, ask questions, try to see them in different ways and develop their thoughts about their practice and professional morals. This in turn often leads to the participants seeing new possibilities for action to try.” (Alsterdal, 2009, p. 170 My translation).

Conclusions

The conclusions regarding designing education to enable knowing-in-action are that Schön's reflective practicum could be revived for several reasons. First, the research on reflective practicum is relatively limited, instead practicum has come to be equated with practicum at workplaces. Second, work-based practice is resource intensive and there is a need to find alternatives. Third, reflective practicum is part of a holistic epistemology. Further, previous research has investigated one case at a time; comparison between different contexts seems to have been overlooked.

My conclusion concerning WIL is that it contributes with research about curriculum, pedagogic and workplace-practice themes. However, I have not found as many statements and clarification about epistemology of practice and of what competence a professional practitioner really has, as within Schön's thoughts. Neither have I found any deeper use of Schön in the WIL framework, so it does not seem that Schön's thoughts have a prominent place in WIL. Thus, just using a practicum does not mean it is based on an epistemology of practice. It could still be based on e.g. technical rationality, and many articles are not clear with this.

Regarding reflection, it is well-known in many contexts but there are still contexts where it is not used. Reflection is important to enable professional development; there is knowledge of how to enable reflection and what inhibits reflection, but also that it is something which must be trained. Reflection-in-action is undeveloped in comparison with reflection-on-action. Finally, it is important to be aware of reflection in relation to epistemology of practice, so it does not risk becoming just another rationalistic method for assessment.

Why is it so hard to change? Quality of learning

As seen above, Schön is one of few, if not the only one, who has developed a holistic epistemology from which others have taken parts. Knowledge about an epistemology of practice, knowing-in-action, and the reflective practicum has been present for over 30 years, but still this knowledge is not used or acted on. Examples of this are where formal education adopts a policy which supports a more practical and reflective approach, but ends up doing the same as before (Birbirso, 2012). Another example concerns the return to focus practice, in sociology and organizational studies called the practice turn, which was meant to be a new method for studying organizations focusing on practices within organizations, what actors really do (Gherardi, 2015, 2017). However, this seems to be just a method without including a criticism to rationalist, cognitivist and positivist perspectives which would make a greater difference (Geiger, 2009). A third example is that the return to practice movement has to

make a choice; if just being a new method, or also including a new epistemology, where the authors argue for an epistemology of practice (Corradi et al., 2010). These examples indicate that it may be difficult to create an understanding of the consequences of a changed view of epistemology. Since an individual's epistemology is often a deeply held assumption, a value, conscious or nonconscious, which in turn affects their behavior which also could be conscious or nonconscious, it is important that learning enables a quality of learning which reaches these deep assumptions. From this point of view, it becomes important to contribute to a deeper understanding of how to enable learning about epistemology which leads to an alignment between thought and action.

Within learning theories, qualities of learning are described in different ways due to the different theoretical starting points; but overall they are describing the same thing, that learning has different qualities. Examples of different qualities of learning include double loop and single loop learning (Argyris & Schön, 1995) used within organizational contexts, where single loop learning means adapting new action strategies to the governing variables, in double loop learning we learn to change the governing variables. This is similar to Ellström (2001) who uses the concepts adaptive and developmental learning, also in an organizational context. Within an educational context the concepts surface and deep learning developed (Marton, 2014) to enable deeper understanding for pupils. Illeris (2007) has created a model which includes learning at all ages, based on Piaget's thoughts about assimilative and accommodative learning and Mezirow's Transformative Learning (TL). The model has four different qualities in a hierarchical relation, cumulative, assimilative, accommodative and TL, where cumulative learning describes learning new things from scratch, such as cycling and memorization, to TL where you reassess your deep assumptions and values. This model is adapted to working life and adult learning (Illeris, 2004).

From the adult learning perspective, one of the most referred scholars is Mezirow (1991, 1997) and his theory of TL. One of the main goals of TL is to become aware of, assess and reinterpret the habits of our minds and points of view which have been taken for granted in order to gain a more complete understanding and a higher degree of control over our lives (Mezirow, 1991). In the context of this thesis, the deep learning which TL describes, the adult perspective, the focus on involving the individual, which is supposed to affect both understanding, values and behavior, i.e. a form of change from inside and out, is a valuable theoretical framework to understand the learning that is required from individuals to reassess their epistemology and align their actions in accordance. In two of the included articles of the present thesis TL is used as a theoretical framework, with the preconditions to enable TL being studied.

Previous research which focuses Mezirow's TL in combination with Schön's reflective practicum and/or WIL is scarce. However, there are a few examples of TL in the context of workplace practicum, e.g. within the WIL

framework where the conclusion is that practicum enables TL (Choy, 2009). Bell and Bell (2020) developed a theoretical model for entrepreneurship education by combining Schön's reflection-in-action, Kolb's experiential learning and Mezirow's TL; the results showed how parts, but not the entirety, from Schön's work were used. McRae and Johnston (2016) describe that the theoretical underpinning of WIL is based on the work of Dewey, Kolb, Schön, and Mezirow; however, among the articles that I have read, only a few of them refer to Schön or Mezirow. A related study by Sung-Chan and Yuen-Tsang (2008) exemplify that by using action research and reciprocal-reflection approach, students could change their understanding and behavior from a positivistic philosophy to one more in line with an epistemology of practice. A TL perspective is more common in the Scholarship of Teaching and Learning framework (e.g. Cranton, 2011; Fanghanel et al., 2016), however, in these studies practicum is not in focus.

Taking another perspective, an organizational learning approach, Schön has in earlier work with Argyris discussed the dilemma of integrating thought and action by using the concepts espoused-theories and theories-in-use (Argyris & Schön, 1974). Espoused theories are the ones we think we have and which articulate how we say we would behave in a specific situation. Theories-in-use are the theories which in fact govern what we do in reality (Argyris & Schön, 1974). When there is an incongruence between these two, we do not act as we preach, i.e. our espoused theories are not in line with our theories-in-use. This is a dilemma highlighted in several studies (Ng et al., 2015; Russell & Martin, 2017; Thomson et al., 2014). Regarding our theories-in-use, we value them so much that we try our best to avoid changing them, at the same time they are often tacit. Argyris and Schön (1974) describe that to change theories-in-use, we need to become aware of them and their incongruence with the espoused theory. They describe a kind of reflective practicum where they try to make participants aware of their theories-in-use, by experiences, supervising, reflection, group work, etc (Argyris & Schön, 1974). Maybe this model is the base for Schön's reflective practicum, but it is not referenced in that way. However, this similarity connects the integration of thought and action with the reflective practicum, and as far as I know, this educational issue has not been further developed, except for Schön's reflective practicum.

Thus, if acting in alignment with our epistemology of practice requires TL, then both Mezirow's theory and Argyris and Schön's work are useful as a framework to analyze the enabled learning quality. Argyris and Schön's concepts, espoused theories and theories in use, make it possible for an epistemology to be expressed in words and expressed in action, but that these expressions could be incongruent.

Conclusions and the contribution of the thesis

One main conclusion of this review of previous research is that research is limited in terms of a holistic perspective on epistemology. This thesis could contribute to the knowledge field of working life science by reviving Schön's (Schön, 1983, 1987) holistic perspective on epistemology of practice, what it is and its consequences for the view of knowing-in-action and educational design. Research which compares education designs from different contexts seems to be overlooked and so, in this thesis, the four included studies exemplify three different contexts and educational design. Thus, it can contribute by analyzing how the epistemology, the view of professional competence and education design is expressed in practice making a comparison between different contexts possible. Finally, research about how to enable a learning quality about epistemology which creates congruence between thought and action will fill current gaps. The thesis could contribute to deeper understanding of this by using TL.

The results of the thesis are useful in different contexts. The holistic perspective, with both theoretical and practical parts, may help teachers in formal and informal education gain a deeper understanding of how one's epistemology affects the view of professional competence and education design. It could also contribute to enable informal learning on the workplace. The thesis can also be seen as a contribution to the debate on trust-based governance and evidence-based practice.

Conceptual framework

The aim of this section is to develop a conceptual framework which will be used to analyze the results from the included studies. As described in the previous section I will base this mainly on Schön. This section addresses what an epistemology of practice is, the reflective practicum and Mezirow's theory of TL. Regarding epistemology I will start by describing a TR and a positivist view of knowledge, since it is against this background that an epistemology of practice should be understood. The view of professional competence is included in the description of epistemology of practice. Each theme, apart from the first about TR, concludes by defining a number of key concepts which will be used as analytic tools in the meta-analysis.

The dominant epistemology: positivism and technical rationality

The view which has dominated the last centuries until the present day, according to several sources (Bornemark, 2018; Molander, 2015), is often generalized as Positivism or TR. I will here use the concept of TR based on Schön's work (1983). This view has its roots in ancient Greece and Plato; according to Plato, true knowledge can only be reached through thinking and contemplation (Burman, 2009). Plato calls this true knowledge episteme. The opposite was doxa, human knowledge, which consists of unfounded perceptions, beliefs, and sensory impressions. Plato also mentioned techne, a kind of practical knowledge and includes arts and crafts skills. The separation of episteme and techne, and the upgrade of episteme has since then characterized the entire history of Western ideas (Burman, 2009).

TR's view of knowledge was shaped during the scientific revolution in the 16th and 17th centuries, and through the rise of positivism during the 19th century (Cohen et al., 2018; Johansson, 2016). Four key ideas emerged which became crucial in scientific thinking (Johansson, 2016). First, that nature is a result from natural processes. Second, that rational arguments are a path to knowledge. Third, that knowledge could be systematized – as in mathematics. And fourth, that logic is a base for rational thinking. The dualistic idea from Plato was picked up by Descartes in the middle of the 17th century. Descartes argued for a separation of the body and soul, because the body was seen only

as matter while the soul represented thinking, consciousness, will, and was therefore considered to be separate from the body (Bornemark, 2018). Consequently, what we in general terms understand as positivism emerged from the distinctive features of empiricism and logical reasoning, i.e. only what we can observe with our senses and logically conclude are sources of knowledge. Scientific methods such as experiments, observations, and calculations based on mathematics were advocated (Johansson, 2016). Therefore, all forms of mysticism and pseudoscience should be removed from human minds, and scientific knowledge expanded to include human society (Schön, 1983). Values, emotions and everything which was viewed as subjective were considered delusions (Raelin, 2007).

Philosophy of science deals with propositional knowledge or Knowing-that, i.e. knowledge which can be completed in a sentence; Knowing-how which is related to practical knowledge is not addressed in the field (Johansson, 2016). In the field of TR practical knowledge is described as the relationship of means to ends (Schön, 1983). That is, if we agree about the ends, the means could be reduced to the best way to achieve the ends which, in turn, the increasingly developed science could contribute via a deeper understanding of cause and effect (Schön, 1983). Based on scientific methods, the optimal means could be applied and thus answer the question: how should I act? Practical knowledge was therefore considered to be application of theory. The consequences for learning are that TR defines professional knowledge as having 1) a *basic science* which the practice rests on, 2) an *applied science* from which procedures and problem-solutions in ordinary work derive from, and 3) a *skills and attitudinal* component about performance of services, based on the underlying basic and applied knowledge (Schein & Kommers, 1972). In line with the prototype for professional education in medicine, law, business, and engineering, the student should first learn basic and systematic knowledge which is specialized, firmly bounded, scientific, and standardized, and then apply it in practice (Schön, 1983). TR has been criticized for simplifying and ignoring the problem setting, assuming that general knowledge can be applied to unique situations (Schön, 1983). Schön summarizes his critique that TR separates means from ends, research from practice and knowing from doing (Schön, 1983).

Epistemology of practice

The focus of an epistemology of practice is on the knowing in the doing. Plato's disciple Aristotle problematized Plato's dualism by dividing knowledge into additional forms, and by not being as one-sided in upgrading the episteme (Burman, 2009). Instead, Aristotle argues that different activities require different kinds of knowledge (Aristotle, 2019; Burman, 2009). In addition to episteme and *techne*, Aristotle describes *phronesis*, which is usually

described as practical wisdom and the ability to apply theoretical knowledge in a specific situation (Aristotle, 2019; Burman, 2009), a kind of ability of judgement (Nilsson, 2009). While episteme was a theoretical knowledge which was constant and could be learnt in the form of formulas (Nilsson, 2009), phronesis was the highest form of practical knowledge. Today, Aristoteles' thinking is revived in several contexts (e.g. Alsterdal et al., 2009; Burman, 2009; Cosgrove & O'Reilly, 2018; Kinsella, 2010).

In the following, I will summarize Schön's thoughts about epistemology of practice complemented with recent research, in a number of key concepts. In this summary I have assumed epistemology of practice as one direction, in contrast to a positivistic one.

Practice and its unique situation

The heart of an epistemology of practice is the practice itself and that practice should be valid equally as theory. Practice is a polysemous term, i.e. comprising meanings as a learning method, an occupation or field of activity, or the way something is done (Gherardi, 2011). It can also be seen as an epistemology, a way of seeing (Corradi et al., 2010). Relative to TR the theory and practice dichotomy expresses the tension or gap between decontextualized and situated knowledge (Gherardi, 2011). Schön describes professional practice as the area of a community of practitioners who share the traditions of a calling, consisting of special activities (Schön, 1987).

Thus, the practice a professional practitioner meets is a unique situation which is complex, uncertain and ambiguous, and the routines or rules from the theory cannot just be applied (Schön, 1987, p. 34; Thomson et al., 2014). In this way, professional competence is created by the professional in practice, which radically changes the traditional view of TR (Kinsella, 2007b). However, this does not mean that theory is downgraded to nothing, instead both are needed. In Schön's work valuable knowledge is developed in practice and in these theories are one part. Thus, the practical knowing is upgraded in itself (Kinsella, 2007b; Schön, 1983).

Knowledge or an art?

There are various ways of describing the competence professional practitioners have when performing their tasks, e.g. Aristotle used Phronesis. In a pragmatic tradition phronesis includes the concept of Bildung: "that wise, sensible action in a particular social situation presupposes a good judgment practiced through experience" (Burman, 2009, p. 126 f, my translation). Schön uses the concept knowing-in-action which is defined as "...the sorts of know-how we reveal in our intelligent action..." (Schön, 1987, p. 25), and describes it as actions, recognitions and judgements spontaneously known how to be carried out, unconsciously or consciously internalized in our understanding (Schön,

1983, 1987). He also uses knowing-in-practice which he explains in relation to the socially and institutionally context shared by communities of practitioners (Schön, 1987).

The competence of a professional is described as a kind of artistry (Kinsella, 2007a; Schön, 1983; Thomson et al., 2014). This refers to the actions the practitioner performs in a specific situation, e.g. adapting former experiences to a specific situation, experimenting and trying to find a proper way to act. “An artistry of practice recognizes that the majority of practice is comprised of indeterminate situations of practice, situation that are not in the book, and such indeterminate zones are not negotiable by simply application of science and technique.” (Kinsella, 2007a, p. 402)

The concept of knowledge is another way of understanding what competence a professional practitioner has. Knowledge can be divided into different kinds. However, there are many ways to describe these different kinds which sometimes overlap each other. As an example, Molander (2015) mentioned three different ways: First, knowing-that and knowing-how, which are mentioned above. Second, a tripartite division described by Göranson (1983), propositional knowledge which is knowledge expressed in statements, practical knowledge referring to skills, to be able to do something, and knowledge of familiarity, to be familiar with certain phenomena. Third, orientational knowledge which gives direction and overview, and technical knowledge which refers to controlling and more instrumental aspects of knowledge (Molander, 2015). Beyond these, knowledge could also be described as possession or practice (Hendriks & Sousa, 2013), which is similar to knowing that and knowing-how.

Another contribution to the debate of knowledge was Polanyi’s concept tacit knowledge (Polanyi, 2009) which is a core concept in an epistemology of practice (Raelin, 2007). It is described as knowledge that we cannot easily express in words, instead it is transferred by example and by showing (Bohlin, 2009). All knowledge has a tacit side; formulations alone cannot carry knowledge, and it is not possible to formulate everything in words. However, at the same time, no knowledge is tacit; language helps to describe even if it cannot capture the action in its entirety (Molander, 2015). Tacit knowledge is carried by the body, culture and actions (Molander, 2015). Some argue that the word *tacit* is misleading, e.g. saying it could not be criticized or never articulated (Bohlin, 2009). Arguments against this consider that we may not be able to articulate it today, but perhaps in the long run (Bohlin, 2009), and that tacit knowledge can certainly be criticized, but this must be done in ways other than propositional knowledge (Bohlin, 2009; Svenaeus, 2009b) e.g. by critical reflection (Svenaeus, 2009b). Instead of using *tacit*, *know-how* is proposed (Bohlin, 2009).

Regarding the above concepts, in an epistemology of practice the focus is on knowing-how, practical knowledge and knowledge of familiarity, a bal-

ance between orientational and technical knowledge, and knowledge of practice. In all of these, knowledge is seen as a noun, but there is also a movement which emphasizes using the verb form, knowing, to highlight the active side of the term (Cook & Brown, 1999; Rennstam & Ashcraft, 2014). Knowing-in-action refers to the know-how which can be seen in an intelligent action (Kinsella, 2007a; Schön, 1987). The knowledge is *in* the action, it is performed spontaneously, and the person cannot describe it in words. However, sometimes later we are able to describe this tacit knowing, but this is always only constructions which are not complete (Kinsella, 2007a; Schön, 1987). In this thesis, the concept of knowing-in-action is used to describe and analyze professional competence.

What is the professional practitioner doing in practice?

Schön argues that professional practitioners reflect in the situation, consider the overall experience and knowledge they have, and create from this an action uniquely adapted to the specific situation (Schön, 1983). Key concepts are reflection-in-action, seeing-as and doing-as, but also framing, experimenting, dialogue, experience, and repertoire. The professional practitioner is seen as a creator of knowledge.

Reflection-in-action describes the thinking the professional does in a specific, unique, and complex situation, a kind of reflective conversation with the situation. Reflection often starts when something in the situation puzzles or makes us surprised (Schön, 1983). It can take place within a fraction of a second but also prolonged over months depending on the nature of the action. The process of reflection-in-action could be described in the following steps: 1. becoming stuck in a dilemma, 2. reframing the problem, 3. experimenting to discover what consequences the reframing leads to, and 4. finally adapting the situation to the frame; the situation talks back, sometimes with unintended changes, the practitioner listens and as he appreciates what he hears, he re-frames (Schön, 1983). The reflection process goes on in a spiral through stages of appreciation, action and reappreciation. Schön states that the practitioners evaluate their experiment in reframing the problematic situation by their ability to solve the new problem, their appreciation of the unintended effects of action, their ability to make an artifact which is coherent and an idea which is understandable, and whether it keeps the inquiry moving forward (Schön, 1983). In reflection-in-action the practitioner shows an artistic performance: "... in his selective management of large amounts of information, his ability to spin out long lines of invention and inference, and his capacity to hold several ways of looking at things at once without disrupting the flow in inquiry." (Schön, 1983, p. 130)

As described in the second step of the reflection-in-action, the professional practitioner needs to *frame the problem* in the unique situation. The framing is often a tacit act, building on the theories-in-use and normative templates a

person has (Kinsella, 2007a). It is important to become aware of how one construct ones frames, to be able to choose between them (Kinsella, 2007a). In the third step, the practitioner *experiments* and Schön argues that these reflection-in-action experiments can be compared to scientific experiments, thus giving reflection-in-action legitimacy as a scientific method (Schön, 1983; Scott, 1990).

Experience is important for the professional practitioner and Schön uses the concepts *seeing-as* and *doing-as* to describe how practitioners use their former experiences. The practitioners have during earlier work developed a repertoire of examples, images, understandings and actions. In this specific, unique situation "... he sees it as something already present in his repertoire" (Schön, 1983, p. 138). In this way the practitioner is looking for both similarities and differences to familiar situations. Seeing-as could also include doing-as. This could proceed nonconscious but also conscious reflection on similarities and differences, comparing situations or describing one in the light of the other, "...to do in the former as we have done in the latter..." (Schön, 1983, p. 140). According to Wagenaar and Cook (2011), experience is more than a subjective experience. However not everything we have experienced becomes an experience, only what we decide to focus as an experience (Waldemarson, 2009). Experience is created in the present by how we attribute meaning to it i.e., we attribute meaning to memories in retrospective. At the same time, experience is in constant change (Waldemarson, 2009). Experience is also a double-edged sword, it could help us learn new things, or it could limit us to just confirm the patterns we already have. To learn from experience, we need to reflect on our experiences, on our interpretation of them, and allow others to critically examine our interpretation (Waldemarson, 2009). Practice is animated by and within experience (Wagenaar & Cook, 2011). An epistemology of practice emphasizes the authority of experience (Beckett, 2000; Russell, 2017).

The result of reflection-in-action is that professional practitioners, from their experiences, their framing and experimenting in unique situations, builds up *their own repertoire* of knowing-in-action (Molander, 2015; Schön, 1983).

A holistic approach

In contrast to a positivistic epistemology, an epistemology of practice considers the body, emotions and values. Starting with *the body*, in epistemology of practice a goal is to overcome the dualism between mind and body (Kinsella, 2007a, 2009). The body is an active source of knowledge (Gherardi, 2011). Practical knowledge is incorporated in our bodies when we do things without thinking about it, e.g. cycling or having breakfast. When doing more complex tasks these things must go on unconsciously in the background (Molander, 2015; Svenaeus, 2009b).

When it comes to *emotions*, they play an important part in the knowledge process (Beckett, 2000; Svenaeus, 2009a). Emotional knowledge is linked to emotional intelligence (EQ) (Goleman, 1996; Svenaeus, 2009a). In working life, co-workers need the ability to interact successfully with both colleagues and customers. Emotional intelligence consists of the ability to understand our own emotions and to be able to control them, but also to be able to understand others' emotions and be able to respond to them in a mature and responsible way (Goleman, 1996). Svenaeus (2009a) concludes that emotional intelligence exists, that there is no knowledge without emotions, and emotions can be more or less important in different situations. Emotions are felt in the body, they open up the world, they have a content since they deal with things in the world, they are visible in the person's posture, they provide us with reason to do things by filling it with meaning, make us act and form the basis for our way of being as a person, i.e. our basic mood (Svenaeus, 2009a).

Several authors emphasize the need of a direction for the action, and therefore the need of an *ethical dimension, including values*. Molander argues for art as striving for the best, and for acting with good reasons (2015). van Manen also emphasizes this by arguing that tact is a moral concern, to be "... tactful for the sake of the good of the other" (van Manen, 1995, p. 9). Becket (2008) argues for knowing not only how, but also why.

A scientific theory perspective

Schön considers himself having a *constructionist approach* (Schön, 1983). This is seen by the stress on the practitioners interpreting the situation to create their own understanding (Geelan, 2000; Gherardi, 2011; Grisham, 1992; Kinsella, 2007a, 2009; Raelin, 2007).

There are also traces of *pragmatism*. Neo-pragmatism emphasizes the view that knowledge claims should be justified by what works in practice (Garrick & Rhodes, 1998; Geelan, 2000). This is also the approach of Schön which is advocated by others in e.g. discussions about different traditions of Bildung (Burman, 2009) and project management (Lalonde et al., 2010).

A *process perspective* can also be identified. Professional growth as a process using reflection-in-action is stressed rather than the exclusively assimilation of content (Beckett & Hager, 2000). Knowledge is seen as "living" since it is never quite finished and a fundamental openness is seen as a distinguishing feature (Molander, 2015). This can also be described by tentativeness, to see things more preliminary and avoid reflexive trust in rules and theories (Raelin, 2007). When trusting theories too much in a specific situation, there is a risk of not seeing what really is there (Raelin, 2007).

Another characteristic in an epistemology of practice is that knowledge and practice are *situated* in a specific situation and a specific context (Dirkx, 2008). As Raelin expresses (2007), learning is not decontextualized; it is first contextualized and later recontextualized. Practical knowledge is situated in

the individual and in the context where it is used (Svenaesus, 2009b). This can be compared to Lave and Wenger's work on situated learning and communities of practice (Lave & Wenger, 1991; Wenger, 1998), although Schön does not refer to these so much.

Finally, knowing and practice are *relational* emerging out of relations by continual interaction and their normative stabilization (Gherardi, 2011). Gherardi compares this with studies of communities-in-practice (Wenger, 1998).

From the above, five key concepts are chosen to use in the discussion, and these are:

- the situated and complex practice in focus,
- knowing-in-action,
- reflective practitioner practicing reflection-in/on-action,
- holistic,
- having a constructionist, pragmatic, process, situated and relational perspective.

Education design: the reflective practicum

Our approach to education, teaching and learning depends on our epistemology of practice (Stensmo, 2007). In this section the consequences of an epistemology of practice will be described, based on Schön's reflective practicum. Key concepts are italicized.

Schön's idea of how to educate the reflective practitioner is via the reflective practicum with specific features such as "learning by doing, coaching rather than teaching, and dialogue of reciprocal reflection-in-action between coach and student." (Schön, 1987, p. 303). Medical schools' practice, internships, and coaching are given as examples, but the reflective practicum is instead *an intermediate space* between a workplace and the academy, with the task of imitating real practice. Important features are that the student learns by engaging in the artistry but in a safe environment, with coaches who initiate students into the specific tradition of the profession, and in a pedagogical manner guide them to see their particular learning needs. In the practicum, the students will learn the traditions of a specific profession and enter a kind of community of practitioners (Schön, 1987). The students learn by doing simulated, simplified projects and real projects under supervision.

The goals of the practicum are *to learn two kinds of practices*: to learn the specific professional tasks in focus and to learn reflection-in-action as a method to learn in practice (Schön, 1987). The overall goal is to make the students aware of what they are doing, to give them words to describe it, to show that it can be done in several ways, that there are different methods and approaches, and that the students will be able to choose their own ways (Schön, 1987).

An essential part in the reflective practicum is *the dialogue* between the student and the coach: “When the dialogue works well, it takes the form of reciprocal reflection-in-action.” (Schön, 1987, p. 163). The dialogue has three specific features: it takes place in the context of the student’s attempts to design; it makes use of actions as well as words; and it depends on reciprocal reflection-in-action. To describe this in more depth, Schön (1987) specifies four themes in the art of dialogue:

- *Telling and listening*: i.e. giving specific instructions, criticizing, informing how to prioritize, and suggesting examples. For the coach this means listening to and observing the student’s action to notice how the student understood the instruction, catch the moment and give further instructions from this point. In this listening, coaches can reflect-in-action on their knowing-in-action, and also how the student reflects-in-action. (Schön, 1987).
- *Demonstrating and imitating*: A common way of learning a practice is that the coach demonstrates how a particular work could be performed and the student tries to imitate it. The student must be able to identify and select what is important in the demonstration, i.e. construct their own image and then try to carry it out in practice. This process can be seen as problem-solving and a form of reflection-in-action, where the student “...constructs and tests, in its own action, the essential features of the action it has observed.” (Schön, 1987, p. 109)
- *Combining Telling with Listening and Demonstrating with Imitation*: in the learning situation telling and demonstrating, listening and imitating are interwoven. By combining them, gaps from each of them can be filled, and the student can learn more than just using one of them (Schön, 1987).
- *The ladder of reflection*: Schön (1987) describes a way of analyzing which he calls the ladder of reflection. This is a vertical dimension where moving up is meta to the lower parts, i.e. to reflect on the activity below, and moving down is “... to move from reflection to an action that enacts reflection” (Schön, 1987, p. 114). It is also possible to move diagonally along the ladder of reflection, which means that an action or reflection from one part triggers reflection or action on another. A description of the different rungs of the ladder of reflection are (Schön, 1987, p. 115):
 4. Reflection on reflection on description of designing
 3. Reflection on description of designing
 2. Description of designing
 1. Designing

It is not necessary to climb the ladder of reflection to learn, but, if the learning becomes stuck, the ability to move up and down the ladder gives new possibilities to search for convergence in meaning and in this way move on.

Using the example of design, Schön emphasizes a paradox: “The paradox of learning a really new competence is this: that a student cannot at first understand what he needs to learn, can learn it only by educating himself, and can educate himself only by beginning to do what he does not yet understand.” (Schön, 1987, p. 93). The student's and coach's stance to the interaction affects the outcome. In some cases, the student accepts the initial dependence on the coach, or the relation becomes one of co-experimentation; in others the student has a clear view from the beginning and does not want to abandon this. Depending on which stance the student displays it can promote or hinder learning.

From a constructionist perspective, where professional knowing is seen as “thinking like a” (Schön, 1987, p. 39), in a specific situation, the student may use either the rules of inquiry or the reflection-in-action. In the latter case, the student may have to develop new rules and methods for the specific case on their own. In reflection-in-action there is no such assumption that every problem has a right answer, instead Schön wants the students “...to learn a kind of reflection-in-action that goes beyond storable rules...” (Schön, 1987, p. 39), and it is the coach's role to emphasize this reflective conversation within the unique situation.

In Schön's reflective practicum, the teacher plays a crucial role acting as a coach. The coach has a broader role than just presenting and transferring knowledge. Schön (1987) state the coaches task as: to demonstrate performance and describe it; to particularize their demonstrations and descriptions, which means to specify by connecting to the specific student and their specific difficulties through improvisation, using their repertoire, and on-the-spot experiments; and to have the ability to foster a relationship open to inquiry by choosing a coaching stance and coaching types.

An important part in learning practical knowledge is to learn from experts in action by their way of revising their cognitive patterns as a response to changes in the world around them (Raelin, 2007). In this way, references are made to theories of the track from novice to mastery (Lave & Wenger, 1991) and communities of practice (Wenger, 1998). This can also be described as modelling, where the teacher with their actions shows the students how to do (Lunenberg et al., 2007).

Schön also identifies three ideal types of coaching which can be shifted and combined (Schön, 1987, chap. 8-10). First, joint experimentation, where the student chooses what he will do, the coach shows how this can be done in different ways, and in the end the performance will be assessed on the basis of whether the student achieved what he wanted from the beginning. Second,

follow me, where the coach demonstrates a performance or an action and the student imitates it. In this way the student learns one way of doing the performance. Third, hall of mirrors, where mirroring means that what happens in the practicum, mirrors what happens in a practice situation. Through how the coach acts in the practicum, he shows how the student could act in a practice situation, and the student experiences what the client in practice is likely to experience. The role of the coaches include handling substantial problems of performance; customize their acting and understanding of the specific student's needs; and do the former based on the coaching role they choose to take. What is important in all three types of coaching is that the student sooner or later is able to reflect on what has happened themselves (Schön, 1987).

According to Raelin (2007), the role of the teacher is seen as a facilitator of learning who fosters an inquiry-based democratic dialogue, and models behavior such as tolerance, openness, patience, empathy. When van Manen (1995) describes pedagogical tact, he emphasizes the ability in a particular situation to "...see what goes on with children, to understand the child's experience, to sense the pedagogical significance of this situation, to know how and what to do, and to actually do something right." (van Manen, 1995, p. 9). Tact is to be able to interpret the situation, the child's thoughts, feelings, body language; the deeper features of these; have a sense of the limits and balance of acting in the situation; and moral intuitiveness (van Manen, 1995).

From this review three key concepts are chosen to summarize educational design:

- the reflective practicum as an intermediary place where theory and practice are combined,
- the dialogue with reflection in and on action,
- coaching by joint experiments, follow me and hall of mirrors.

The quality of learning: Transformative learning

Reaching a deep learning quality is important to be able to reassess our epistemology. Our epistemology is often a value, a deeply held assumption. TL is an adult learning theory which has these qualities since it aims to assist the reassessment of our deeply held assumptions and values. TL assumes that we, throughout our childhood, are socialized into different ways of interpreting our environment and ourselves. We create frames of references, meaning perspectives, structures of assumptions and expectations through which we filter sense impressions, and these are either conscious or nonconscious (Mezirow, 2012). A frame of reference includes cognitive, conative, and affective components. It is composed of a habit of mind i.e. a set of assumptions which are broad, generalized predispositions which act as a filter for interpreting the

meaning of experience, and become expressed as a point of view. Habits of mind could include social norms, moral-ethical values, religious commitments, learning styles, as well as psychological, health, and aesthetic thoughts. A point of view comprises clusters of meaning schemes which arbitrarily determine what we see and how we see it (Mezirow, 2009). As adults, to be able to handle a rapidly changing modern society, there is a need to become aware of, assess and reinterpret the habits of our minds and points of view which have been taken for granted, in order to gain a more complete understanding and a higher degree of control over our lives (Mezirow, 1991).

Learning could have different characters or qualities: assimilation, where the individual integrates new learning within existing frames of reference, or learns new frames of references; or accommodation, where the individual transforms existing points of view or habits of mind (Mezirow, 2000a). It is this accommodative learning which is TL.

TL can be epochal, a sudden major reorientation in habit of mind e.g. as an effect of life crises, or cumulative characterized by a progressive sequence of insights resulting in changes in points of view leading to a transformation of habit of mind (Mezirow, 2009). All TL involves taking action to implement insights derived from critical reflection (Mezirow, 1991).

Mezirow (1991) has identified 10 steps leading to TL. All steps are not required to reach TL; critical reflection, disorienting dilemmas and trying out new roles have the highest association with reported TL (Brock, 2010).

1. A disorienting dilemma
2. Self-examination with feelings of fear, guilt or shame
3. A critical assessment of epistemic, sociocultural, or psychic assumptions
4. Recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar change
5. Exploration of options for new roles, relationships, and actions
6. Planning a course of action
7. Acquisition of knowledge and skills to implement one's plans
8. Provisional trying of new roles
9. Building of competence and self-confidence in new roles and relationships
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective (Mezirow, 1991, p. 169).

To enable TL, six core elements have been identified (Taylor, 2009). 1) *Individual experience* concerns the possibility for the student to reflect on former experiences, to be active and use experiences in the moment. 2) *Critical reflection* is to enable reflection, and especially to question deeply held as-

sumptions. 3) *Dialogue* concerns the importance of participating in a discourse with others. Necessary conditions for optimal participation in a discourse are freedom, democracy, equality, justice and social cooperation, stemming from Habermas's communicative learning (Mezirow, 1991). 4) *A holistic orientation* means that the whole person should be engaged using e.g. arts, affection, bodily experiences, and fiction (Kasworm & Bowles, 2012; Taylor, 2007; Taylor & Jarecke, 2009). Later development of TL theory has pointed out that emotions, intuition and imagination play a role in the transformation process (Mezirow, 2009). 5) *Awareness of context* means to inquire and adapt to personal and sociocultural factors such as rules and different cultures. 6) *Establishing authentic relationships* means to create a safe and permitting climate which allows students to share information and question their thoughts. This also relates to having a supportive attitude (Taylor, 2009).

Mezirow (2009) claims that most TL takes place outside awareness. Therefore, a teacher could assist participants to improve the participant's ability and inclination to engage in TL by bringing this process into awareness (Mezirow, 2009), by fostering participant's reflection upon their own beliefs or meaning schemes through a critical examination of the history, context, and consequence of their assumptions of discourse (Mezirow, 1991). For adult teachers, to foster discourse is a long-established priority, transferring authority to the participant to become a more collaborative learner (Mezirow, 2000b).

In this thesis it is assumed that TL is required to enable the quality of learning needed for individuals to reassess their epistemology. To find out whether TL has occurred, there is a need for either statements from individuals who describe a change in understanding and behavior, or to check whether TL is enabled in the course design by e.g. using Mezirow's 10 steps or Taylor's six core elements.

From the above, two key concepts have been chosen to summarize the quality of learning;

- 10 steps to TL
- six core elements to foster TL

Empirical studies

This thesis includes four empirical studies (see Table 1). The studies were accomplished within three different projects. Studies I and III were based on the same project, “Regisserad kompetensutveckling”¹ (Diarie nr. 2007-02122) financed by Vinnova 2007–2011. Study II was part of the project “Ungas introduktion i arbetslivet. Betydelsen av arbetsmiljöutbildning och arbetsmiljöintroduktion för goda arbetsförhållanden och säkert arbete”², financed by AFA 2012-2015 (Diarie nr. 120048). Study IV was indirectly financed by Dalarna University as part of my PhD. Table 1 gives an overview of the four studies: their research designs, settings, participants and their methods for data collection and analysis.

Research worldviews

Since this thesis focuses on epistemology and the importance of acting in line with our view, it becomes particularly important to be aware of and transparent with my research worldviews, or ontologies and epistemologies, which have been chosen in this thesis, and that these should be in line with the chosen methods (cf. Burell & Morgan, 1979; Creswell & Creswell, 2018; Wigblad, 1997). In line with Schön this thesis is inspired by constructivism and an action research approach.

A constructivist approach holds the assumption that human beings construct meaning, and a social constructionist approach states that this constructed meaning is dependent on the context, society and history (Creswell & Creswell, 2018). In this way social constructionism focuses on the constructions created in society, between humans (Burr, 2003). In the included studies the focus has been on capturing individuals’ experiences and understandings of different phenomenon, and therefore a constructivist perspective was useful. Beyond Schön (1983, 1987), Mezirow’s TL theory, which was used in Studies III and IV, is based on constructivism (Mezirow, 1991). However, even if the empirical data which has been collected focused on the individual’s

¹ Translation: “Directed competence development”

² Translation: “Young people's introduction to working life. The importance of work environment training and work environment introduction for good working conditions and safe work”

Table 1. *Overview of the studies*

	Design	Setting	Parti- pants	Data collection	Data analysis
Study 1	Quasi exper- imental Educational intervention Action re- search	Private and pub- lic, small and large organiza- tions	Managers and their subordi- nates, focus on subordi- nates	Three pre- and post-question- naires to the sub- ordinates of the participating man- agers	Factor analy- sis t-test
Study 2	Convergent mixed meth- ods design	Voca- tional ed- ucation	Pupils	Questionnaires and focus group interviews	Descriptive statistics, ag- gregate and percentage calculations. Content anal- ysis
Study 3	Explanatory mixed method de- sign Quasi exper- imental Educational intervention. Action re- search	Private and pub- lic, small and large organiza- tions	Managers and their subordi- nates, focus on managers	Three pre- and post-question- naires to the sub- ordinates of the participating man- agers Interviews with participating man- agers Notes from work- shops Reflection proto- cols from partici- pating managers	Triangulation of results from Study 1, interviews, notes and re- flections Deductive analysis
Study 4	Qualitative design Action re- search in ed- ucation	A univer- sity course	Students Teachers/re- searchers	Interviewing stu- dents Observations Teachers' reflec- tions	Triangulation of interviews, observations, and teachers' reflection Adaptive analysis

view, the social aspect of constructions were important especially in Studies I and III, the integrating aspects of the enabling leadership, and in Study IV with its focus on collective learning.

Johansson (2016) criticizes the constructivist approach as not everything can be constructed. I agree with this criticism; however, the concepts studied in these studies, such as learning, work environment, and knowing-in-action, are relevant to handle as constructions, and in particular social constructions.

Action research is an orientation of inquiry consisting of “a family of approaches” (Reason & Bradbury, 2008, p. 7). It has five characteristics: participation and democracy, human flourishing, practical issues, knowledge-in-action and emergent developmental form (Reason & Bradbury, 2008). In this thesis, an action research approach has been chosen for several reasons. In Studies I and III, there was a desire to educate the managers in enabling leadership combined with the aim of evaluating whether a change could be noticed by the manager’s employees, together with a wish to develop the theory about the enabling managerial role together with the participating managers. In Study IV the action research within education approach was chosen since we wanted to take advantage of the knowledge and experiences we have as teacher practitioners, and combine that with being researchers i.e. researching our own practice (Altrichter et al., 1993; McNiff, 2013; Norton, 2018).

In line with an epistemology of practice, action research within education has a desire to legitimize practical knowledge (McNiff, 2013), and using action research for researching practice is proposed (e.g. Kemmis, 2005; Schön, 1995).

Research design, methods and participants

To fulfil the overall aim of the thesis, a combination of qualitative and quantitative research designs was applied. A mixed method approach was chosen since it utilizes the strengths and minimizes the weaknesses with the qualitative and quantitative methods, is a sophisticated and complex approach, and could provide a more complete understanding (Creswell & Creswell, 2018; Hanson et al., 2005; Harrison et al., 2020). To obtain rich data material, several different data collection methods have been used such as questionnaires, individual and focus group interviews, observations, field notes, reflection protocols and teachers’ narratives (Creswell & Creswell, 2018). In the following I will describe the studies and their research design, data collection methods and participants further.

Study I

Research design

Studies I and III were based on the same research project. The study was designed as a quasi-experimental study, inspired by action research, with an educational intervention for managers, and pre- and post-questionnaires to the managers' subordinates to assess the outcome of the intervention. The intervention part had a pre-experimental design with a one-group pre- and post-test design (Creswell & Creswell, 2018). Study I reports the results from the pre- and post- assessments.

The intervention consisted of eight workshops with the aim of training enabling manager skills. The workshops were held by the researchers during a period of one year for three and a half hours each time. The content included reflection on the previous workshop, feedback from the pre-survey and new input about that workshop's particular theme. Themes in the workshops included dialogue competence, balanced communication, attractive work, integrated autonomy, group creativity through improvisation, and external relations. The first workshop contained an introduction focusing on creating a good social climate, with the last workshop summarizing the project. The results from the quantitative assessments were presented to explore whether the intervention led to some changes in the work for the subordinates.

Methods for data collection

Three different questionnaires were completed by the managers' subordinates before and after the intervention to assess whether the intervention had any effect. The questionnaires focused the themes from the intervention. One questionnaire focused on interaction between subordinates, the second on integrated autonomy, and the third on attractive work. The pre-questionnaires were completed during spring 2009, the intervention took place between autumn 2009 and spring 2010, and the post questionnaires were completed during autumn 2010. The questionnaires were completed during the managers' ordinary meetings with the subordinates, and non-present subordinates were given the opportunity to answer and submit the questionnaire later.

The interaction and integrated autonomy questionnaires were created in the project while the Attractive Work questionnaire was developed and used at Dalarna University (Hedlund, 2007; Åteg, 2006; Åteg et al., 2004). The interaction and integrated autonomy questionnaires were developed with support of theory, discussed in the group, and tested by volunteers before use. The interaction questionnaire was also presented at a conference (Åteg et al., 2008). See Table 2 for more information on the questionnaires' number of questions, scales, and number of respondents.

Table 2. *Questionnaires and number of respondents in Study I*

Questionnaire	Number of Questions	Scale	Total number of subordinates	Number of respondents pre-questionnaire	Number of respondents post-questionnaire
Interaction: Dialogue competence	35	Five graded scale from <i>Very seldom or never</i> to <i>Very often or always</i>	335*	266 Response rate 79%	215 Response rate 64%
Integrated autonomy	33	Five-point scale <i>Not at all</i> to <i>Completely</i>	335*	261 Response rate 78%	215 Response rate 64%
Attractive work	179	Five-point scale <i>Not at all</i> to <i>Completely</i>	335*	223 Response rate 67%	167 Response rate 50%

* The number of subordinates varied over time. This figure is based on an approximation from the start of the project.

Participants

The sample of managers was a multistage convenience sample (Creswell & Creswell, 2018), where the participants in the educational intervention were managers and the respondents of the questionnaires were the managers' subordinates; thus, the sample of the questionnaire was the whole population. To obtain a broad sample, eighteen managers, twelve woman and six men, participated in the intervention. They represented fifteen different organizations: nine managers from eight organizations in the public sector such as government authorities, health care, municipal activity; and, nine managers from seven organizations within the private sector such as the motor industry, bank, manufacturing industry, real estate service and a health service company. From the beginning 20 managers participated, but two were unable to complete the project. See Table 2 for more information. The differences in response rate between the different questionnaires could be because the attractive work questionnaire was most comprehensive so not everybody completed it. The differences in response rate between pre- and post-assessment could be due to the fact that in several workplaces the workforce decreased during the project. Further, the motivation to fill in the questionnaires a second time could have been lower, due to e.g. the repetition.

Study II

Research design

Study II was part of a larger project which investigated different aspects of pupils' introduction to working life through a work environment perspective. This part of the project investigated the pupils' knowledge about environment issues and their view of the education about this. A convergent mixed method design was used, which means that qualitative and quantitative methods were used simultaneously to create a deeper understanding of the field, i.e. one phase (Creswell & Creswell, 2018; Hanson et al., 2005). In this study a questionnaire was chosen to obtain a broad overview of the field, and focus group interviews to capture in-depth knowledge of the pupils' perceptions of health and safety issues at work and their training in this.

Methods for data collection

A questionnaire and focus group interviews were used as methods for data collection. The questionnaire contained nine questions covering core issues within Swedish work environment legislation such as knowledge about risks in the work environment, responsibility for environment issues at work, action to take and introduction to the work-based practice. All questions except one had different response alternatives which were more or less correct answers to the questions. In the last question the students were free to give examples of risks in the work they were being educated for and to rank these risks based on degree of risk. The questionnaire was distributed to the pupils by the researchers when visiting the school, between December 2012 until March 2013. The focus group interviews were conducted by two of the researchers during April 2013. The interviews were semi-structured to open, an interview guide was used with open questions about the pupils' thoughts about work environment, their training in health and safety at work in their vocational education, work environment at their workplace-based learning and risks in work environment in the profession they were training for. The questions were followed by additional probing questions. The interviews were recorded and transcribed into Swedish.

Participants

The study group were youths in graduating classes studying vocational programs within the Swedish upper secondary compulsory school. Criteria for the sample were based on discussions with a reference group: their geographical location, i.e. geographical spreading and urban and rural areas, their size i.e. small and large schools, number of programs i.e. having one or all of the focused programs and private or municipal ownership. Ten schools were chosen within which 20 vocational programs were located. The programs were

the industrial technology program, the restaurant management and food program, the transport program, and the handicraft program. The questionnaires were administered to all participants in the study group. Of 273 possible pupils, 239 completed the questionnaire which gave a response rate of 88%, 166 men and 73 women. Regarding the interview study, it was undertaken with one focus group at six of the schools, with four to seven pupils representing the different programs in each group. The headmaster of the school asked the pupils to participate voluntarily in the interviews. After six interviews saturation was considered to be achieved.

Study III

Research design

This study was based on the same project as Study I, therefore please refer also to the information about Study I above. The design of this study was an explanatory sequential mixed method approach with two phases (Creswell & Creswell, 2018). The study used the results from the analysis of quantitative data from Study I to rank and cluster the workplaces according to the level of change noticed between the pre- and post-questionnaires. Further, qualitative data was collected via interviews with the managers to deepen the understanding of the quantitative results.

Methods for data collection

As a starting point, Study III used the results from the questionnaires in Study I. However, the essential material in the study was the qualitative data in terms of interviews conducted with the managers after the intervention. These were complemented with field notes from the interventions, videotaped and partly transcribed observations of workplace meetings, and reflection notes written by the managers in relation to each workshop. Interviews with the participating managers were conducted six months after the intervention by two interviewers, one who was not within the research groups, and one of the researchers, depending on the geographical proximity to the participants' workplace. The interviews were semi-structured to open, and an interview guide was used focusing the manager's view of their role as a manager, dilemmas with their role, their view of the enabling managerial role, and their experience from and use of the intervention. The interviews were recorded and transcribed into Swedish. The videotaped observations focused on communication patterns but were used only to a minor extent since problems were discovered with the analysis method, i.e. coding definitions and interrater reliability. Field notes were taken by the researchers during the workshops to capture comments, stories and experiences from the participants which were discussed during the workshops. The managers also wrote reflection notes between the workshops containing their reflections about the workshop's theme.

Participants

Since the focus in Study III was the interviews, the participants were the 18 managers who participated in the intervention. For more information see Study I.

Study IV

Research design

Study IV was done on its own, i.e. it was not part of any larger project. This study had a qualitative design using interviews, observations and teachers' narratives (Creswell & Creswell, 2018). The Study also had an action research within education approach (Altrichter et al., 1993; Norton, 2018; Whitehead & McNiff, 2012). This combination was chosen to take advantage of the experience and practical knowledge of the teachers as practitioners since two of the researchers were the course teachers. A third researcher, previously unknown to the teachers, acted as an observer and interviewer. Interviews were chosen to capture the students' experiences and views on the course structure. The teachers' narratives contributed with a practitioner's view and the observer with an outsider view.

Methods for data collection

The data materials consisted of three parts: interviews with students, notes from the observations, and the teachers' narratives. The interviews were conducted by the third researcher who was not a course teacher, in November and December 2016, some weeks after the course ended. The interviews were semi-structured to open, allowing the students to elaborate their views on the course. In particular questions were asked about which level of reflection they thought they attained, addressing Kember et al. (2000; 2008), and what promoted this. The interviews were recorded and transcribed into Swedish. The observations were conducted by the third researcher and focused on signs of reflection and what promoted reflection during six of the nine course days. It was semi-systematic and abductive (Cohen et al., 2018), and the observer took notes continuously. The teachers' narratives contained how the teachers described their view of how they tried to create preconditions to foster learning in the course. By doing a narrative the teachers verbalized their tacit knowledge, i.e. a reflection-on-action (Altrichter et al., 1993; McNiff, 2013), and enabled disciplined subjectivity and reflexivity to distance themselves from their own experience (Alvesson & Sköldbberg, 2017; Efron & Ravid, 2020). The teachers' narratives were put together after a reflective session where the two teachers via several steps tried to compile the essence of their approach, what is important and why, and how they based the course on this approach.

Participants

The study was conducted during a university course called *Collective Learning and the Learning Organization* studied during the third year of a human resources program. The course was chosen since the course teachers as well as the researchers saw an opportunity to develop knowledge by using the course as a study object, i.e. a convenience sample. The participants were 40 students, five men and 35 women, aged between 21 and 52 with an average age of 27. The interviewees were selected by including every fifth person from the participants list. Seven were selected, and five accepted, four women and one man aged 21, 28, 30, 32 and 32.

Data analysis

In Study I the focus was to compare the results of the pre- and post-assessment. Prior to the comparisons, factor analysis with principal axis rotation was employed in order to reduce the number of questions in each of the questionnaires to the most important underlying factors. Using factor analysis, the Interaction questionnaire was reduced from the initial 35 questions to 4 factors; in a similar way, the Integrated Autonomy questionnaire was reduced from 33 questions to 4 factors. Lastly, the Attractive Work questionnaire was reduced from 179 questions to 9 factors. In order to measure the internal consistency of the resulting factors, Cronbach-alpha was calculated for each of them, ranging between 0.56-0.93. After the factor analysis, the means of each scale from the pre- and post-assessment were compared, and the strength of the change was tested using a T-test.

In Study II the data from the questionnaire study was presented as descriptive statistics including aggregate and percentage calculations. The interviews were analyzed by content analysis (Hsieh & Shannon, 2005; Silverman, 2020). The two researchers who conducted the interviews analyzed the interviews separately, and then the findings were scrutinized independently by a third researcher not involved in the interviews. Finally, the findings were discussed in the researcher group to identify similarities and differences in the analysis.

In Study III the analysis was done with data triangulation. The quantitative data from Study I was used to rank and cluster the workplaces according to the level of change. This was expected to reveal the learning quality from the intervention. All qualitative data (interview transcription, field notes, the manager's reflection notes, and observations) from one workplace at a time were analyzed simultaneously to interpret the quality of learning. The analysis was done in two steps. First, the data was analyzed deductively using the core theoretical concepts such as sensitizing concepts, searching for preconditions for learning; disorienting dilemma, cognitive conflict, motivation and supportive

contexts. Second, the analysis searched for traces of new ways of thinking or acting to understand the quality of learning from the core concepts of assimilative, cumulative, and epochal learning.

In Study IV a triangulation was made by comparing the teachers' narratives, observation notes and transcriptions from the interviews. An adaptive approach was used which can be described as "zig-zagging back and forth between theoretical ideas, data collection and analysis" (Layder, 1998, p. 77). The empirical data was read and reread to identify preconditions to foster TL by continuously examining the preconditions outlined in the theory. Using this approach contributed to the theory by confirming the theoretical framework and adding two elements identified in this empirical study.

The role of the researcher and my preconceptions

Within action research and qualitative research design, it is important to discuss the role of the researcher since the researcher is a tool in the research process and therefore can affect the research process in different ways (Altrichter et al., 1993; Alvesson & Sköldberg, 2017; Grant et al., 2008; McNiff, 2013; Mercer, 2007). In this thesis, four issues concerning the researcher's role have been important: being an insider versus outsider, being objective versus subjective, proximity versus distance, and power relations.

In action research you are either an *outsider*, i.e. you are not familiar with the participants and the researched area, or an *insider* e.g. action research within education where you research your own practice. In Studies I, II and III I was an outsider while in Study IV I was an insider. In Study IV the advantages were that I had access to the field, I could easily affect the research process and the content, and I was familiar with the context with deep knowledge in the issue which was studied (Mercer, 2007). The disadvantages were that it could be difficult to be aware of things taken for granted and I could influence the participants to say what I wanted to hear. As an outsider in Studies I and III it was harder to gain access to the research field; I had to learn more about the organizations and the participants' situations to understand. However, the advantages were that I could more easily be objective, asking about the obvious; and, sometimes an outsider can obtain more sensitive information than an insider (Mercer, 2007).

Concerning *objectivity verses subjectivity*, in qualitative research designs the researcher needs to interpret the data and, in this process, it is impossible to be totally objective (Johansson, 2016). There are several ways of handling this, e.g. by having a reflexive attitude throughout the whole research process (Alvesson & Sköldberg, 2017). In Study IV subjectivity was a challenge and several actions were taken to handle this, e.g. a third researcher, an outsider in relation to the course, conducted the interviews and observations, and also acted as a critical friend helping the teachers critically reflect on their actions

and assumptions. In Studies I and III we were outsiders although, at the same time, involved as workshop teachers. This was handled by a person outside the research group conducting two thirds of the interviews, triangulating the data with the results being analyzed jointly by the group.

In action research, when the researcher is involved in a change process the issue of *proximity versus distance* becomes important (Svensson, 2008). This was especially urgent in Studies I and III where we as researchers implemented an educational intervention but at the same time wanted to develop the content together with the participants. The balance between proximity and distance, to let the process go on or to interrupt, to develop and support or dare to leave (Svensson, 2008), were questions which we asked ourselves during the process.

As a researcher you are often in a *power relation* to respondents. When doing action research within education power relations become especially prominent since the participants are students (McNiff, 2013); in Study IV my own students or as in Studies I and III participants in an intervention. It was important to be aware of this, and to handle it by being transparent with the research process and to show respect for the student's autonomy (Grant et al., 2008). In addition, continuously reflecting over our actions prevented us from using our power in a negative way. Power issues are closely related to ethical issues, which are discussed later in this section.

It is also important to be aware of and transparent with my preunderstanding as a researcher to make it easier for a reader to evaluate the results. Beyond my research worldviews described above, some additional aspects are worth mentioning. I have been a teacher at the university for 17 years, with a master's degree in working life pedagogy, and have taught about adult learning, competence development, learning organization, group process, communication, leadership, work environment issues, change and development, processes and facilitating. My theoretical starting point as a teacher is based on adult pedagogic or andragogic in accordance with Knowles et al (2015) and Mezirow (1991). My goal as a teacher is to enable learning which leads to both in-depth understanding and an ability to act in accordance with this understanding. The pedagogical methods I use, and during Study IV developed, are inspired by Mezirow and others (e.g. Mezirow, 1991; Taylor, 2009) Knowles et al, (2015); Kolb, (1984); Schön, (1983, 1987); Filstad, (2012); and Illeris, (2007).

Ethical considerations

Being a researcher requires a high awareness of ethical issues. This concerns how we treat participants in research, i.e. external ethics, and how particular researchers do their work, i.e. internal ethics. The overall principles of research should be respectful of persons, beneficence (to do good, and to not

harm), and justice as stated in the Belmont Report (Brydon-Miller, 2008; National Commission for the protection of human subjects of biomedical and behavioral research, 1979).

In order to protect participants during research, ethical review is required if a study handles sensitive personal data, involves risks which may be harmful to a participant physically or mentally, etc. (SFS 2003:460). Ethical approvals were applied in Study II, but not in the other studies since preliminary requests replied that it was not needed in these cases. The included studies were conducted between 2009-2016 but since then praxis has changed. For example, in 2016 the GDPR (General Data Protection Regulation 2016/679) came into force which strengthened the protection of individuals' personal data. Therefore, if the present studies were conducted today an ethical vetting would have been applied for to have an advisory statement.

In the included studies ethical issues have been handled in accordance with a number of guidelines (CODEX; Nolen & Putten, 2007; Resnik, 2018; Swedish Research Council, 2002, 2017). Ethically important questions concerning participants have been informed consent, confidentiality, voluntariness and how data are used and stored. Before starting the research projects the participants were *informed* about the plan and purpose of the research, the methods which will be used and how they will be used, eventual risks, who has responsibility, that participation is *voluntary* and that they are free to terminate participation at any time without risk of retaliation (SFS 2003:460; Swedish Research Council, 2017). Participants were informed about how data will be used and stored, who has access to data, confidentiality, what was expected of the participant, who to contact if they have questions, and opportunity was given to ask questions. The information was both written and oral, and written *consent* was collected in all studies for all data collection. To handle *confidentiality*, code keys were used to protect information which could reveal a person's identity and the data were stored in safe places. Concerning video and audio recordings, the names of the participants were not revealed in the recording. The *use of the data* was restricted to articles, conferences, reports to financiers and to the participating organizations.

In addition, when using action research more issues become important (Nolen & Putten, 2007; Zeni, 1998), e.g., to analyze the power relationships when the researcher also is a teacher (Brydon-Miller, 2008; Nolen & Putten, 2007). In this case, informing the participants about voluntariness, about freedom to terminate without risk, and confidentiality becomes crucial; having a respectful and open attitude also becomes extra important (Nolen & Putten, 2007).

Action researchers need to embody ethics within their practice, to critically examine their own values, enter into a dialogue with other researchers and participants, and model ethical behavior (Brydon-Miller, 2008).

Validity, reliability, generalizability and trustworthiness

In quantitative studies concepts such as validity, reliability and generalizability are used to describe the quality of the research (Creswell & Creswell, 2018). In qualitative research it has become more common to instead use concepts such as trustworthiness, credibility, dependability, and transferability (Connelly, 2016; Elo et al., 2014; Graneheim & Lundman, 2004; Shenton, 2004).

In an experimental quantitative study such as Study I, internal validity, and to some extent external validity, become important to ensure that the manipulated variables are those which affect the outcome (Creswell & Creswell, 2018). Internal validity in Study I concerns how well we can be sure that a change in results between pre- and post- questionnaires depends on the intervention. External validity concerns to what extent the results could justify conclusions in other contexts. To increase internal validity we tried to recruit as large sample as possible to account for drop outs; we tried to obtain as wide a selection as possible to spread the risk of extreme participants affecting the results too much; the interval between the pre- and post-assessment was 1.5 years to minimize the risk that the participants remembered their last answer; and the same questionnaires were used for the pre- and post-assessments to allow for comparison (Creswell & Creswell, 2018). However, there are some limitations. First, the construct validity is vague, i.e. the link between the concepts described in theory, the themes in the interventions and the questionnaires. Second, to strengthen the results, that the change depends on the intervention, a control group could have been used. Yet, assessing and interviewing the entire sample, i.e. the participating managers and their subordinates, strengthens the validity (Creswell & Creswell, 2018). Further, the qualitative results from Study III and that events in the surrounding society, i.e. financial crises and a general negative development, rather point of a decline in the post-assessment, strengthens the results. Third, there is a lack of clarity in terms of the number of participants in the pre- and post- assessment, which contributes to an uncertainty about the response rate. Concerning external validity we do not proclaim that the results are generalizable in a larger setting due to the small sample (Creswell & Creswell, 2018). However, by describing the context, the organizations, and the process, the reader is given the opportunity to draw their own conclusions on the possibilities of generalizability of the results. A threat in an exploratory mixed method design is that not all options from the quantitative results are followed up. We chose to discuss the learning quality and have described that clearly, but there were other options which were not followed up. A limitation of the questionnaires is that neither of them has been subjected to a test-retest to test the instrument's reliability (Creswell & Creswell, 2018). Trustworthiness was increased by the researchers work-

ing, analyzing, and reflecting together throughout the entire project. This procedure is similar to negotiated consensus, as described by Wahlström et al (1997) and used by Johansson et al (2008).

In Study II, with a convergent mixed method design, both qualitative and quantitative methods were used. Concerning the quantitative survey, construct validity became important. The questionnaire corresponded partly with questions used by Tucker and Turner (2011), which strengthen the results, even if the survey has not undergone a test-retest. Validity was also strengthened by the possibility of using triangulation, and by the broad sample of pupils from different programs and schools. When interpreting the interviews, trustworthiness was increased by the researchers first analyzing the data separately, then discussing it together to reach consensus, and subsequently discussing it with a third researcher (Graneheim & Lundman, 2004). This could also be seen as negotiated consensus (Johansson et al., 2008; Wahlström et al., 1997).

In Study III trustworthiness was increased by triangulation of the results from questionnaires, interviews, field notes, managers' reflection notes and observations. Recommended procedures for interviewing were followed e.g. by having an interview guide, asking follow up questions, recording the interview, and transcribing it (Kvale, 1997). The analysis was made by one of the researchers, and then peer debriefing was used by discussing the analysis with the other researchers in the group, comparing and relating to the other results. The results were described in detail, so-called thick description, to enhance credibility (Shenton, 2004). In addition, the procedure was carefully described to enhance dependability (Connelly, 2016; Shenton, 2004).

In Study IV several actions were taken to increase trustworthiness. To increase credibility triangulation, thick descriptions with interview quote, member checking, peer debriefing and an external teacher, presenting negative as well as positive results, and reflectivity were used (Connelly, 2016; Creswell & Creswell, 2018; Shenton, 2004). Dependability was accomplished by trying to describe the process as clearly as possible and reflecting within the research team during the process (Shenton, 2004). Transferability in these kind of studies, which can be compared to a case-study (Yin, 2009), is not possible in the sense of generalization in quantitative studies. Instead, the advantage is being able to go in-depth in the specific case. However, by giving clear descriptions of the context, the sample, the situation, the research process, the reader is able to decide whether and how the results are transferable to other contexts (Connelly, 2016; Shenton, 2004). Limitations could be that the Study does not assess to which extent TL is reached, and therefore we cannot be sure that the preconditions enable TL. However, previous research and the teachers' previous experiences are in line with the results. Researching your own work is risky, but as mentioned above several actions were taken to handle this.

Summary of studies

Study I: Manager's task to support integrated autonomy at the workplace: Results from an intervention

Aim

The goal was to study whether training first line managers in the enabling managerial task may lead to changes in the work for the subordinates. The enabling managerial task is described as to provide conditions for and influence interaction between actors to enable the emergence of coordination in tune with a changing environment. The research questions were: 1. Is it possible to change behavior of the subordinates by training their manager?; 2. What changes will training of managers in the enabling task introduce? (a) Has the training changed the interactions between employees at the workplace? (b) Is there more integrated autonomy in the workplace?

Main findings

The results show a positive change on all scales, thus concluding that it is possible to change subordinates' behavior by training their manager. The changes that the training of managers enabling task introduced were, by amount of increase: 1. Physical milieu, 2. Relationship to management, 3. Democracy, 4. Appreciation, 5. Social milieu and 6. Integration into the organization. Ignoring the first item, physical milieu, these results indicate a better relationship between the manager and their subordinates, increased trust, communication, and interaction. The results also indicate that the training has changed the interaction between employees at the workplace in a positive way, e.g. a more positive social climate where all are involved, listened to and understood. In addition, an increased dialogue competence was noted, e.g. individual subordinates talked actively more often, started discussions to scrutinize what was said, listened actively and reflected critically more often. We also concluded that there was more integrated autonomy in the workplaces after the intervention, although integration had increased more than autonomy. This raised questions of developing workshops in how to train managers to give autonomy.

Contributions to the thesis

The study contributes to the aim of the thesis by being an example of a competence development activity for practicing managers in different organizations. The goal was to learn the enabling managerial task. Epistemology questions were not discussed, but a constructivist and complexity theory perspective were expressed. The enabling managerial task promoted learning by, in

turn, promoting autonomy and integration, communication in the form of dialogue competence, and creativity.

The study also contributes by describing the pedagogical methods used in the intervention, i.e. feedback from questionnaires, short input in the form of theories behind the questionnaires, exercises on a variety of themes, reflection in small groups regarding the feedback, theory, connecting to their own experience, trying to adapt in practice by choosing their own homework, and reflective writing on experiences from practicing. The study also describes the teacher's role as a combination of modelling the content which was possible, i.e. promoting learning as a learning dialogue and reflection. The teachers fostered reflection and tried to help the managers to use the theory to deepen their understanding of their experiences and practices. Regarding learning quality, a more detailed analysis was completed in Study III. Overall, the main conclusion is that the intervention was successful in terms of the managers on average changing their behavior so that it influenced the employees' experience to the positive.

Study II: Knowledge and experiences of risks among pupils in vocational education

Aim

As young workers are over-represented in statistics concerning negative outcomes of poor work environment and risky work, the aim of this study was to identify the knowledge and experiences which vocational school pupils gather concerning potential work environment risks in their future employment. More specifically, questions of interest were how vocational school pupils were prepared to minimize the risks involved in their future work, and what their thoughts and attitudes towards risks were.

Major findings

The study revealed that the pupils were offered knowledge far from that intended by laws and by state-of-the-art occupational health risk research. This was most evident in the case of the pupils' lack of knowledge about systematic work environment work such as the demand to do risk analyses and taking long-term actions. The pupils considered working environment work important and mentioned many risks in their respective workplaces. The pupils were satisfied with their occupational health and safety education in school. Training materials included textbooks, films, and tasks with questions. The pupils described that different training techniques which suited the learning skills of all pupils were needed to increase their knowledge; for some, practical teaching was easier to remember. The education on safety at work was mostly provided in the 1st year of the 3-year vocational program and some pupils suggested an improvement in the form of a repetition of the work environment course in year 3 of the program. In the workplace-based learning, most of the pupils received some kind of introduction and information. However, the most common information issues from the pupils' experiences of this were about personal protective equipment, good housekeeping and not to hurry. The conclusion was that a systematic approach to pupils' training in work environment was lacking.

Contributions to the Thesis

The study contributes by being an example of a vocational education program focusing on work environment issues with work-based practice. Epistemology was not discussed, yet the pupils had both theoretical and practical lectures in school, e.g. to learn how to use different machines or to cook. The study contributes by showing how the education was designed and the results of this design. For example, the teachers had different specialties, some more theoretical and some more practical. In the practical lectures the teachers modelled how to do. The study contributes also with how the pupils experienced the

training, i.e. that they emphasized the positive with the teacher relating anecdotes from their own work experience. The role of the work based supervisor was not handled in this study, but in another article from the same project (Andersson et al., 2015) the results point to the need to develop the supervisors' competence in supervision. Concerning learning quality, the results shows that the pupils had low levels of work environment and safety knowledge.

Study III: Enabling transformative learning in the workplace: An educative research intervention

Aim

The aim of the study was to discuss the potential of an educational research intervention to influence the quality of the learning outcome in the workplace as interpreted from the perspective of adult learning theory.

Major findings

The findings are presented in five clusters showing changes from dramatic learning to negative outcome. The clusters are based on the results of the quantitative pre- and post-assessments. The results were analyzed from: the pre-conditions for learning and the quality of learning; the experience of a disorienting dilemma and a cognitive conflict, motivation and support, and the quality of learning; and, assimilative learning and cumulative or epochal TL. Where no learning was traced, the managers were not motivated to put the intervention into practice, or the demand for change became too great. In addition, the support from the organization was low. When assimilative learning was found, the managers either found support for their own thinking or were not motivated to take on any challenge. So, regardless, they were not pushed to the learning edge. When cumulative TL was found, both managers and employees developed new understandings and new ways of acting. When epochal TL was found, the managers and the employees experienced a dilemma, struggled with cognitive conflict, achieved the first steps of the TL process, and rebuilt their capacities. Compared to cumulative TL, epochal TL is more dramatic with clear demands. The overall results show that the research intervention had an impact on the learning processes both for the managers and employees. The core elements for supporting TL are: the experience of a disorienting dilemma, e.g. by external forces; the issue feels important; time and place for interaction are available; a learning network for the managers is provided; new knowledge is offered; managers and employees are motivated to act; and to develop your understanding of your role and act accordingly. Noteworthy is the impact of contextual factors.

Contributions to the Thesis

The context contribution is the same as in Study I. Concerning epistemology this is not discussed, yet the study contributes by using TL as a theoretical framework i.e. a constructivist view. Concerning education design it was the same as in Study I, but in this study the analysis also emphasized the pre-conditions for learning: disorienting dilemma, cognitive conflict, motivation and support. Regarding learning quality, this study contributes by analyzing the quality of learning in terms of assimilative, cumulative or epochal TL. The

results show that different qualities of learning were reached depending on the preconditions.

Study IV: Fostering transformative learning in higher education: core elements and recursive process

Aim

The overall aim was to deepen the understanding of how teachers can create contextual preconditions to foster TL.

Major Findings

In the article, a framework to create contextual preconditions to foster TL is proposed. The starting point was Taylor's six core elements for fostering TL: individual experience, critical reflection, dialogue, a holistic orientation, an awareness of context and establishing authentic relationships. The results reveal that a process perspective and activity are not included and so the study proposes to extend the preconditions with what is called a recursive process and activity. A recursive process to foster TL adds a process perspective especially on micro and meso levels; emphasizes group-processes, progression on both individual and group levels; and, adds the role of process leader to the teacher, constantly adapting to what happens, to lead the students to their learning edge. The concept recursive emphasizes the learning process as a non-linear, cyclic, and emergent process. This is implemented in the recursive experience and recursive reflection. Recursive experience means to create experiences or use what happens during the course to promote learning. The teachers model the course content and create exercises allowing the student to practice. Recursive reflection means focused and repeatedly recurring reflection from different perspectives, with input from previous reflections as a new starting point. The results emphasize a systematic approach to reflection with clear questions to help the students critically reflect over their experiences and habitual behavior. Activity is added to emphasize the importance of the students being active, through exercises, reflection and dialogue within the groups.

As a whole, the teachers act as process leaders conducting a weaving between the six core elements, the recursive process and activity in a progression during the course.

Contributions to the Thesis

The study contributes by exemplifying adult education in the form of a university course for HR students with the goal to learn about how collective learning and learning organizations could be fostered. Epistemology is not discussed as the goal was to foster TL and act in line with the expressed goal. Regarding educational design, the study exemplifies how the course in itself is used as a practice for creating collective learning. The teacher's role is to model the content: how to foster collective learning, foster reflection, and give theoretical input. The learning level is not studied; the origin of the study was

the experience, from reading the reflective writings of and feedback from former students, that TL was fostered. In addition, the study contributes by describing and analyzing pedagogical methods to foster TL: the six core elements to which are added a recursive process and activity. In this study, the teachers' knowing-in-action was used as empirical input since it contributes with a deeper understanding of how the teachers adapt to the unique situation in the classroom.

A meta-analysis of epistemology in the included studies

In this section the results from the included studies are analyzed through the lens of the conceptual framework. The structure will follow the aim of the thesis starting with what an epistemology is including the view of professional competence, followed by the consequences of an epistemology of practice for educational design, and finally what quality of learning is needed to change the view of epistemology.

Epistemology

The theoretical review shows that there are at least two different approaches to epistemology and that the view of knowledge one chooses has consequences for the view of professional competence and how education is designed. According to Schön (1983), the prevailing view of knowledge in terms of TR is challenged by epistemology of practice. Presently, there are many examples and attempts to formulate an epistemology of practice in many different research fields (cf. Beckett, 2000; Cook & Brown, 1999; Cosgrove & O'Reilly, 2018; Dall'Alba, 2013; Dirkx, 2008; Kinsella, 2009; Molander, 2015; Raelin, 2007). Although the epistemology has consequences for how education is designed, it is not always expressed explicitly; instead the approach seems to become visible through the choice of methods and in the practical action. From the theoretical framework, some key terms describing an epistemology of practice are outlined (e.g. Gherardi, 2011; Molander, 2015; Schön, 1983, 1987):

- the situated and complex practice in focus,
- knowing-in-action,
- the reflective practitioner practicing reflection-in/on-action,
- a holistic approach,
- having a constructionist, pragmatic, process and relational perspective.

When analyzing the four included studies, none of them explicitly expresses the view of epistemology. Therefore, I need instead to search for how

the epistemology might be expressed in practice. In the following I will use the key terms to search for signs of an epistemology of practice in the included studies. For clarification I have marked the key terms with italics. Studies I and III will be handled simultaneously as they are based on the same study.

In Studies I and III the focus on *the situated and complex practice* is not obvious. Possibly one could interpret the researchers'/teachers' approach of allowing the participants find their own homework for the next time as a way of adapting to the specific situation of each manager. The opposite would have been to create the same homework for everybody; but since their situations were different, they had different needs and possibilities. Regarding *knowing-in-action* the managers who had made a change could have incorporated the new knowledge into their acting, adapting it to their situation. When it comes to *reflection* it is clear that it was an important part both during the workshops and in the enabling leadership. In addition, it is clear that the managers who went through TL had incorporated reflection in their way of being and also taught their employees this way of being. Reflection helped the participants to integrate the new knowledge into their experiences. This can be compared with incorporating new knowledge into one's own repertoire through reflection (Schön, 1983, 1987). Regarding *holistic*, there are parts of especially the improvisation field which value knowledge from both the body and feelings. This is a kind of knowing which both the teachers emphasized and which was included in the enabling managerial task. Finally, the researchers expressed the use of a complex system theory *perspective* in both Studies I and III, as well as a constructivist perspective in Study III. The constructivist perspective is in line with an epistemology of practice. Regarding complexity theory it is harder to say since it is not mentioned particularly. Thus, there are aspects in the complexity theory which could be in line with an epistemology of practice, e.g. the view that the world is a complex system (cf. Solé, 2000; Stacey, 2001), but I do not have enough knowledge in complexity theory to draw any conclusions regarding this. Interaction is highlighted which is similar to a relational perspective.

Regarding Studies I and III it is worth mentioning that when the researchers described the enabling manager task, it could be interpreted as the task of a manager who would enable knowing-in-action, i.e. in line with an epistemology of practice. The description of the post-industrial work system emphasizes the competence of the employees; that the organizational structure is not as pre-defined as in earlier work systems; innovation and flexibility is in focus; and the complexity makes the system impossible to plan, manage and control by one person. This could be interpreted as a vision of an organization in line with an epistemology of practice. Here, the enabling manager is supposed to create preconditions for the employees to be able to learn from each other. Integrated autonomy is emphasized, as are communication skills with a special focus on dialogue and reflection, and improvisation. The picture being painted of the enabling manager and the employee could be interpreted as the

picture of how a manager should act to also enable knowing-in-action at a workplace. This would mean that the researchers, in fact, without using the explicit words, advocate a leadership in line with an epistemology of practice.

In Study II, it is more difficult to draw any conclusions about epistemology of practice as the researchers' views are not relevant since they are not involved in the study, and the teachers are not interviewed about their view in the included study. Yet, most visible regarding *the situated and complex practice*, the courses have integrated work-based practice in the programs, so this seems to be important. In addition, in school the pupils are provided with practical experiences by e.g. learning how different machines work. Regarding *knowing-in-action* it is hard to say this is expressed in any way; possibly when the teachers show how the machines work, their knowing-in-action could be visualized; and, for the pupil, by training to use the machines their knowing-in-action is developed. However, it is hard to say if this learning is to learn a specific routine, or to adapt the doing to a specific situation (Schön, 1983). Regarding *reflection*, it is interesting that nothing is mentioned about reflection. However, from the study where the teachers and supervisors were interviewed it is mentioned that in some programs the pupils were obliged to write diaries or do some other kinds of assignments and to discuss this with their schoolmates on their return to school (Andersson et al., 2015). This could be interpreted that there is, in some programs, some kind of reflection. The *holistic* element could be expressed by the practice elements both in school and in the work-based practice. However, I would not say that providing practice is enough to be in line with an epistemology of practice; it depends on how this practice is done, and in this case, how bodily knowing is valued. Regarding *perspectives*, no specific perspectives were mentioned. The researchers express that the demands for professional competence have increased in the labor market, but at the same time many jobs are characterized by low freedom of action, high psychosocial demands, low social support, and high work intensity, which seems to describe a work situation more in line with a TR approach than that of an epistemology of practice.

In Study IV, the researchers are also the teachers. Regarding *practice* the teachers describe that "the course is the course", i.e. the content of the course is also experienced in the course. The teachers try to provide the students during the course with experiences which would enhance the students' learning and provide the students with practice. In addition, the teachers describe the importance of constantly adapting the preconditions to the specific situation, which could be compared to the situated and complex practice. This could also be interpreted as practicing their *knowing-in-action*. In the exercises throughout the course, culminating in the final workshop, the students are able to train their own knowing-in-action and afterwards receive feedback and discuss how they adapted to the specific situation. A crucial point here is that there is no right and wrong way to do this; instead how a theory is adapted to the specific situation is due to the situation, and the students are to learn about this process

of adapting. *Reflection* is a crucial part in the course, used every day during the course and in writing reflection protocols. The teachers describe how they reflect-in-action during the course day to adapt to the situation, and that a goal is to teach the student to reflect. Using Schön's words, this can be seen as an example of what the reflective practitioner does in a specific situation (Schön, 1983). Thus, in a specific situation, this could be to foster an understanding of how to use theory in practice, not as the truth, but as *one* way among many of understanding a situation. It is through reflection that the theory can be linked to previous experiences to create your own repertoire of knowing-in-action (Schön, 1983, 1987). The *holistic* approach is expressed by the use of different exercises to help the students become aware of their feelings, their bodies and how this contributes to their knowing. Further, the use of exercises and different methods which involve emotions, values, and the body, show that a holistic approach is represented and so indicates an epistemology of practice. In the result section of the study's article, the teachers' *perspective* of their education design is outlined, which will be discussed further in the next section. Thus, the use of Mezirow indicates a constructivist perspective (Mezirow, 1991).

To summarize, it is noteworthy that none of the included studies articulate their epistemology, which is also seen in other studies (Gray & Siegel, 2014; Rico et al., 2012; Slovak et al., 2017). This absence could be due to the focus in the studies being something else, or that there is no room for a discussion about epistemology. The epistemology could sometimes be seen in practice, in the actions or in the theoretical framework which was chosen. However, the absence of epistemology could also be due to ignorance, and not understanding its significance, and if this is the case, it is important to raise the awareness of the consequences of an epistemology.

A question now is how many of these key themes are necessary to achieve an epistemology of practice? After analyzing the above I do not think I can answer that question, more information is needed. Therefore, we move on to education design.

Education Design

According to Schön (1987), the reflective practitioner can be educated through a so-called reflective practicum. This is characterized by being in an intermediary situation where the student learns by doing, under supervision and with the support of a teacher who is an expert in the field and acts as a coach (Schön, 1987). Reflection using the ladder of reflection is crucial which the teacher combines with telling and listening, demonstrating, and imitating. Coaching models include joint experimentation, follow me and the hall of mirrors. The teacher models the content by using their own knowing-in-action,

improvising, experimenting and using their repertoire (Schön, 1987). The crucial thing is to teach the student how theory by reflection-in-action is adapted to the specific situation. From the theoretical framework, the key themes are:

- the reflective practicum as an intermediary place where theory and practice are combined,
- the dialogue with reflection in/on action,
- coaching by joint experiments, follow me and hall of mirrors.

When analyzing Studies I and III from an education design point of view in line with Schön's reflective practicum, both similarities and differences can be seen. Regarding the *reflective practicum*, at first glance the workshops were not a reflective practicum since the managers did not train their leadership in them. However, on closer inspection, the researchers/teachers combined theory and practice in the workshops by giving theoretical input, allowing the managers to reflect together to integrate their experiences with the theories, and receive feedback from their subordinates through the questionnaires. *Dialogue competence* theory (Wilhelmson, 1998) was practiced during the workshops, and in this way the researchers/teachers tried to model dialogue competence. The managers were invited to *reflect* together on their actions with feedback from the questionnaires and other managers' experiences being helpful input. Regarding the enabling manager skill, the teachers and the managers exercised *joint experiments* to gain insight into how the enabling managerial task could be performed from the different situations the managers described. By modelling, the teachers performed the coaching type *follow me* by showing examples of how to do. In this way the workshops became a *hall of mirrors*, where how the teachers acted in the workshops was how the managers would act towards their subordinates. In this case, practice became something slightly different than what could have been expected at a first glance. That is, the managers had a lot of experiences already, and they had their work to practice their new skills in between the workshops. Thus, the practice needed was to model the enabling managerial task. However, in the article, the researchers did not describe this, so the question is whether they were aware of this or just made it nonconsciously? Either way, the researchers were familiar with the description of the enabling managerial task, the theories this was based on, and they acted in line with this.

In Study II the *reflective practicum* was two folded: the work-based practice and the practice in school. In school the practice seemed to incorporate theory and practice; describing that they went through the theory first and then practiced. The teachers described the machines or how to do and told stories about their experiences. In this way, they modelled the practice, and probably coached the pupils while they practiced. In the work-based practice there

seemed to be no theoretical integration, although the pupils said that they recognized what the teachers had said in school. Regarding *dialogue and reflection*, there are few signs of this in this study. However, as mentioned above, in the study of the teachers, there were some programs where some of the assignments indicated a form of reflection (Andersson et al., 2015). However, nothing indicates that there was any reflection on the work-based practice. The pupil said nothing about having a dialogue with their teachers and supervisors. When it comes to *coaching types*, I could interpret that follow me is the one used, where the teacher or the supervisor at the work-based practice shows how to do. However, whether the teacher and supervisor also show alternative ways and teaches reflection-in-action is impossible to say. I do not see any signs of joint experiment nor hall of mirrors.

Study IV could be interpreted as being a *reflective practicum* as Schön (1987) proposes. The teachers do not call it a reflective practicum, rather using “the course is the course” to describe how the course tries to “be” a collective learning; that the students in the course will enable collective learning and, by doing this, learn how to enable collective learning. The similarity with Schön’s reflective practicum is the intermediate placement, where the students are still in formal education, in the classroom, but are able to practice how to learn collectively as in real life, but in a safe environment. The integration of theory and practice is noteworthy since the two go hand in hand throughout the course; e.g. when the teachers try to create exercises which emphasize the core in the theories, the students use the theory in practice and reflect about them. Regarding *dialogue and reflection*, these are also in focus during the course according to the teachers who call the reflection “recursive reflection” describing continuous reflection from different perspectives and levels. This seems similar to Schön’s ladder of reflection, to meta reflect and reflect on the earlier level (Schön, 1987). Dialogue is also in focus and both a theory of dialogue (Wilhelmson, 1998) and a theory of reflection (Kember et al., 2000; Kember et al., 2008) is used to combine both theory and practice throughout during the course. A difference compared to Schön (1987) is that he seems to have the ability to coach the students one at a time in the design program. In the Study’s course the teachers at most could coach at a group level, although written comments were given on individual student’s reflection protocols. Concerning *coaching types*, the teachers argue that they must model the content since the course is the course. They must show and do the things which enable collective learning. Further, they describe how they could ask the students to, at the end of the workshop, reflect on what the teachers had done and how this had enabled collective learning. As this was also confirmed by the students, this behavior can be an example of meta reflection as well as a kind of joint experimentation or follow me, where the teacher discusses the choices made and shows their reflection-in-action to the students (Schön, 1987). The course is the course is also an example of hall of mirrors since the students can experience being in a collective learning process, seeing how the teachers

are acting. At the end of the course, they take the place of the teacher and do the same thing themselves with their classmates.

In this example, it appears that the teachers practice what they preach when teaching and that they are aware of what they are doing. However, they are not using the vocabulary of Schön, e.g. they are not talking about reflection-in-action, the reflective practicum, etc. Using these concepts and connecting to an epistemology could maybe enhance the understanding of the situation and clarify even more.

To summarize, Study IV is most similar to Schön's reflective practicum (Schön, 1987), followed by Studies I and III. Study II instead exemplifies work-based placement. However, the contexts are different and in Studies I and III, a practicum as in Study IV would perhaps have been unnecessary since the managers already had a workplace to use experiences from and train within. On the other hand, reflection-in-action is lacking if practice with supervisors or teachers is not used. The key concepts highlight some useful methods in the practicum. Some of these was used in the Studies but far from all. To further develop education design in line with an epistemology of practice, these concepts can act as a guide.

The quality of learning: TL

Previous research indicates that it can be difficult for a new view of knowledge to permeate the practice, i.e. that it becomes an espoused theory but not integrated into a person's theory-in-action (Argyris & Schön, 1974). The question asked was what quality of learning is required to enable learning which enables congruence between thought and action, in this case concerning epistemology of practice. Mezirow's theory of TL (Mezirow, 1991) was found to be useful as it handles the reassessment of basic assumptions. From the theoretical framework, we could either explore whether TL has occurred according to statements from the individuals or explore whether preconditions to enable TL were provided by Mezirow's 10 steps or Taylor's six core elements. However, as seen in Study IV, two more core elements, recursive process and activity, should be added. In this thesis the included articles provide different information and therefore different analyses can be done. From the theoretical framework and the included studies, the key concepts are:

- Ten steps to TL
- Eight core elements to foster TL

In Studies I and III the results from the workshops indicate that TL has occurred, not within all participants but within some of them. Study I shows that the educational intervention led to positive changes within the interaction

between the managers and their subordinates and between the subordinates, and that integrated autonomy has increased. In Study III the interview results showed that some of the managers had gone through a TL process. The managers described how they changed their thoughts and how this had also affected their behavior. This indicates that when TL is at hand it enables acting in line with your thoughts. In this case, it is not an expressed goal that the participants should learn a new epistemology. However, as described earlier, the enabling managerial task is in line with epistemology of practice thinking. So, the managers who went through TL could learn a new way of thinking and acting which is in line with an epistemology of practice.

In Study II the results indicated that the pupils did not have the knowledge they should have regarding work-environmental issues. Nor were there any signs of a change of epistemology perhaps due to the study not having this in focus.

In Study IV no outcome assessment was done. However, the researchers argue that they have seen that TL was enabled in earlier courses when using a core structure as in this Study. There was no focus on changing epistemology in this course either. However, as in Studies I and III, the course content, to enable collective learning and the way the teachers express how this is done, seems to be in line with an epistemology of practice. Therefore, I would argue that if TL is at hand, it could have included learning a new epistemology. Yet, in this case we do not have any proof that the students also act in accordance with this new view.

Thus, in these educational situations, what enabled TL to occur or not occur? Using Mezirow's 10 steps, in Study I and III some of the managers experienced a dilemma at work, which the enabling managerial task could provide an answer to. They used the workshops, the inputs from theory, the feedback from the questionnaires, the other participants' thoughts and experiences as exploration of new roles and actions, and they critically assessed their assumptions trying out new roles and new behavior.

In Study II we do not have any descriptions from the pupils of what their learning process looked like. From the focus-group interviews we could imagine that the practical training in school and at the workplace could create dilemmas. However, since reflection was not emphasized, critical assessment is neglected. Possibly dialogue with others is available, but we do not know. The exploration of new roles, training these and building competence could, on the one hand, be seen as obvious steps in a practical training, but on the other hand TL demands critical reflection, a challenge to your values, and this we do not know anything about in this case. What we know is that there are no signs which support that this has happened.

In Study IV the teachers explicitly describe that the exercises are used to create disorienting dilemmas, and that these should be followed by critical reflection, dialogue with others, and input from the theory which provides the students with new ways of understanding and acting. The follow-up exercises

are described as giving possibilities to try out new roles and build new competence.

Another option is to use Taylor's six core elements (Taylor, 2009) and the two elements added in Study IV, the recursive process and activity, to see if these are provided in the education situation, and thereby create preconditions to enable TL. Regarding *experiences*, in Study I and III the managers already had experiences, but they were encouraged to reflect on these during the workshops with the other managers. Yet, feedback from questionnaires and exercises during the workshops gave experiences and created in some cases dilemmas when not in line with what the managers wanted or believed. *Reflection* was enabled both during and between the workshops by writing reflection protocols. *Dialogue* was a theoretical input but also trained during the workshops. A *holistic approach* was partly provided by using exercises where the whole body was engaged. The importance of taking the *context* into account was emphasized when the teachers in different ways adapted to the various situations of the managers and encouraged them to adapt the enabling managerial task to their specific situations. In addition, it was concluded in the study that the managers work situation affected the results of the study, i.e. whether a change occurred or not. *Authentic relationships* were enabled since the teachers described the importance of starting with a focus on creating a good social climate and working habits in the group. The *recursive process* seems similar to Schön's thoughts about the reflective practicum, especially hall of mirrors and follow me as well as the ladder of reflection (Schön, 1987). See also the discussion above regarding the reflective practicum, concluding that this is provided. Regarding *activity*, the managers were active during the workshops, in discussions and reflections, in exercises, and in creating their own homework.

In Study II, *experiences* were provided by the practical exercises in school and by the workplace practice. Whether *reflection* is used is hard to say; as mentioned earlier there are some examples of this from another study but only a few. *Dialogue* could have occurred, but again it was not mentioned. A *holistic approach* was partly provided by films, questions, literature, and training practice. Regarding the *context* I do not have information to answer this, and regarding *authentic relations* it is possible that it was emphasized, but again nothing was mentioned. Regarding recursive experience in the *recursive process* it could have been provided when training in school; however recursive reflection seems to be overlooked, although *Activity* seems to be provided.

In Study IV the course is already analyzed through the six core elements, recursive process and activity in the study. The conclusion was that these elements were provided in different ways in the course.

What conclusions can we draw from this? That more preconditions to enable TL were provided in Studies I, III and IV, and that this might have resulted in a more qualitative learning occurring? Yes, but at the same time, it is only

in Study IV that the aim to enable TL was expressed. The content of the learning which occurred in the different studies was not aimed at epistemology, rather aimed at learning the enabling managerial task, work environment issues, and collective learning. This analysis concerns to which extent they have learned these issues, not epistemology of practice. Yet, by doing this analysis I am interested in whether education design could enable TL, regardless of content. And with this aim, the conclusion is that Study IV probably enables TL more than the others, Study II the least. Thus, on the one hand we cannot say anything about whether these educational situations have enabled a change and deeper understanding of epistemology, but we can say that they, to a greater or lesser extent, have enabled TL; and, that if the question has touched epistemology, it could probably have been able to enable a change of epistemology where mind and action are in line. On the other hand, in Studies I, III and IV the content as the enabling managerial task and collective learning could be interpreted as based on an epistemology of practice. Thus, the TL that has been seen could have touched on epistemology of practice.

When analyzing the studies using the eight core elements, I notice that there are great similarities between the methods used in the reflective practicum and how to enable TL. Both emphasize experience, reflection, dialogue, a holistic approach, relations and context, action and the recursive process. It seems they are just using different words. The difference is that Schön is more precise and focuses specifically on learning a practice, and therefore gives examples of learning in both the practice of the work and in reflection as well as the use of the different coaching styles (Schön, 1987). This could indicate that the reflective practicum, according to Schön, also enables TL. This is not surprising, since Schön has his past in the work of enabling a congruence between espoused theories and theories-in-use (Argyris & Schön, 1974). However, the eight core elements are perhaps not enough to enable knowing-in-action, since TL does not focus on a specific practical competence, rather it focuses on assumptions in general.

The questioning of assumptions is significant for TL, often those deep values originating from childhood (Mezirow, 1991). According to TR, values and subjectivity should not interfere with knowledge, instead objectivity is accentuated. In an epistemology of practice, values are important. Molander (1996) talks about acting with good reasons, and with discretion, and that knowing-in-action values are integrated. Therefore, when learning knowing-in-action, fostering a learning which reaches the values would be desirable. Deeper levels of learning as TL is supposed to achieve would lead to the conclusion that fostering TL would be needed to foster knowing-in-action.

Discussion

The overall aim of this thesis was to contribute to a deeper understanding of a holistic perspective on epistemology, i.e. what an epistemology of practice is, its consequences for the view of professional competence in working life, and how education may be designed in different contexts. Previous research revealed Schön's (1983, 1987) work on epistemology of practice as a comprehensive theory which was useful in this thesis. Further, Mezirow's TL theory (1991) was chosen as an example of an adult learning theory focusing on deep learning while critically reassessing your deeply held assumptions and values. The results from four studies representing three different contexts and types of educational situations contribute to the following discussion.

Main findings

When analyzing and comparing the included studies in the meta-analysis, some aspects become visible. First, regarding epistemology, none of the studies express epistemology clearly. This is not unusual as in previous research it has been common to dive into an analysis of reflection, a practicum, etc without describing the epistemology (cf. Gray & Siegel, 2014; Rico et al., 2012; Zhu, 2011). Instead, signs of an epistemology have to be traced by the actions made, or in the used theories. An interpretation in this thesis is that signs of an epistemology of practice can be seen in Studies I, III and IV. In Study II, the signs are fewer which could indicate that the practice-based learning in Study II could be more in line with TR, regardless of using work-based practice; or, that this education needs to develop the framework of the practice so that it is in line with an epistemology of practice and enable knowing-in-action.

Overall, the lack of expressing the epistemology view also makes the view of professional competence and the understanding of why an education is designed as it is less comprehensible. Schön (1983, 1987) has developed a holistic view of epistemology containing a view of knowledge, a view of professional competence, and how to educate the professional practitioner. The main findings in the studies are that this holistic view was not found in any of the studies, and therefore it becomes unclear what they want to achieve and why. In some situations, the differences between education design in TR and epistemology of practice are hard to see; the same methods are used, but small

differences in approach makes a difference (cf. Ng et al., 2015). Therefore, a recommendation is to explicitly express the view of epistemology to enhance the consciousness of this subject and its consequences.

Regarding education design, all the Studies describe in different ways that the aim is to gain knowledge which should be put into practice. However, as mentioned earlier, none of them discuss the view of epistemology. The three educational situations chose different designs to reach their goals. Study IV uses a kind of reflective practicum, in line with Schön (1987), trying to combine theory, practice, and reflection in an intermediary place within a formal education, in a classroom setting. Study II was designed as a work-based practice, with a practical part combined with theory but less reflection. Studies I and III are something in between, focusing on the theoretical and reflectional parts, fewer exercises, and no practice. This indicates that different contexts could use different designs to enable knowing-in-action. In Studies I and III a practicum is maybe not needed as much as in Studies II and IV since the participants were working, having a practice already. At the same time, when not using practice with supervisors, there is a risk of missing the possibility of enabling reflection-in-action, which could enhance the learning. For example, if the managers had had a supervisor at work, the supervisor could have made the manager aware of aspects which now were not noticed.

To take this reasoning further, if Study IV is similar to Schön's (1987) reflective practicum, Study II is more in line with the designs emphasized in WIL (Billett, 2011; Patrick et al., 2008), while Studies I and III could be compared to the design developed by Göransson et al. (1991; 2006) and Södertörn's university (Alsterdal et al., 2009; Josefson, 2011). These differences could be due to differences between the participants' previous experiences. In Studies I and III the participants are managers already in the workforce, i.e. they have work experiences which can be used. In Studies II and IV the participants are students and pupils with less experience and no workplace to practice in. It could possibly be interpreted that the upper secondary school pupils in Study II are too young to be able to do that form of reflection, and instead a more child related pedagogic instead of an andragogic is used. Adult learning emphasizes the integration of new things with former experiences, since adults have more experiences (Knowles et al., 2015). On the other hand, even if the pupils in Study II have fewer experiences, they could reflect on the experiences from their work-based practice and from school practice. In this Study, the absence of reflection could have hindered the development of critical thinking and in the end, knowing-in-action. In Study IV some of the students have experiences from previous employment which they used as input to reflect on, beyond what happens in the classroom, and this seemed to work well. A conclusion of this is that the overall design of education could be different, depending on the experiences of the participants.

No matter which design is chosen, Schön emphasizes several methods which are needed to enable knowing-in-action, to combine theory and practice, dialogue, reflection-in/on-action and coaching by joint experiments, follow-me and hall of mirrors (Schön, 1987). The Studies use several of these methods, however the findings indicate that reflection is central for the development of knowing-in-action, as is the approach of adapting to the specific and complex situations (Schön, 1983).

A significant part in education design is the important role of the teacher and supervisor. In Schön's example the teacher acts as both expert in the field and teacher, i.e. the teacher in the practicum teaches both the theoretical and practical parts, as well as reflection skills (Schön, 1987). This is an extended role compared to the teacher's role within TR which focuses mainly on theory. In Study IV, the teachers also modelled how to enable collective learning since they as teachers are some kind of experts on this. In Studies I and III, there is another situation. Here the teachers could model how to enable learning, but they could not model the managerial part since they did not have this experience. In Study II the teachers in school were both teaching theory as well as practice in the classroom. The other study by Andersson et al (2015) reveals that the teachers often had former experience in the work they taught. Beyond this, the supervisors at the work-based practice should teach the practice. A conclusion is that it is important that the expert, either teacher or supervisor, should have the ability to express in words what they do and how they think, and can show this in action. It is also important that the expert can foster the participants' reflection-in-action and reflection-on-action by making the dilemmas visible, asking questions, and encouraging the participants to think for themselves (Schön, 1987). There seems to be a risk that if the roles are separated between different persons, some of the tasks are forgotten which could negatively affect the learning possibilities, especially the possibility to capture the moment. It is important not to forget to reflect-in-action (Schön, 1987).

Regarding the quality of learning, it is argued that TL is needed to learn about and change behavior in line with a new epistemology. None of the studies have had this in focus; however, in Studies I, III, and IV the contents had similarities to an epistemology of practice. If interpreting the learning about the enabling managerial task as similar to an epistemology of practice, the results indicate support for the idea that TL is needed to change behavior. Study IV shows the most use of key elements to enable TL followed by Studies I and III with Study II showing the least. The analysis also reveals similarities between the key elements to enable TL and the methods in the reflective practicum. An important conclusion, however, is that if TL is required to promote the development of knowing-in-action, reflection is required. Referring to Kember et al. (2000; 2008), reflection means that the individual connects the knowledge to themselves, their experiences, feelings and assumptions.

Reconnecting to previous research

A conclusion in this thesis is that it is important to clarify our epistemology. In the above analysis and discussion this has focused teachers and authors; however, regarding participants, I want to connect to Billett's (2009, 2011) argument for the importance of an individual's epistemology and that this affects how the individual approaches learning. As participants, the view of epistemology could have consequences for what they learn and how they approach learning. Therefore, to learn about different epistemologies, what knowing-in-action is, how to develop knowing-in-action through e.g. reflection-in-action and reflection-on-action, could enhance an individual's possibility to develop knowing-in-action and become a professional.

In previous research, the largest proportion of those who referred to Schön had focused on reflection: reflection-in/on-action and the reflective practitioner (Anderson, 2019; Griggs et al., 2018; Korkko et al., 2016). The conclusion of this thesis is that reflection is essential in an epistemology of practice. Reflection is what integrates theory with practice, helps the professional to adapt their experiences and theories to the specific situation and create their repertoire, i.e. their knowing-in-action. Without reflection there is a risk of ending up in TR. From this perspective, earlier research has been "right" to focus on reflection. However, as NG et al (2015) argue, if reflection is not combined with an epistemology of practice, it could result in just a TR method.

As noticed in previous research there has been a focus on reflection-on-action, at the expense of reflection-in-action (Korkko et al., 2016; Zhu, 2011). In the reflective practicum, reflection-in-action is promoted when the teacher shows reflection-in-action or encourages the participant to reflect-in-action. In examples from work-based practice, seminars after the practice are emphasized as important (López-de-Arana Prado et al., 2019; Saiz-Linares & Susinos-Rada, 2020), i.e. reflection-on-action. A conclusion therefore is that to enable reflection-in-action, there is a need for a teacher or supervisor who knows the practice, is able to reflect and to use theory in this reflection.

In an epistemology of practice, practice is important. However, one conclusion from this thesis is that practice is not enough, which is in line with earlier research (Billett, 2015). In this thesis reflection is emphasized, as is the role of the teachers and supervisors to help the participant integrate theory and practice to create their knowing-in-action. Beyond what has been outlined in the main findings, previous research has developed a framework which could contribute to this by highlighting the need to support participants before, during and after the practice (Billett, 2011; Jackson, 2015). This advice could increase the participants' ability to benefit from their work-based practice and give helpful guidelines to the teachers.

When dealing with courses in higher education, WIE and WIL give valuable thoughts about how to create curricula which are aligned with the practical

parts of courses (Billett, 2019). The distinction between the intended, enacted and experienced curriculum is especially enlightening. Through the lens of this thesis, this is compared to espoused theories and theories-in-use and emphasizes the difference between what you say you do (espoused theories – intended curriculum) and what you do (theories-in-use – enacted curriculum). In addition, experiences involve the participants and their epistemology (experienced curriculum). If one intends to develop a curriculum with a holistic epistemology, these concepts put important parts of the work into words.

In previous research the focus has been on practice as a work placement, and Schön's thoughts about the reflective practicum are almost forgotten. However, previous research shows that it is hard to find enough organizations to satisfy the needs for practice placement, especially during the current COVID19 pandemic (Kay et al., 2019; Zegwaard et al., 2020). This has led to a search for other alternatives, and an inquiry in this thesis is whether the reflective practicum could contribute to this question by providing a model for an intermediate practicum. The findings in this thesis are that the reflective practicum could act as an alternative, despite not being "real", if the methodological aspects are provided. The findings also emphasize that methods such as dialogue seminars (Alsterdal et al., 2009; Göranson et al., 2006; Josefson, 2011) could be an alternative. The key is to adapt education design to the specific context and the specific participants.

The disadvantage with the reflective practicum is that it is not "real" which could have negative consequences since participants are not able to learn the situated learning at a specific workplace (Billett, 2012). Another criticism is that of learning transfer, i.e. that it is hard to transfer learning from one situation to another (Winman, 2014). However, research has found that simulations and other forms of classroom practicum are effective (Söderström et al., 2019; Wood et al., 2020). From this thesis and previous research the conclusion is that there are also several dilemmas with work-based practice. For example, the difficulties within the WIL framework concerning support in the institution, participant readiness, mentors being competent and able to assess the knowing, and workplace motivation to teach the participants (Govender & Vaaland, 2020). Several of these were also seen in Study II. In times when it is hard to find enough work-placements, and in situations where work-placements are not possible, the reflective practicum or other forms could be an alternative. From another point of view, the need to better understand what the participant learns in the work-based practice, to be able to better provide these experiences, could maybe be helped by the work of Schön since he provides a clear and comprehensive description of this subject (cf. Schön, 1987).

Schön has been criticized for being too individualistic, both when describing knowing-in-action as something individual, and in the way it is developed by an expert (Kotzee, 2012; Mewburn, 2012; Tannebaum et al., 2013; Zeichner & Liston, 2013). Schön's work came earlier than Lave and Wenger's, which could be an explanation why Schön does not refer to them

(cf. Lave & Wenger, 1991; Schön, 1983, 1987; Wenger, 1998). However, later work has made this connection and, within the WIL framework, communities of practice as a theoretical framework are commonly used (Billett, 2001a; Ferns & Moore, 2012; Jackson, 2015). I think the argument that knowing-in-action could be developed not only from experts but also between employees and students, is a relevant proposal (Tannebaum et al., 2013). Further, other aspects of combining these theories with an epistemology of practice is encouraged.

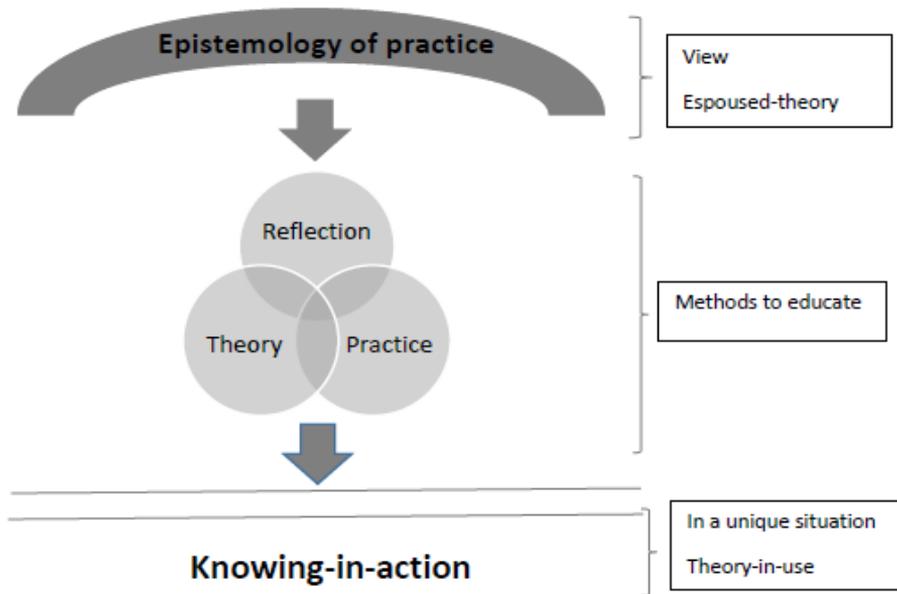
Does it matter which epistemology an education rests on, what view a teacher, participant or manager has? According to this study, yes. For example, Winman (2014) shows that students put different concepts in the foreground depending on how they understand the situation. If you are expected to apply the theory in practice, you put the theory in the foreground; if you use the theory to understand the practice, you put the practice in the foreground. With Schön's epistemology of practice, the practice is put at the center instead of the theory (Kinsella, 2007b).

According to Argyris and Schön (1974), it is important that a person's theories-in-use are in line with their espoused theories. When theories-in-use about epistemology of practice are not in line with the espoused-theories, this may be because one has not really understood the underlying difference between the view of practical knowledge according to the different epistemologies and its consequences in practice. The paradigm of positivism still seems deeply rooted in formal education and workplaces which makes it difficult to distance oneself from it. To really understand and make a change, this thesis emphasizes the need to foster deep learning with critical reflection on our practical actions. Since this seems to be hard to implement in practice, this is still a current issue.

A holistic model

In this part, I will summarize the conclusions in the form of a "thought model". The model visualizes the holistic view of an epistemology of practice, where the epistemology of practice affects education design and comes to practice via knowing-in-action. Overall, your perspective, view, in this case epistemology, affects which methods and theories you choose to use, and ultimately how you actually act in a specific situation, i.e. your knowing-in-action. To enable knowing-in-action I propose that you need to be aware of and understand what an epistemology of practice means. Then, in an educational situation, you need to balance a theoretical perspective with practice and reflection. This is visualized in Figure 1 followed by a detailed description.

Figure 1. *A summary model of the relation between epistemology of practice, theory, practice, reflection, and knowing-in-action.*



The starting point is that an individual's epistemological view, the understanding of what knowledge is, affects how an individual approaches education, learning, knowledge, theory, and practice. The view could be conscious or nonconscious, thoughtful or non-thoughtful. The conclusion here is that it is an advantage if the view is conscious and thoughtful, i.e. that you understand what your epistemology means and its consequences in practice. Using Argyris and Schön's concept of an espoused theory (Argyris & Schön, 1974), and depending on awareness, it could be acted on as a theory-in-use; if not thoughtful, there will be a discrepancy between espoused-theory and theories-in-use. In this thesis, I argue that it is important for teachers to be aware of their epistemology, what professional competence means, and thereby be able to consciously design education to enable this competence, i.e. from an epistemology of practice to the enabling of knowing-in-action. For participants and professionals the awareness of epistemology could clarify different views of professional competence, help them to develop their own view of epistemology and thereby how they could develop their competence.

Next, with the view of an epistemology of practice, the concepts theory, practice, and reflection become central, and a balance between these are needed to develop knowing-in-action. In this thesis the Studies exemplify three different ways of handling this balance, emphasizing different parts:

- *Theory and reflection*: Studies I and III exemplify a design where theory and reflection are emphasized. The managers already have experiences from their workplaces to relate to. This is similar to the education design emphasized by Göranson et al (2006) and used at Södertörn University (Alsterdal et al., 2009). The focus here is reflection-on-action, and the risk is to miss reflection-in-action. Exercises during the course could partly bridge this gap.
- *Theory and practice*: Study II exemplifies a design where theoretical inputs in combination with practice are used. There is small or no indication of reflection. Without reflection there is no framing of the problem and no adaption to the specific situation. Thus, there is a risk of either becoming a strict follower of the manual; of creating two separate parts which do not act together, i.e. there will be a discrepancy between espoused-theories and theories-in-use; or, that the practitioner decides that the theories are useless in practice. However, research about work-based practice emphasizes the need for reflection to be made in e.g. seminars (cf. Billett, 2011, 2012; López-Arana Prado et al., 2019; Saiz-Linares & Susinos-Rada, 2020).
- *Theory, practice and reflection*: Study IV exemplifies the reflective practicum which combines theory, practice and reflection in the intermediary placement. The risk here is that the practice is not regarded as “real”.

There are also other combinations. Having *Theory in focus* can be compared to a TR view, where theory is emphasized as the “answer” of how to do in practice, and where theory is supposed to be applied to practice. Here, the risk is increasing the gap between theory and practice, missing the ability to frame the problem and adapt to the unique situation. Having *Practice in focus* emphasizes only practice, learning “how to do” in a specific context, but without taking into account other perspectives, critical views and conclusions from careful studies. In this case there is a risk of relying too much on common sense. Having *Reflection in focus* is ineffective since reflection needs something to reflect on, either theory or practice. Having *Practice and reflection* could be when an individual reflects on their actions trying to understand what works and what does not. However, without input from a broader perspective than the immediate context, there is a risk of becoming blinkered. As seen, there are advantages and disadvantages with different designs. In this thesis I argue that a balance is needed between theory, practice and reflection. However, what this balance should look like needs to be adapted to the specific context.

Finally, with a balance between theory, practice, and reflection the preconditions to enable knowing-in-action are given. This means that a professional can create their own repertoire of how to adapt the theories to the specific, unique and concrete situation. This is where our theories-in-use come into

play, i.e. where our understanding is expressed in concrete action and it becomes clear if we practice what we preach. For teachers, their theories-in-use come into play in the courses, i.e. the enacted curriculum (Billett, 2011).

If TL could be enabled which includes becoming aware of what an epistemology of practice is, and its consequences for the view of professional competence and education design, this could be a way to handle the dilemmas described in the Introduction.

- An epistemology of practice could bridge the theory-practice gap and thereby enable employability.
- Developing an understanding of epistemology of practice could enable the view of evidence-based practice which the National Board of Health and Welfare emphasize
- An epistemology of practice could upgrade the status of professionals, which in turn could promote the wellbeing of professionals
- This upgrade of professional knowledge would be in line with the Trust Reform
- Knowing-in-action could provide organizations with the specific and situated knowledge needed to be efficiently sustainable.

Methodological considerations

This thesis utilized multiple designs, methods and sources of data to contribute with both broad and in-depth knowledge concerning epistemology of practice and its consequences in practice. Concerning the general quality criteria of the research, I have discussed these in the Empirical Studies section in terms of validity, reliability, generalization and trustworthiness. I have also discussed the dilemmas with a researcher's role in action research. In this section I will discuss some additional aspects concerning the thesis as a whole.

A limitation in this thesis is that the included studies are not interconnected. The studies originate from three different research projects with aims which differed from the aim of this thesis. If I had been clearer with my research question from the start and had the opportunity to design the studies more directly based on it, I could have shed more light on the core aim of the thesis. For example, in Studies I and III, I could have examined how the managers described their individual epistemology, their knowing-in-action, how it possibly changed during the project, and how our intervention contributed to this change. In Study II, I could have focused more specifically on how the pupils experienced the balance between reflection, theory and practice, how the teachers and supervisors thought about their roles, and their view of epistemology. In Study IV, I could have investigated our view of epistemology, our

knowing-in-action more directly, how we enabled the participants' development of knowing-in-action, and the participants' individual epistemology and how it possibly changed during the course.

The work with this thesis has been ongoing for a long period and during this time research methods have been developed and other methods have come into focus. If the present studies were conducted today possibly other methods would have been chosen. For example, in Study III a deductive analysis was used to search for preconditions to TL. However, using a phenomenography approach (Alvesson & Sköldbberg, 2017) to analyze the quality of the managers understanding (Marton, 1981) could have contributed more to the knowledge about the managers' views of epistemology and knowing-in-action, and how those changed during the intervention.

Concerning generalizability and transferability of this thesis, it is worth mentioning the context. The studies were conducted in Sweden, with relatively small samples even if each study has tried to reach a broad empirical base. An advantage is that the studies cover various kinds of educational situations. A limitation could be that all of them are located in Sweden. What speaks against the results being generalizable is that the conditions prevailing in Sweden with regard to the view of epistemology and its consequences may be specific to Sweden, since values could be context-bound (cf. World Values Survey, n.d.). However, previous research from different countries confirms and is in line with the results which strengthens the conclusions.

The result of this thesis contributes by exemplifying how an epistemology of practice can be expressed in practice. The generalizability and transferability of this lies mainly in its anchoring in previous research and established theory, i.e. reviving Schön's work and combining it with TL. The empirical material contributes to make visible, raise awareness of and make it possible to discuss the consequences of epistemology of practice in practice. The action research within education approach contributed by valuing the experience of the researchers as teachers (cf. McNiff, 2013; Whitehead & McNiff, 2012), which in this context means that I as a practicing teacher have been able to assess the trustworthiness of the results in relation to my experiences.

The research process in this thesis could be described as an adaptive research process (Layder, 1998). From this perspective, it could be seen as an advantage that the thesis has been developed over a long period of time. In this process, the research question has developed over time in a hermeneutic circle or spiral (cf. Alvesson & Sköldbberg, 2017; Debesay et al., 2008), where the focus from the start was on promoting learning, a learning which finds expression in practice, on the importance of underlying approaches and on the promotion of TL. The hermeneutical spiral has led to an in-depth learning for me personally, which resulted in a research question about epistemology. In this process, empirical data have given new input which sometimes has challenged and developed theory, theories which have helped me keep my distance and given structure; and, my own experience has contributed to an in-depth

understanding but which has also been challenged. Reflexivity (Alvesson & Sköldberg, 2017; Cheek et al., 2015) has been crucial to commute between the whole and the parts, the ground and the figure, the theory and the empirical (cf. Alvesson & Sköldberg, 2017; Layder, 1998).

Future research

In this thesis I argue for the need to create awareness of one's own epistemology and that this would enable the development of knowing-in-action. Further research is needed to investigate how this could be done, what becomes important and how to assess the outcome. Related to this, research about how TL and the use of the eight core elements to enable the change of epistemology could contribute to the field. As Zegwaard et al. (2020) emphasizes, there is a need to find alternatives to work-based practice. To analyze how the reflective practicum could contribute to this, and how Schön's concepts could contribute to the understanding of what is learnt in a practicum, could provide understanding which would be useful in the shaping of future education. In addition, more research is needed about the different roles of teachers and supervisors in an epistemology of practice.

Practical implications

The practical implications of this thesis are to emphasize the importance as a teacher and as a participant to become aware of your own epistemology, and to analyze whether your actions are in line with the chosen view. In choosing an epistemology of practice, there is a need to balance theoretical input with practice and reflection. This can be done by using a reflective practicum in line with Schön, by using work-based practice with supervisors, or by enabling theoretical input and reflection. The importance is to combine theory, practice and reflection in a way suited for the specific context. The teacher and practical supervisor need to be able to use theories to understand practice, reflect-in/on-action and use their knowing-in-action to enable the participant to develop knowing-in-action. Methods to do this is to combine theory and practice, dialogue, use the ladder of reflection, reflect- in/on-action, use coaching types such as joint experiment, follow me and hall of mirrors. To enable a change of epistemology, TL is needed and can be enabled by handling the eight core elements: experience, reflection, dialogue, a holistic approach, relate to context, authentic relationships, recursive process and activity. The design of an education needs to be adapted to the specific context, especially the experiences of the participants and their access to work practice.

Concluding remarks

In this thesis the focus has been on what an epistemology of practice is and its consequences for the view of professional competence and education design in different contexts. The conclusions are:

- As a professional, being aware of your own epistemology could enable your ability to develop knowing-in-action. As a teacher, this awareness will affect how you design education and how you act in the course, i.e. use your knowing-in-action.
- To design an education in line with an epistemology of practice, adding practice is not enough. Instead, a balance between theory, practice and reflection is emphasized.
- Reflection is what enables the adaption of theory to the specific complex situation, and develops the professional's own repertoire, i.e. their knowing-in-action. Reflection means to connect to the individuals' own experiences, emotions and assumptions.
- The role of the teacher and supervisor is crucial to be able to connect the theory to the practice; teach theory, reflection and practice; demonstrate their knowing-in-action; and practice reflection-in/on-action.
- Education design needs to be adapted to the context. Different contexts, participants, and contents create different preconditions which the teacher needs to adapt to when designing the education.
- To really understand the consequences of an epistemology, a quality of learning such as TL is proposed as necessary.

This thesis has focused on the consequences of an epistemology of practice and proposes that this epistemology could contribute to manage some of the dilemmas seen in society and organizations today such as bridging the theory-practice gap, increasing employability and upgrading professional competence. In this thesis an epistemology of practice has been in focus, however there are other epistemologies. The overall question we need to ask ourselves is, what epistemology do we want, and what consequences does this choice have in practice?

Svensk sammanfattning

Utbildning och kompetensutveckling har fått ökat intresse i dagens samhälle och i organisationer, för att öka anställdas välmående, livslångt lärande, och mobilitet i arbetslivet samt bidra till organisationers globala konkurrens. Som en konsekvens har formell och informell utbildning ökat i omfattning. Ett antal dilemman syns dock; att överbrygga gapet mellan teori och praktik, att öka anställningsbarheten hos studenter från högre utbildning och en nedgradering av professionellas kompetens. Dessa dilemman kan delvis bero på synen på kunskap, dvs epistemologi, och svårigheten att handla i enlighet med sin epistemologi. Tidigare forskning har beskrivit Teknisk Rationalitet (TR) som orsaken till problemet och presenterat en praktisk epistemologi som ett alternativ.

I denna avhandling är målet att skapa en djupare förståelse för en helhets-syn på epistemologi, i detta fall vad en praktisk epistemologi är, och vilka konsekvenser den har för synen på professionell kompetens och hur en utbildning kan designas i olika kontexter. Utöver detta analyseras även vilken kvalitet av lärande som krävs för att omvärdera sin epistemologi. Det teoretiska ramverket baserar sig på Schöns arbete om praktisk epistemologi, professionellas kompetens – reflektion och kunskapande-i-handling, och utbildningsdesign – ett reflekterande praktikum. Utöver detta används Mezirows teori om Transformativt Lärande (TL) för att analysera lärandets kvalitet.

De fyra inkluderade studierna används som exempel på olika utbildnings-situationer i olika kontexter; i studie I och III hur chefer i en forskningsintervention lär sig att bli främjande chefer; i studie II hur elever i yrkesinriktade gymnasieprogram förbereds att minimera arbetsmiljörisker i deras kommande yrken; och i studie IV hur Personal och Arbetslivsstudenter lär sig att främja kollektivt lärande i organisationer.

Resultatet visar vikten av att vara medveten om din epistemologi och att agera i linje med den. Utifrån perspektivet praktisk epistemologi, är den övergripande slutsatsen att det inte räcker med att lägga till praktik, det är även viktigt att balansera teori, praktik och reflektion för att främja kunskapande-i-handling. Lärarens och handledarens roll att kunna hantera både teori, praktik och reflektion genom att reflektera-i/efter-handling betonas. Utbildningens design behöver anpassas till deltagarnas tidigare erfarenheter och tillgång till praktik. För att möjliggöra omvärdering av epistemologi föreslås TL, eftersom det krävs en kvalitet på lärande som möjliggör djuplärande.

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When standing at the end of a research and education period of over 10 years and looking back at what I have done and what it has finally become, I can see that I have learned an incredible amount. Things that I expected, and things that I did not expect. I have done many things I am satisfied with, but there are also things I have learned along the way, where I today would have made other decisions or done in other ways. This journey has not only been as a PhD student, it has also embraced me as a teacher, since in three of the four studies, I have been both a teacher and a researcher. This makes this thesis not only a theoretical work but a personal experience, a development of my own knowing-in-action as a teacher practitioner. There are three things which make me especially proud today:

- First, the most obvious: I have completed my doctoral studies. Twenty years ago, when I stepped into the Dalarna University to start my way to a master's degree in Learning in Working Life, this was not in my mind. This is great!
- Second, there have been too many setbacks during these 12 years. I have lost people in my vicinity, I have been burned out and come back. Sometimes the studies caused a bad mood, sometimes it was the studies which kept me going, made me think of something else. The fact I am still standing here today is great.
- Third, as I wrote in the Discussion, this journey could be described as a hermeneutical spiral. From the beginning I had problems with formulating the research question. I had observed dilemmas I wanted to investigate but could not identify what questions I should ask. Some periods I gave up finding the "red thread" but when starting to work with my thesis during my last year, the pieces fell into place. And with comments from the commentators during the final seminar I was back where I started, but on a higher level. I found the question, the core, was epistemology. It was such a relief and joy to finally be able to tie the threads together and find words for what I have had in the back of my mind during my almost 20 years in the university world. Having said that, this is not the end, this is the beginning.

There are advantages and disadvantages with the PhD journey being over 10 years, 2009 to 2021 in all. Almost all of my original supervisors retired

before I could defend my dissertation, which is sad. On the other hand, it gave me the opportunity to get to know new supervisors. Time has also meant that the knowledge had time to sink in.

I have a lot of people to be thankful to so I can stand here today. Starting with the first half of my PhD journey and my first group of supervisors: main supervisor Kerstin Isaksson, for not giving up with the article about Balanced communication, even if in the end I gave up. Lena Wilhelmson for inspiring me to become a PhD student with your dialogue competence model and many interesting discussions about learning. Ing-Marie Andersson and Gunnar Rosén for believing in me and organizing the possibilities for me to become a PhD student. You are such an obvious element in “theme working life” in Borlänge.

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Marie Moström Åberg

References

- Abrahamsson, L., & Johansson, J. (2013). One hundred years of inertia: An exposé of the concept of the psychosocial work environment in Swedish policy and research. *Nordic Journal of Working Life Studies*, 3(1), 4. <https://doi.org/10.19154/njwls.v3i1.2518>
- Alm, M. (2015). *När kunskap ska styra: Om organisatoriska och professionella villkor för kunskapsstyrning inom missbruksvården*. [When knowledge is the ruling force: On organizational and professional conditions for knowledge governance in substance abuse treatment] (Publication Number Linnaeus University Dissertations; 215/2015) [Doctoral dissertation, Linnéuniversitetet]. Linnaeus University Press. <http://lnu.diva-portal.org/smash/record.jsf?pid=diva2%3A798271&dswid=7827>
- Alsterdal, L. (2009). Dilemma i äldreomsorg [Dilemma in elderly care]. In L. Alsterdal, J. Bornemark, & F. Svenaeus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 162-189). Södertörns högskola.
- Alsterdal, L., Bornemark, J., & Svenaeus, F. (2009). *Vad är praktisk kunskap? [What is practical knowledge?]*. Södertörns högskola.
- Altrichter, H., Posch, P., & Somekh, B. (1993). *Teachers investigate their work: An introduction to the methods of action research*. Routledge.
- Alvesson, M., & Sköldberg, K. (2017). *Reflexive methodology: New vistas for qualitative research*. SAGE.
- Anderson, J. (2019). In search of reflection-in-action: An exploratory study of the interactive reflection of four experienced teachers. *Teaching and Teacher Education*, 86, 102879, 1-17. <https://doi.org/http://dx.doi.org/10.1016/j.tate.2019.102879>
- Andersson, I.-M., Gunnarsson, K., & Rosèn, G. (2015). Role of headmasters, teachers, and supervisors in knowledge transfer about occupational health and safety to pupils in vocational education. *Safety and Health at Work*, 6(4), 317-323. <https://doi.org/10.1016/j.shaw.2015.07.012>
- Appleton, K. (1994, July 3-6). *Using learning theory to guide reflection in the practicum* Paper presented at the Annual Meeting of the Australian Teacher Education Association Brisbane, Queensland, Australia. <https://files.eric.ed.gov/fulltext/ED374128.pdf>
- Argyris, C., & Schön, D. A. (1974). *Theory in practice: Increasing professional effectiveness*. Jossey-Bass.

- Argyris, C., & Schön, D. A. (1995). *Organizational learning II: theory, method and practice*. Addison-Wesley.
- Aristotle. (2019). *Nicomachean ethics* (T. Irwin, Trans.; 3rd ed.). Hackett Publishing Company. (Original work published ca. 350 B.C.E.)
- Baird, M. A. (1996). The idea of a reflective practicum: Overcoming the dichotomy between academia and the practice setting. *Radiography*, 2(2), 119-138. [https://doi.org/10.1016/S1078-8174\(96\)90004-8](https://doi.org/10.1016/S1078-8174(96)90004-8)
- Beckett, D. (2000). Making workplace learning explicit: an epistemology of practice for the whole person. *Westminster Studies in Education*, 23(1), 41-53. <https://doi.org/10.1080/0140672000230105>
- Beckett, D. (2008). Holistic competence: Putting judgements first. *Asia Pacific Education Review*, 9(1), 21-30. <https://doi.org/10.1007/bf03025822>
- Beckett, D., & Hager, P. (2000). Making judgments as the basis for workplace learning: towards an epistemology of practice. *International Journal of Lifelong Education*, 19(4), 300-311. <https://doi.org/10.1080/02601370050110365>
- Bejerot, E., Forsberg Kankkunen, T., & Hasselbladh, H. (2015). Två decennier av new public management : Arbetsmiljön i skola och sjukvård [Two decades of new public management: The work environment in schools and healthcare]. *Arbetsmarknad & Arbetsliv [Labor Market & Working life]*, 21(3), 23-41.
- Bell, R., & Bell, H. (2020). Applying educational theory to develop a framework to support the delivery of experiential entrepreneurship education. *Journal of Small Business and Enterprise Development*, 27(6), 987-1004. <https://doi.org/10.1108/JSBED-01-2020-0012>
- Billett, S. (2001a). Knowing in practice: re-conceptualising vocational expertise. *Learning and Instruction*, 11(6), 431-452. [https://doi.org/10.1016/S0959-4752\(00\)00040-2](https://doi.org/10.1016/S0959-4752(00)00040-2)
- Billett, S. (2001b). Learning through work: Workplace affordances and individual engagement. *Journal of Workplace Learning*, 13(5), 209-214. <https://doi.org/10.1108/EUM00000000005548>
- Billett, S. (2002). Workplace pedagogic practices: Co-participation and learning. *British Journal of Educational Studies*, 50(4), 457-481. <https://doi.org/10.1111/1467-8527.t01-2-00214>
- Billett, S. (2009). Personal epistemologies, work and learning. *Educational Research Review*, 4(3), 210-219. <https://doi.org/10.1016/j.edurev.2009.06.001>
- Billett, S. (2011). *Curriculum and pedagogic bases for effectively integrating practice-based experiences within higher education*. Australian Learning and Teaching Council.
- Billett, S. (2012). Practice-based learning and professional education: Pursuing quality outcomes and sustainability. In J. Higgs (Ed.), *Practice-based education: Perspectives and strategies* (pp. 101-

- 112). Sense Publishers. https://doi.org/10.1007/978-94-6209-128-3_8
- Billett, S. (2015). *Integrating practice-based experiences into higher education*. Springer Netherlands.
- Billett, S. (2019). Augmenting post-practicum experiences: Purposes and practices. In S. Billett, J. Newton, G. Rogers, & C. Noble (Eds.), *Augmenting health and social care student's clinical learning experiences. Professional and practice-based learning* (Vol. 25, pp. 3-25). Springer, Cham. https://doi.org/10.1007/978-3-030-05560-8_1
- Billett, S., & Choy, S. (2012). Emerging perspectives and the challenges for workplace learning. In J. Higgs (Ed.), *Practice-Based Education* (pp. 145-160). Brill Sense.
- Birbirso, D. T. (2012). Reflective practicum: experience of the Ethiopian context. *Reflective Practice, 13*(6), 857-869. <https://doi.org/10.1080/14623943.2012.697886>
- Bissett, N., & Saunders, S. (2015). Criticality and collegiality: A method for humanizing everyday practice? *Journal of Management Education, 39*(5), 597-625. <https://doi.org/10.1177/1052562914557281>
- Björck, V., & Johansson, K. (2018). Problematising the theory–practice terminology: a discourse analysis of students' statements on Work-integrated Learning. *Journal of Further and Higher Education, 43*(10), 1363-1375. <https://doi.org/10.1080/0309877x.2018.1483016>
- Björk, L., Bejerot, E., Jacobshagen, N., & Härenstam, A. (2013). I shouldn't have to do this: Illegitimate tasks as a stressor in relation to organizational control and resource deficits. *Work and Stress, 27*(3), 262-277. <https://doi.org/10.1080/02678373.2013.818291>
- Bohlin, H. (2009). Tyst kunskap: ett mångtydigt begrepp [Tacit knowledge: an ambiguous concept]. In L. Alsterdal, J. Bornemark, & F. Svenaeus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 55-84). Södertörns Högskola.
- Bornemark, J. (2018). *Det omätbaras renässans: En uppgörelse med pedanternas världsherravälde* [The immeasurable renaissance: A settlement with the pedants' world domination]. Volante.
- Bornemark, J. (2020). *Horisonten finns alltid kvar: om det bortglömda omdömet* [The horizon is always there: about the forgotten discretion]. Volante.
- Broberg, Å. (2014). *Utbildning på gränsen mellan skola och arbete: pedagogisk förändring i svensk yrkesutbildning 1918-1971* [Education on the border between school and work: Educational change in Swedish vocational education and training 1918-1971] (Publication Number Institutionen för pedagogik och didaktik; 31) [Doctoral dissertation, Stockholms universitet]. <https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A722607&dswid=-7331>

- Brock, S. E. (2010). Measuring the importance of precursor steps to transformative learning. *Adult Education Quarterly*, 60(2), 122-142. <https://doi.org/10.1177/0741713609333084>
- Brookfield, S. (2017). *Becoming a critically reflective teacher* (Second ed.). Jossey-Bass.
- Bruno, A., & Dell'Aversana, G. (2018). Reflective practicum in higher education: the influence of the learning environment on the quality of learning. *Assessment & Evaluation in Higher Education*, 43(3), 345-358. <https://doi.org/10.1080/02602938.2017.1344823>
- Brydon-Miller, M. (2008). Ethics and action research: Deepening our commitment to principles of social justice and redefining systems of democratic practice. In P. Reason & H. Bradbury (Eds.), *The SAGE handbook of action research: Participative inquiry and practice* (2. ed., pp. 199-210). SAGE.
- Burell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis*. Aldershot.
- Burman, A. (2009). Erfarenhet, reflektion och bildning [Experience, reflection and "Bildung"]. In L. Alsterdal, J. Bornemark, & F. Svenaeus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 108-128). Södertörns Högskola.
- Burr, V. (2003). *Social constructionism*. Routledge.
- Cheek, J., Lipschitz, D. L., Abrams, E. M., Vago, D. R., & Nakamura, Y. (2015). Dynamic Reflexivity in Action: An Armchair Walkthrough of a Qualitatively Driven Mixed-Method and Multiple Methods Study of Mindfulness Training in Schoolchildren. *Qualitative Health Research*, 25(6), 751-762. <https://doi.org/10.1177/1049732315582022>
- Choy, S. (2009). Transformational learning in the workplace. *Journal of Transformative Education*, 7(1), 65-84. <https://doi.org/10.1177/1541344609334720>
- Clarà, M. (2015). What is reflection? Looking for clarity in an ambiguous notion. *Journal of Teacher Education*, 66(3), 261-271. <https://doi.org/10.1177/0022487114552028>
- CODEX. (2021, April 7). *CODEX regler och riklinjer för forskning* [CODEX rules and guidelines for research]. Retrieved Aug. 14 from <https://codex.uu.se/>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (Eighth ed.). Routledge.
- Coll, R. K., & Zegwaard, K. E. (2006). Perceptions of desirable graduate competencies for science and technology new graduates. *Research in Science & Technological Education*, 24(1), 29-58. <https://doi.org/10.1080/02635140500485340>
- Connelly, L. M. (2016). Trustworthiness in qualitative research. *Medsurg Nursing*, 25(6), 435-436.

- Cook, S. D. N., & Brown, J. S. (1999). Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organization Science*, 10(4), 381-400. <https://doi.org/10.1287/orsc.10.4.381>
- Cook, S. D. N., & Wagenaar, H. (2012). Navigating the Eternally Unfolding Present: Toward an Epistemology of Practice. *The American Review of Public Administration*, 42(1), 3-38. <https://doi.org/10.1177/0275074011407404>
- Corradi, G., Gherardi, S., & Verzelloni, L. (2010). Through the practice lens: Where is the bandwagon of practice-based studies heading? *Management Learning*, 41(3), 265-283. <https://doi.org/10.1177/1350507609356938>
- Cosgrove, T., & O'Reilly, J. (2018). Theory, practice and interiority: an extended epistemology for engineering education. *European Journal of Engineering Education*, 45(1), 38-54. <https://doi.org/10.1080/03043797.2018.1544226>
- Cranton, P. (2011). A transformative perspective on the Scholarship of Teaching and Learning. *Higher education research and development*, 30(1), 75-86. <https://doi.org/10.1080/07294360.2011.536974>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches* (Fifth rev., international student ed.). SAGE.
- Cubero-Perez, R., Cubero, M., & Bascon, M. J. (2019). The reflective practicum in the process of becoming a teacher: The tutor's discursive support. *Education Sciences*, 9(2), Article 96. <https://doi.org/10.3390/educsci9020096>
- Cuffa, D., & Steil, A. V. (2019). Organizational learning in public organizations: an integrative review. *Navus-Revista de Gestão e Tecnologia*, 9(3), 112-123. <https://doi.org/10.22279/navus.2019.v9n3.p112-123.875>
- Dall'Alba, G. (2013). Learning professional ways of being: Ambiguities of becoming. *Educational Philosophy and Theory*, 41(1), 34-45. <https://doi.org/10.1111/j.1469-5812.2008.00475.x>
- Debesay, J., Nåden, D., & Slettebø, Å. (2008). How do we close the hermeneutic circle? A Gadamerian approach to justification in interpretation in qualitative studies. *Nursing Inquiry*, 15(1), 57-66. <https://doi.org/10.1111/j.1440-1800.2008.00390.x>
- Dirkx, J. M. (2008). The epistemology of practice: An argument for practice-based research in HRD. *Human Resource Development Review*, 7(3), 263-269. <https://doi.org/10.1177/1534484308320857>
- Dixon, N. (2017). Learning together and working apart: routines for organizational learning in virtual teams. *The Learning Organization*, 24(3), 138-149. <https://doi.org/10.1108/TLO-12-2016-0101>

- Ds 2021:16. *Grundläggande omställnings- och kompetensstöd - för flexibilitet, omställningsförmåga och trygghet på arbetsmarknaden*. [Foundational conversion and competence support - for flexibility, adaptability and security in the labor market].
<https://www.regeringen.se/49c78a/contentassets/311af8999fdb4d2ebb9aa178d14286a3/grundlaggande-omstallnings--och-kompetensstod.pdf>
- Ds 2021:18. *Omställningsstudiestöd - för flexibilitet, omställningsförmåga och trygghet på arbetsmarknaden*. [Conversion study support - for flexibility, adaptability and security in the labor market].
<https://www.regeringen.se/49c84c/contentassets/83075815b75d49f696e5c31af0bbb6b5/.omstallningsstudiestod--for-flexibilitet-omstallningsformaga-och-trygghet-pa-arbetsmarknaden-ds-202118.pdf>
- Döös, M., Johansson, P., & Wilhelmson, L. (2015). Beyond being present: learning-oriented leadership in the daily work of middle managers. *The Journal of Workplace Learning*, 27(6), 408-425.
<https://doi.org/10.1108/JWL-10-2014-0077>
- Eaton, C. (2016). "I don't get it", - the challenge of teaching reflective practice to health and care practitioners. *Reflective Practice*, 17(2), 159-166. <https://doi.org/10.1080/14623943.2016.1145582>
- Efron, S. E., & Ravid, R. (2020). *Action research in education: a practical guide* (Second ed.). The Guilford Press.
- Ellström, E., & Ellström, P.-E. (2018). Two modes of learning-oriented leadership: a study of first-line managers. *The Journal of Workplace Learning*, 30(7), 545-561. <https://doi.org/10.1108/JWL-03-2018-0056>
- Ellström, P.-E. (2001). Integrating learning and work: Problems and prospects. *Human Resource Development Quarterly*, 12(4), 421-435. <https://doi.org/10.1002/hrdq.1006>
- Ellström, P.-E., Larsson, S., & Gustavsson, B. (1996). *Livslångt lärande* [Lifelong learning]. Studentlitteratur.
- Ellström, P.-E., Löfberg, A., & Svensson, L. (2005). Pedagogik i arbetslivet: ett historiskt perspektiv [Pedagogy in working life: a historical perspective]. *Pedagogisk Forskning i Sverige. [Pedagogical Research in Sweden]*, 10(3/4), 162.
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE open*, 4(1), 215824401452263.
<https://doi.org/10.1177/2158244014522633>
- Eriksson, A., & Dellve, L. (2020). Learning processes as key for success in workplace health promotion interventions in health care. *Frontiers in Public Health*, 8, Article 576693.
<https://doi.org/10.3389/fpubh.2020.576693>

- European Higher Education Area. (n.d.). *Employability* Retrieved July 5, 2021 from <http://ehea.info/page-employability>
- European Parliamentary Research Service. (n.d.). *Lifelong learning in the EU* Retrieved July 6, 2021 from <https://www.europarl.europa.eu/thinktank/infographics/lifelonglearning/>
- Evetts, J. (2009). New professionalism and New Public Management: Changes, continuities and consequences. *Comparative Sociology*, 8(2), 247-266. <https://doi.org/10.1163/156913309X421655>
- Fanghanel, J., Pritchard, J., Potter, J., & Wisker, G. (2016). Defining and supporting the Scholarship of Teaching and Learning (SoTL): a sector-wide study.(Literature review).
- Ferns, S., & Moore, K. (2012). Assessing student outcomes in fieldwork placements: An overview of current practice. *International Journal of Work-Integrated Learning*, 13(4), 207-224.
- Filstad, C. (2012). *Organisationslärande: från kunskap till kompetens.[Organizational learning: from knowledge to competence]* (First ed.). Studentlitteratur.
- Fragkos, K. C. (2016). Reflective practice in healthcare education: An umbrella review. *Education Sciences*, 6, Article 27. <https://doi.org/10.3390/educsci6030027>
- Garrick, J., & Rhodes, C. (1998). Deconstructive organisational learning: the possibilities for a postmodern epistemology of practice. *Studies in the Education of Adults*, 30(2), 172-183. <https://doi.org/10.1080/02660830.1998.11730681>
- Geelan, D. R. (2000). Sketching some postmodern alternatives: Beyond paradigms and research programs as referents for science education. *The Electronic Journal for Research in Science & Mathematics Education*, 5(1).
- Geiger, D. (2009). Revisiting the concept of practice: Toward an argumentative understanding of practicing. *Management Learning*, 40(2), 129-144. <https://doi.org/10.1177/1350507608101228>
- General Data Protection Regulation 2016/679. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02016R0679-20160504&from=EN>
- Gherardi, S. (2009). Knowing and learning in practice-based studies: an introduction. *The Learning Organization*, 16(5), 352-359. <https://doi.org/10.1108/09696470910974144>
- Gherardi, S. (2011). Organizational learning: The sociology of practice. *Handbook of organizational learning and knowledge management*, 2, 43-65.
- Gherardi, S. (2015). How the Turn to Practice may contribute to Working Life Studies. *Nordic Journal of Working Life Studies*, 5(3a), 13. <https://doi.org/10.19154/njwls.v5i3a.4831>

- Gherardi, S. (2017). One turn ... and now another one: Do the turn to practice and the turn to affect have something in common? *Management Learning*, 48(3), 345-358. <https://doi.org/10.1177/1350507616688591>
- Goleman, D. (1996). *Emotional intelligence: why it can matter more than IQ*. Bloomsbury.
- Govender, C. M., & Vaaland, T. I. (2020). Business students and work-life: mind the gaps! *Education and Training*. <https://doi.org/10.1108/et-11-2018-0246>
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105-112. <https://doi.org/10.1016/j.nedt.2003.10.001>
- Grant, J., Nelson, G., & Mitchell, T. (2008). Negotiating the challenges of participatory action research: Relationships, power, participation, change and credibility. In P. Reason & H. Bradbury (Eds.), *The SAGE Handbook of action research: Participative inquiry and practice* (Second ed., pp. 589-601). SAGE.
- Gray, C. M., & Siegel, M. A. (2014). Sketching design thinking: Representations of design in education and practice. *Design and Technology Education: An International Journal*, 19(1).
- Gray, D. E. (2007). Facilitating management learning: Developing critical reflection through reflective tools. *Management Learning*, 38(5), 495-517. <https://doi.org/10.1177/1350507607083204>
- Griggs, V., Holden, R., Lawless, A., & Rae, J. (2018). From reflective learning to reflective practice: assessing transfer. *Studies in Higher Education*, 43(7), 1172-1183. <https://doi.org/10.1080/03075079.2016.1232382>
- Grisham, D. L. (1992, Dec. 2-5). *Teacher epistemology and practice: Enactments in the elementary language arts classroom* Paper presented at the Annual Meeting of the National Reading Conference (42nd), San Antonio.
- Gustavsson, M., & Thunborg, C. (2016). Pedagogik i arbetslivet - forskningsområdets utveckling under 2005-2015. [Pedagogy in working life - the development of the research areas between 2005-2015]. *Pedagogisk Forskning i Sverige [Pedagogical Research in Sweden]*, 21(3/4), 165-190.
- Göranzon, B. (1983). *Datautvecklingens filosofi: tyst kunskap och ny teknik* [The philosophy of computer development: tacit knowledge and new technology]. Carlsson & Jönsson.
- Göranzon, B. (1991). *Det praktiska intellektet. Datoranvändning och yrkeskunnande* [The practical intellect. Computer use and professionalism]. BoD-Books on Demand.
- Göranzon, B. (2007). Tacit knowledge and risks. *AI & Society*, 21(4), 429-442. <https://doi.org/10.1007/s00146-007-0086-5>

- Göranzon, B., Ennals, R., & Hammeron, M. (2006). *Dialogue, skill and tacit knowledge*. John Wiley & Sons.
- Hanson, W. E., Creswell, J. W., Clark, V. L. P., Petska, K. S., & Creswell, J. D. (2005). Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology, 52*(2), 224-235. <https://doi.org/10.1037/0022-0167.52.2.224>
- Harrison, R. L., Reilly, T. M., & Creswell, J. W. (2020). Methodological rigor in mixed methods: An application in management studies. *Journal of Mixed Methods Research, 14*(4), 473-495. <https://doi.org/10.1177/1558689819900585>
- Hedlund, A. (2007). *Attraktivitetens dynamik - studier av förändringar i arbetets attraktivitet* [The dynamics of attractiveness - studies of changes in the attractiveness of work] [Doctoral dissertation, Kungl. Tekniska Högskolan]. Stockholm. <http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A12152&dsid=5338>
- Hendriks, P. H. J., & Sousa, C. A. A. (2013). Practices of management knowing in university research management. *Journal of Organizational Change Management, 26*(3), 611-628. <https://doi.org/10.1108/09534811311328605>
- Hepplewhite, K. (2014). Here's another nice mess: using video in reflective dialogue research method. *Research in Drama Education: The Journal of Applied Theatre and Performance, 19*(3), 326-335. <https://doi.org/10.1080/13569783.2014.928012>
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. <https://doi.org/10.1177/1049732305276687>
- Illeris, K. (2004). *Learning in working life*. Roskilde University Press.
- Illeris, K. (2007). *Lärande* [Learning] (S. Andersson, Trans.; Second ed.). Studentlitteratur.
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education, 40*(2), 350-367. <https://doi.org/10.1080/03075079.2013.842221>
- Johansson, K., Denvall, V., & Vedung, E. (2015). After the NPM wave. Evidence-based practice and the vanishing client. *Scandinavian Journal of Public Administration, 19*(2), 69-88.
- Johansson, K., Kopciwicz, L., & Dahlgren, L. O. (2008). Learning for an unknown context: a comparative case study on some Swedish and Polish political science students' experiences of the transition from university to working life. *Compare, 38*(2), 219-231. <https://doi.org/10.1080/03057920701582764>
- Johansson, L. G. (2016). *Philosophy of science for scientists*. Springer.
- Josefson, I. (2001). Teori och praktik - hur skapas ett möte mellan olika kunskapsformer? [Theory and practice - how does one create a meeting between different forms of knowledge?]. In Högskoleverket (Ed.), *Ribban på rätt nivå: sju inlägg om högskolemässighet* [The

- bar at the right level: seven contributions on university education]* (pp. 29-35). Högskoleverket.
- Josefson, I. (2011). Omdömet skolning [The development of discretion]. In A. Burman (Ed.), *Våga veta: om bildningens möjligheter i massutbildningens tidevarv [Dare to know: about the educational possibilities in the era of mass education]* (Vol. 2, pp. 117-126). Södertörns högskola.
- Kasworm, C. E., & Bowles, T. A. (2012). Fostering transformative learning in higher education settings. In E. W. Taylor & P. Cranton (Eds.), *The handbook of transformative learning: Theory, research, and practice* (pp. 388-407). Jossey-Bass.
- Kay, J., Ferns, S., Russell, L., Smith, J., & Winchester-Seeto, T. (2019). The emerging future: Innovative models of work-integrated learning. *International Journal of Work - Integrated Learning*, 20(4), 401-413.
- Kember, D., Leung, D. Y., Jones, A., Loke, A. Y., McKay, J., Sinclair, K., Tse, H., Webb, C., Yuet Wong, F. K., & Wong, M. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment & Evaluation in Higher Education*, 25(4), 381-395. <https://doi.org/10.1080/713611442>
- Kember, D., McKay, J., Sinclair, K., & Wong, F. K. Y. (2008). A four-category scheme for coding and assessing the level of reflection in written work. *Assessment & Evaluation in Higher Education*, 33(4), 369-379. <https://doi.org/https://doi.org/10.1080/02602930701293355>
- Kemmis, S. (2005). Knowing practice: searching for saliences. *Pedagogy, Culture & Society*, 13(3), 391-426. <https://doi.org/10.1080/14681360500200235>
- Kemmis, S. (2009). Action research as a practice-based practice. *Educational Action Research*, 17(3), 463-474. <https://doi.org/10.1080/09650790903093284>
- Kinsella, E. A. (2007a). Embodied reflection and the epistemology of reflective practice. *Journal of Philosophy of Education*, 41(3), 395-409. <https://doi.org/10.1111/j.1467-9752.2007.00574.x>
- Kinsella, E. A. (2007b). Technical rationality in Schön's reflective practice: dichotomous or non-dualistic epistemological position. *Nursing Philosophy*, 8(2), 102-113. <https://doi.org/10.1111/j.1466-769X.2007.00304.x>
- Kinsella, E. A. (2009). Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*, 11(1), 3-14. <https://doi.org/10.1111/j.1466-769x.2009.00428.x>
- Kinsella, E. A. (2010). The art of reflective practice in health and social care: Reflections on the legacy of Donald Schön. *Reflective Practice*, 11(4), 565-575. <https://doi.org/http://dx.doi.org/10.1080/14623943.2010.506260>

- Kis, S. K., & Kartal, G. (2019). No pain no gain: reflections on the promises and challenges of embedding reflective practices in large classes. *Reflective Practice, 20*(5), 637-653.
<https://doi.org/10.1080/14623943.2019.1651715>
- Knowles, M. S., Holton III, E. F., & Swanson, R. A. (2015). *The adult learner: the definitive classic in adult education and human resource development* (Eighth ed.). Routledge.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Korkko, M., Kyro-Ammala, O., & Turunen, T. (2016). Professional development through reflection in teacher education. *Teaching and Teacher Education, 55*, 198-206.
<https://doi.org/10.1016/j.tate.2016.01.014>
- Kotzee, B. (2012). Private practice: Exploring the missing social dimension in "reflective practice". *Studies in Continuing Education, 34*(1), 5-16. <https://doi.org/http://dx.doi.org/10.1080/0158037X.2012.660521>
- Kvale, S. (1997). *Den kvalitative forskningsintervju* [The qualitative research interview]. Studentlitteratur.
- Lalonde, P.-L., Bourgault, M., & Findeli, A. (2010). Building pragmatist theories of PM practice: Theorizing the act of project management. *Project Management Journal, 41*(5), 21-36.
<https://doi.org/10.1002/pmj.20163>
- Larsson, J., Holmstrom, I., & Rosenqvist, U. (2003). Professional artist, good Samaritan, servant and co-ordinator: four ways of understanding the anaesthetist's work. *Acta Anaesthesiologica Scandinavica, 47*(7), 787-793. <https://doi.org/10.1034/j.1399-6576.2003.00151.x>
- Lauri, M. (2016). *Narratives of governing: rationalization, responsibility and resistance in social work* [Doctoral dissertation, Umeå Universitet]. <http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A923799&dswid=-4030>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.
- Layder, D. (1998). *Sociological practice: Linking theory and social research*. SAGE.
- Linder, C. J., Leonard-McIntyre, C., Marshall, D., & Nchodu, M. R. (1997). Physics tutors' metalearning development through an extension of Schön's reflective practice. *International Journal of Science Education, 19*(7), 821-833.
<https://doi.org/10.1080/0950069970190706>
- López-de-Arana Prado, E., Martínez Gorrotxategi, A., Agirre García, N., & Bilbatua Pérez, M. (2019). More about strategies to improve the quality of joint reflection based on the theory-practice relationship during practicum seminars. *Reflective Practice, 20*(6), 790-807.
<https://doi.org/10.1080/14623943.2019.1690982>

- Lunenberg, M., Korthagen, F., & Swennen, A. (2007). The teacher educator as a role model. *Teaching and Teacher Education*, 23(5), 586-601. <https://doi.org/10.1016/j.tate.2006.11.001>
- Lyman, B., Jacobs, J. D., Hammond, E. L., & Gunn, M. M. (2019). Organizational learning in hospitals: A realist review. *Journal of Advanced Nursing*, 75(11), 2352-2377. <https://doi.org/10.1111/jan.14091>
- Marton, F. (1981). Phenomenography — Describing conceptions of the world around us. *Instructional Science*, 10(2), 177-200. <https://doi.org/10.1007/BF00132516>
- Marton, F. (2014). *Inläring och omvärldsuppfattning: en bok om den studerande människan* [Learning and perception of the world around us: a book about the student human] (Fourth ed.). Studentlitteratur.
- Maseko, L. A. (2018). A review of work-integrated learning in South African mining engineering universities. *Journal of the Southern African Institute of Mining and Metallurgy*, 118(12), 1315-1323. <https://doi.org/10.17159/2411-9717/2018/v118n12a10>
- McNiff, J. (2013). *Action Research: Principles and practice* (Third ed.). Taylor and Francis. <https://doi.org/10.4324/9780203112755>
- McRae, N., & Johnston, N. (2016). The development of a proposed global work-integrated learning framework. *Asia-Pacific Journal of Cooperative Education*, 17(4), 337.
- Mercer, J. (2007). The challenges of insider research in educational institutions: Wielding a double-edged sword and resolving delicate dilemmas. *Oxford Review of Education*, 33(1), 1-17. <https://doi.org/10.1080/03054980601094651>
- Mewburn, I. (2012). Lost in translation: Reconsidering reflective practice and design studio pedagogy. *Arts and Humanities in Higher Education: An International Journal of Theory, Research and Practice*, 11(4), 363-379. <https://doi.org/http://dx.doi.org/10.1177/1474022210393912>
- Mezirow, J. (1990). *Fostering critical reflection in adulthood*. Jossey-Bass Publishers.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education*, 1997(74), 5-12. <https://doi.org/10.1002/ace.7401>
- Mezirow, J. (2000a). *Learning as Transformation: Critical Perspectives on a Theory in Progress*. The Jossey-Bass Higher and Adult Education Series. ERIC.
- Mezirow, J. (2000b). Learning to think like an adult. Core concepts of transformation theory. In J. Mezirow & Ass. (Eds.), *Learning as transformation: critical perspectives on a theory in progress* (pp. 3-33). Jossey-Bass Inc.

- Mezirow, J. (2009). An overview on transformative learning. In K. Illeris (Ed.), *Contemporary theories of learning. Learning theorists...in their own words*. (pp. 90-105). Routledge.
- Mezirow, J. (2012). Learning to think like an adult. Core concepts of transformation theory. In E. W. Taylor & P. Cranton (Eds.), *The handbook of transformative learning: Theory, research, and practice* (pp. 73-96). John Wiley & Sons.
- Molander, A. (2011). Efter eget skön: om beslutsfattande i professionellt arbete.[At your own discretion: on decision-making in professional work].
- Molander, B. (1996). *Kunskap i handling* [Knowledge in action] (Second ed.). Daidalos.
- Molander, B. (2015). *The Practice of Knowing and Knowing in Practices*. Peter Lang Edition.
- Mules, P. (2018). Reflections on the absence of formal reflection in public relations education and practice. *Public Relations Review*, 44(1), 174-179. <https://doi.org/10.1016/j.pubrev.2017.09.008>
- National Commission for the protection of human subjects of biomedical and behavioral research. (1979). *The Belmont report. Ethical principles and guidelines for the protection of human subjects of research*. <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html>
- Ng, S. L., Kinsella, E. A., Friesen, F., & Hodges, B. (2015). Reclaiming a theoretical orientation to reflection in medical education research: a critical narrative review. *Medical Education*, 49(5), 461-475. <https://doi.org/10.1111/medu.12680>
- Nilsson, C. (2009). Fronesis och den mänskliga tillvaron. [Phronesis and the human existence]. In L. Alsterdal, J. Bornemark, & F. Svenaeus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 39-54). Södertörns högskola.
- Nilsson, P. (2003). *En introduktion till pedagogik i arbetslivet: begrepp-historik-nutid*. [An introduction to pedagogy in working life: concepts - history - present day]. Pedagogiska Institutionen, Umeå universitet.
- Nolen, A. L., & Putten, J. V. (2007). Action research in education: Addressing gaps in ethical principles and practices. *Educational Researcher*, 36(7), 401-407. <https://doi.org/10.3102/0013189X07309629>
- Norton, L. (2018). *Action research in teaching and learning: A practical guide to conducting pedagogical research in universities*. Routledge.
- Patrick, C.-j., Peach, D., Pocknee, C., Webb, F., Fletcher, M., & Pretto, G. (2008). *The WIL [Work Integrated Learning] report: A national scoping study*. Australian Learning and Teaching Council (ALTC) Final report. <https://eprints.qut.edu.au/44065/1/WIL-Report-grants-project-jan09.pdf>

- Polanyi, M. (2009). *The tacit dimension*. The University of Chicago Press.
- Ponnert, L., & Svensson, K. (2016). Standardisation—the end of professional discretion? *European Journal of Social Work, 19*(3-4), 586-599. <https://doi.org/10.1080/13691457.2015.1074551>
- Powell, S. R. (2016). The influence of video reflection on preservice music teachers' concerns in peer- and field-teaching settings. *Journal of Research in Music Education, 63*(4), 487-507. <https://doi.org/10.1177/0022429415620619>
- Purdie, F., Ward, L., McAdie, T., King, N., & Drysdale, M. (2013). Are Work-Integrated Learning (WIL) students better equipped psychologically for work post-graduation than their on-work-integrated learning peers? Some initial findings from a UK University. *Asia-Pacific Journal of Cooperative Education, 14*(2), 117-125. <https://doi.org/10.1016/j.sbspro.2011.11.297>.
- Raelin, J. A. (2007). Toward an epistemology of practice. *Academy of Management Learning & Education, 6*(4), 495-519. <https://doi.org/10.5465/AMLE.2007.27694950>
- Reardon, R., Fite, K., Boone, M., & Sullivan, S. (2019). Critically reflective leadership: Defining successful growth. *International Journal of the Whole Child, 4*(1), 20-32.
- Reason, P., & Bradbury, H. (2008). Introduction. In P. Reason & H. Bradbury (Eds.), *The SAGE Handbook of Action Research: Participative Inquiry and Practice* (Second ed., pp. 1-10). SAGE.
- Rennstam, J., & Ashcraft, K. L. (2014). Knowing work: Cultivating a practice-based epistemology of knowledge in organization studies. *Human Relations, 67*(1), 3-25. <https://doi.org/10.1177/0018726713484182>
- Resnik, D. B. (2018). *The ethics of research with human subjects: protecting people, advancing science, promoting trust* (Vol. 74). Springer.
- Rico, D. Z. C., Becerra, L. D., Trujillo, J. C. A., Vera, M. V. A., Cáceres, M. M., & Parra, G. E. C. (2012). How can a process of reflection enhance teacher-trainees' practicum experience? *HOW Journal, 19*(1), 48-60.
- Rowe, A. D., & Zegwaard, K. E. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning.
- Russell, T. (2017). Improving the quality of practicum learning: Self-study of a faculty member's role in practicum supervision. *Studying Teacher Education, 13*(2), 193-209.
- Russell, T., & Martin, A. K. (2017). Teacher education needs an epistemology of practice. *Search and research: Teacher education for contemporary contexts, 111-118*.
- Röing, M., Holmström, I. K., & Larsson, J. (2018). A metasynthesis of phenomenographic articles on understandings of work among

- healthcare professionals. *Qualitative Health Research*, 28(2), 273-291. <https://doi.org/10.1177/1049732317719433>
- Saiz-Linares, A., & Susinos-Rada, T. (2020). Revisiting reflection in pre-service teacher training: let's rethink through a practicum in Spain. *Reflective Practice*, 21(5), 629-645. <https://doi.org/10.1080/14623943.2020.1785414>
- Sandberg, J. (2000). Understanding human competence at work: an interpretative approach. *Academy of Management Journal*, 43(1), 9-25. <https://doi.org/10.2307/1556383>
- Sandberg, J., & Targama, A. (2007). *Managing Understanding in Organizations*. SAGE Publications.
- Schein, E. H., & Kommers, D. W. (1972). *Professional education: Some new directions*. Carnegie Commission on Higher Education.
- Schön, D. A. (1983). *The reflective practitioner: how professionals think in action*. Routledge.
- Schön, D. A. (1987). *Educating the reflective practitioner*. Jossey-Bass.
- Schön, D. A. (1995). Knowing-in-action: The new scholarship requires a new epistemology. *Change: The Magazine of Higher Learning*, 27(6), 27-34. <https://doi.org/10.1080/00091383.1995.10544673>
- Scott, D. (1990). Practice wisdom: The neglected source of practice research. *Social Work (New York)*, 35(6), 564-568. <https://doi.org/10.1093/sw/35.6.564>
- Senge, P. M. (2006). *The fifth discipline: the art and practice of the learning organization* (Rev. and updated ed.). Currency Doubleday.
- SFS1992:1434. *Högskolelag* [University law]. https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/hogskolelag-19921434_sfs-1992-1434
- SFS 2003:460. *Lag om etikprövning av forskning som avser människor* [Ethical review of research concerning humans Act]. https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2003460-om-etikprovning-av-forskning-som_sfs-2003-460
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63-75. <https://doi.org/10.3233/EFI-2004-22201>
- Sigrell, H. (2006). *På väg mot yrkeskompetens: spår av tyst kunskap och lärande under det kiropraktiska praktikåret* [Towards professional competence: traces of tacit knowledge and learning during the chiropractic internship year] [Doctoral dissertation, Stockholms Universitet]. <https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A200817&dswid=5764>
- Silverman, D. (2020). *Interpreting qualitative data* (Sixth ed.). SAGE Pub.
- Slovak, P., Frauenberger, C., Fitzpatrick, G., & Acm. (2017, May). *Reflective practicum: A framework of sensitising concepts to design for transformative reflection* Proceedings of the 2017 CHI

- Conference on Human Factors in Computing Systems, New York.
https://dl.acm.org/doi/abs/10.1145/3025453.3025516?casa_token=PpzvbvAeMs0AAAAA:yUz-MIV9EEUXDweRKakAHZfBP8JuZhLsdNyxyd7VWx-Xh8my-18-93nDUrk3NWturjYYANNWGqPXoA
- Solé, R., Goodwin, Brian, . (2000). *Signs of life*. Basic Books.
- SOU 2000:28. *Kunskapsbygget 2000 – det livslånga lärandet* [Knowledge Building 2000 - lifelong learning].
<https://data.riksdagen.se/fil/28121CFA-A7BB-4509-8EB3-8FB402C18741>
- SOU 2018:38. *Styra och leda med tillit: Forskning och praktik* [Steering and leading by trust: research and practice].
<https://www.regeringen.se/49d62e/contentassets/0aa3c27a6cee4f78830cd1f56844b087/styra-och-leda-med-tillit.-forskning-och-praktik-sou-201838.pdf>
- SOU 2019:43. *Med tillit följer bättre resultat - tillitsbaserad styrning och ledning i staten* [With trust comes better results - trust-based steering and leading in government].
<https://www.regeringen.se/4ad5c9/contentassets/792a8511629447d8abf5aa2520161631/med-tillit-foljer-battre-resultat--tillitsbaserad-styrning-och-ledning-i-staten-sou-201943.pdf>
- Stacey, R. D. (2001). *Complex responsive processes in organization. Learning and knowledge creation*. Routledge.
- Statistics Sweden. (2018). *Vuxnas deltagande i utbildning* [Adult participation in education](Theme report 2018:1).
https://www.scb.se/contentassets/f2d5dc43313d4c86876f5b33bc04f3dd/uf0538_2016a01_br_a40br1801.pdf
- Statistics Sweden. (2020). *Utfärdade examina vid universitet och högskolor efter examen, kön och läsår* [Degrees issued at universities and colleges by degree, gender and academic year]. Statistiska centralbyrån [Statistics Sweden]. Retrieved Dec. 21, 2020 from
https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__UF__UF0550/Historisk11bN/table/tableViewLayout1/
- Stensmo, C. (2007). *Pedagogisk filosofi* [Pedagogical philosophy] (Second ed.). Studentlitteratur.
- Steup, M., & Ram, N. (2020). Epistemology. In *The Stanford Encyclopedia of Philosophy*.
<https://plato.stanford.edu/archives/fall2020/entries/epistemology/>
- Sung-Chan, P., & Yuen-Tsang, A. (2008). Bridging the theory-practice gap in social work education: A reflection on an action research in China. *Social Work Education*, 27(1), 51-69.
<https://doi.org/http://dx.doi.org/10.1080/02615470601141383>
- Svenaesus, F. (2009a). Känslornas kunskap: exemplet emotionell intelligens [Emotional knowledge: the emotional intelligence example]. In L. Alsterdal, J. Bornemark, & F. Svenaesus (Eds.), *Vad är praktisk*

- kunskap? [What is practical knowledge?]* (pp. 85-102). Södertörns högskola.
- Svenaesus, F. (2009b). Vad är praktisk kunskap? [What is practical knowledge?]. In L. Alsterdal, J. Bornemark, & F. Svenaesus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 11-34). Södertörns högskola.
- Svensson, L. (2008). Att vara som skoskav ["Being like chafed feet", acting as an irritant to provoke change]. In B. Johannisson, E. Gunnarsson, & T. Stjernberg (Eds.), *Gemensamt kunskapande - den interaktiva forskningens praktik [Common knowledge creation - interactive research practice]* (Vol. Acta Wexionensia Nr 149/2008, pp. 77-94). Växjö University Press.
- Swedish Council for Higher Education. (2021, Mars 19). *Bolognaprocessen - det europeiska området för högre utbildning [The Bologna process - the European higher education area]*. Retrieved July 4, 2021 from <https://www.uhr.se/internationella-mojligheter/Bolognaprocessen/>
- Swedish Ministry of Education. (2017/18:204). *Flera vägar till kunskap - en högskola för livslångt lärande [Several paths to knowledge - a university for lifelong learning]*(Prop. 2017/18:204). <https://www.regeringen.se/rattsliga-dokument/proposition/2018/03/201718204/>
- Swedish Ministry of Education. (2020). Stärkt kompetensförsörjning och utbildning som leder till jobb [Strengthened competence supply and education which leads to employment]. Retrieved Sept. 21, 2020, from <https://www.regeringen.se/artiklar/2020/09/starkt-kompetensforsorjning-och-utbildning-som-leder-till-jobb/>
- Swedish National Agency for Education. (2000). *Det livslånga och livsvida lärandet [Lifelong and lifewide learning]*(1999:121). <https://www.skolverket.se/download/18.6bfaca41169863e6a6537df/1553956707219/pdf588.pdf>
- Swedish National Audit Office. (2009). *Studenternas anställningsbarhet - regeringens och högskolans insatser [Students' employability - the government's and the university's efforts]*(RiR 2009:28). https://www.riksrevisionen.se/download/18.78ae827d1605526e94b2e28a/1518435473482/RiR_2009_28.pdf
- Swedish National Board of Health and Welfare. (2020). *Att arbeta evidensbaserat. Ett stöd för praktiskt arbete [Working evidence-based. A support for practical work]*(2020-10-6930). Socialstyrelsen. <https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2020-10-6930.pdf>
- Swedish Research Council. (2002). *Forskningsetiska principer inom humanistisksamhällsvetenskaplig forskning [Research ethics principles in humanities and social science research]*. Vetenskapsrådet.

- Swedish Research Council. (2017). *Good research practice*. Swedish Research Council. <https://www.vr.se/english/analysis/reports/our-reports/2017-08-31-good-research-practice.html>
- Söderström, M. (2011). *Vad är arbetslivets pedagogik?: bakgrund, problem och möjligheter* [What is working life pedagogy?: background, problems and opportunities]. Institutionen för pedagogik, psykologi och idrottsvetenskap, Linnéuniversitetet.
- Söderström, T., Lindgren, C., & Neely, G. (2019). On the relationship between computer simulation training and the development of practical knowing in police education. *The International Journal of Information and Learning Technology*, 36(3), 231-242. <https://doi.org/10.1108/IJILT-11-2018-0130>
- Tannebaum, R. P., Hall, A. H., & Deaton, C. M. (2013). The development of reflective practice in American education. *American Educational History Journal*, 40(1/2), 241.
- Taylor, E. W. (2007). An update of transformative learning theory: A critical review of the empirical research (1999–2005). *International Journal of Lifelong Education*, 26(2), 173-191. <https://doi.org/https://doi.org/10.1080/02601370701219475>
- Taylor, E. W. (2009). Fostering transformative learning. In J. Mezirow & E. W. Taylor (Eds.), *Transformative learning in practice: insights from community, workplace, and higher education* (pp. 3-17). Jossey-Bass.
- Taylor, E. W., & Jarecke, J. (2009). Looking forward by looking back: Reflections on the practice of transformative learning. In J. Mezirow & E. W. Taylor (Eds.), *Transformative learning in practice: Insights from community, workplace, and higher education* (pp. 275-289). Jossey-Bass.
- Thomson, O. P., Petty, N. J., & Moore, A. P. (2014). A qualitative grounded theory study of the conceptions of clinical practice in osteopathy—a continuum from technical rationality to professional artistry. *Manual Therapy*, 19(1), 37-43. <https://doi.org/10.1016/j.math.2013.06.005>
- Tucker, S., & Turner, N. (2011). Young worker safety behaviors: Development and validation of measures. *Accident Analysis and Prevention*, 43(1), 165-175. <https://doi.org/10.1016/j.aap.2010.08.006>
- Tynjälä, P. (2013). Toward a 3-P model of workplace learning: a literature review. *Vocations and Learning*, 6(1), 11-36. <https://doi.org/10.1007/s12186-012-9091-z>
- van Manen, M. (1995). On the epistemology of reflective practice. *Teachers and Teaching, Theory and Practice*, 1(1), 33-50. <https://doi.org/10.1080/1354060950010104>
- Wagenaar, H., & Cook, S. (2011). The push and pull of the world: How experience animates practice. *Evidence & Policy: A Journal of*

- Research, Debate and Practice*, 7(2), 193-212.
<https://doi.org/10.1332/174426411X579225>
- Wahlström, R., Dahlgren, L. O., Tomson, G., Diwan, V. K., & Beermann, B. (1997). Changing primary care doctors' conceptions – A qualitative approach to evaluating an intervention. *Advances in Health Sciences Education : Theory and Practice*, 2(3), 221-236.
<https://doi.org/10.1023/A:1009763521278>
- Waldemarson, Y. (2009). En erfarenhet rikare? En kvalitativ studie av barns strategier och barnfattigdomens villkor i välfärdsstaten [An experience richer? A qualitative study of children's strategies and the conditions of child poverty in the welfare state]. In L. Alsterdal, J. Bornemark, & F. Svenaeus (Eds.), *Vad är praktisk kunskap? [What is practical knowledge?]* (pp. 129-156). Södertörns högskola.
- Wegner, C., R Emmert, K., & Ohlberger, S. (2017). Evaluation of a wiki for lesson reflection in the project “Kolumbus-Kids” at Bielefeld University. *The Electronic Journal for Research in Science & Mathematics Education*, 21(4).
- Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*. Cambridge University Press.
- Whitehead, J. (2000). How do I improve my practice? Creating and legitimating an epistemology of practice. *Reflective Practice*, 1(1), 91-104. <https://doi.org/10.1080/713693129>
- Whitehead, J., & McNiff, J. (2012). *Action research for teachers: A practical guide*. Taylor and Francis.
<https://doi.org/10.4324/9780203462393>
- Wigblad, R. (1997). *Karta över vetenskapliga samband* [Map over scientific connections]. Studentlitteratur.
- Wilhelmson, L. (1998). *Lärande dialog: Samtalsmönster, perspektivförändring och lärande i gruppsamtal* [Learning dialogue. Discourse patterns, perspective change and learning in small group conversation] (Publication Number 88) [Doctoral dissertation, Stockholm University].
- Winman, T. (2014). Lärande i teori och praktik [Learning in theory and practice]. *Nordic Journal of Vocational Education and Training*, 4(2), 1-16. <https://doi.org/10.3384/njvet.2242-458X.14v4i2a6>
- Wood, Y. I., Zegwaard, K. E., & Fox-Turnbull, W. (2020). Conventional, remote, virtual and simulated work-integrated learning: A meta-analysis of existing practice. *International Journal of Work - Integrated Learning*, 21(4), 331-354.
- Working Group on Employability. (2009). *Report to ministers. Bologna Conference Leuven/Louvain-la-Neuve, April 28-29, 2009*.
http://ehea.info/media.ehea.info/file/2009_Leuven_Louvain-la-Neuve/91/5/2009_employability_WG_report_594915.pdf
- World Values Survey. (n.d.). Retrieved Aug. 24, 2021 from <https://www.worldvaluessurvey.org/wvs.jsp>

- Yin, R. K. (2009). *Case study research: design and methods* (Fourth ed.). SAGE.
- Zegwaard, K. E., Johansson, K., Kay, J., McRae, N., Ferns, S., & Hoskyn, K. (2019). Professional development needs of the international work-integrated learning community. *International Journal of Work-Integrated Learning*, 20(2), 201-217.
- Zegwaard, K. E., Pretti, T. J., & Rowe, A. D. (2020). Responding to an international crisis: The adaptability of the practice of work-integrated learning. *International Journal of Work-Integrated Learning*, 21(4), 317-330.
- Zeichner, K. M., & Liston, D. P. (2013). *Reflective teaching: An introduction*. Routledge.
- Zeni, J. (1998). A guide to ethical issues and action research[1]. *Educational Action Research*, 6(1), 9-19.
<https://doi.org/10.1080/09650799800200053>
- Zhu, X. (2011). Student teachers' reflection during practicum: Plenty on action, few in action. *Reflective Practice*, 12(6), 763-775.
<https://doi.org/http://dx.doi.org/10.1080/14623943.2011.601097>
- Ziebart, C., & MacDermid, J. C. (2019). Reflective practice in physical therapy: A scoping review. *Physical Therapy*, 99(8), 1056-1068.
<https://doi.org/10.1093/ptj/pzz049>
- Åteg, M. (2006). *Aktiviteter och lärande för attraktivt arbete. Utvecklingsprocesser inom verkstadsindustrin* [Activities and learning for attractive work. Development processes within the engineering industry] [Doctoral dissertation, Kungliga Tekniska Högskolan]. Stockholm.
- Åteg, M., Hedlund, A., & Pontén, B. (2004). *Attraktivt arbete. Från anställdas uttalanden till skapandet av en modell* [Attractive work. From employee statements to the creation of a model]. Arbetslivsinstitutet.
- Åteg, M., Wilhelmson, L., Moström Åberg, M., Backström, T., Önnared, L., & Isaksson, K. (2008, May, 6-7). *Att mäta dialogkompetens: Metodutveckling för projektet Regisserad kompetensutveckling* [Measuring dialogue competence: Method development for the Directed competence development project]. Paper presented at the first Nordic Working Life Research Conference, Växjö, Sweden, <https://go.exlibris.link/JRsSZDNj>