The role of theory in empirical research methods in Information Systems: An agile lecture sequence approach

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ABSTRACT: Researchers of Information Systems have long demonstrated that the teaching of research methods hinges on the dynamic interplay between theory and practice. However, grasping the role of theory in both the process (research design) and products (reading and writing articles) of research is challenging for teachers and, crucially, their students. This project contributes to the pedagogical discourse on qualitative research methods in Information Systems. It proposes the prototype of a framework in the shape of an agile lecture sequence for making explicit the role of theory across the research process when teaching research methods in Information Systems. The proposed framework is based on a constructivist approach, recognizing that students co-construct their knowledge recursively through the interplay with the socio-cultural context.

1   BACKGROUND

1.1   Problem definition

Research methods have a crucial role in forming the critical attitude of undergraduate and graduate students. Capacity building rooted in research methods is indeed positioned by research councils as fundamental to global competitiveness (Lewthwaite and Nind 2016).

The teaching of research methods hinges on the dynamic interplay between theory and practice. As Kawulich (2016) observes, "students sometimes find it difficult to understand the role that theory plays in developing and conducting research" (p. 37). However, the pedagogies involved in the research theory/practice interplay remain under-researched and the pedagogical culture under-developed (ibid). This holds true in the Information Systems (IS) discipline, a sub-field of Computer Science, as I have observed through my engagement and interest in the teaching of research methods in this area.

The branch of the IS scholarships I belong to adopts empirical research design strategies and methods that are largely drawn from the social sciences. The aim of these approaches is to develop a deeper understanding of the social and technical aspects that influence the development, use, and maintenance of digital systems and infrastructures in a specific context, such as a company, a public space or organization, or the home. As a result, empirical IS largely adopts qualitative data collection and analysis strategies.

Explaining the role of theory in the both the process (research design) and products (reading and writing articles) of this type of research is however challenging for mature scholars (Berends and Deken 2019) and not the least for their students (Kawulich 2016). Specifically, in IS, like in the social sciences, there are scant resources that support teachers in letting students understand the role of theory in research methods, other than their and their colleagues' experience.

This project contributes to the pedagogical discourse on research methods in IS. It takes steps toward presenting a framework in the shape of an agile and modular lecture sequence for making explicit the role of theory in research methods in empirical IS for the students. Given the relatively limited time span of this project (1 year) the focus is set on qualitative research methods.

1.2   context of problem definition and proposed approach

My engagement with this theme relates to two different—although interlinked—settings: master- or PhD-level courses in research methods in IS and thesis projects (master and PhD). Given the breadth of the topic, however, I will here primarily present the reflections I developed while teaching courses in qualitative research methods in empirical IS at the master and PhD level at the Department of Computer Science, NTNU (2015-today). The courses I refer to in this report are the following:

- IT3010 – Empirical Research Methods in Information Science, Master in Informatics (year 1, semester 2, compulsory). Approx. 90 students (Personal experience: 2016-2019)

- DT8111 – Empirical software Engineering, PhD in Information Technology. 10 students (Personal experience: 2019)

My role has varied over the years. I initially started as assignment coordinator and co-teacher (involved in planning the lectures in different degrees) and gradually took the role of main lecturer, always in team with a more experienced co-teacher.

The master-level course I have most been involved with so far is IT3010 designed to help students in planning the one-year master thesis project in the following year. I have always taught this course with Associate Professor Babak Farshchian. After the course became compulsory in 2016, we have had a growing number of students every year, ranging from 70 to about 90 in 2019.

To deal with the practical problem associated with the course scaling up, we re-arranged the course as a student conference, were 50% of the grade is based on groupwork to produce a research paper and present it at an open conference, and 50% is a reflection report (Figure 1).

In 2019, we adapted this course to the PhD level with 10 first-year PhD students.
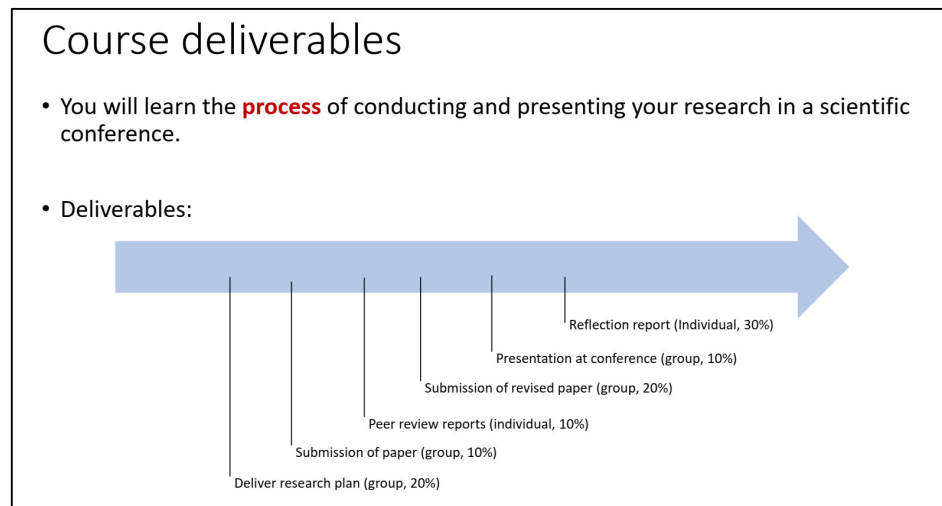

Figure 1. A snapshot of the deliverables from the course slides (slide by Babak Farshchian and Elena Parmiggiani)

In Autumn 2019, I was lecturer in the course TDMA5004 – Planlegging av forskningsprosjekt, Master in Digital Collaboration (year 2, semester 1), with 8 students. The course responsible is Associate Professor Olav Skundberg. The focus in TDMA5004 is on designing a research project. This course prepares the students to conduct their master thesis work. It is also limited in size as it belongs to a master program accepting maximum 20 students. It therefore represented a very good opportunity to test my idea without the additional stress associated large numbers of students—an additional parameter which I will include in my proposed approach in the future.

In the remainder of this report, I first introduce my data collection and analysis methods. I then provide analysis of the problem from my perspective as well as that of the students, the colleagues, and the literature. I finally present my proposed approach and evaluate it based on those four perspectives.

2   METHODS

As I shall outline in the next section, the data I rely on for my reflections are qualitative:

- Unstructured interviews and conversations with colleagues teaching research methods in IS at different Nordic universities. These include the colleague-based supervision organized as part of Pilot H19
- Literature study on teaching empirical IS in collaboration with my co-teacher Babak Farshchian and PhD students Tangni Dahl-Jørgensen and Farzana Quayyum
- A one-day workshop organized in August 2019 in conjunction with the Scandinavian Conference on Information Systems in Nokia, Finland, in collaboration with three colleagues. Participants were scholars interested in this theme from the following Nordic

Universities: NTNU, University of Oslo, Kristiania University College; University of Agder; Aalto University; University of Gothenburg; University of Aarhus

- End-of-semester evaluation surveys with students
- Reference group meetings in all the courses (from two to three times per course)

The results of the literature review and the workshop are to appear in the Scandinavian Journal of Information Systems (Farshchian et al. forthcoming)

In analyzing my data, I lean on qualitative pedagogy, a dynamic approach that aims to be responsive, reflective, and contextual to mirror the characteristics of the qualitative research that I am teaching (Hsiung 2015). More in general, like in my own research in IS, my approach to the problem is guided by a constructivist paradigm (inspired by hermeneutics), stating that students co-construct their knowledge recursively and collectively, through the interplay with a social context and culture (including the teacher and the other students) (Biggs 1996).

3 PROBLEM ANALYSIS

I address the role of theory in research methods from four perspectives that can guide the teaching of the role of theory in research methods (Brookfield 2017). Additional reflections on the teaching of research methods more in general can be found in a forthcoming paper I co-author with Babak Farshchian and other two colleagues (Farshchian et al. forthcoming).

3.1 Literature

Theory influences all phases of the research design cycle (Figure 2). Theory is a fundamental brick in supporting the development of meaningful and relevant questions and answers, but it intervenes in different ways across the research design cycle. It takes at least three fundamental forms: a body of literature that provides a framework (or a lens) to understand a situation and propose a solution; a background, sometimes implicit, vocabulary that describes the researchers assumptions about a phenomenon; and a paradigm that guides the way we talk about ad discover the world, such as interpretivism or positivism (cf. Kawulich 2016).
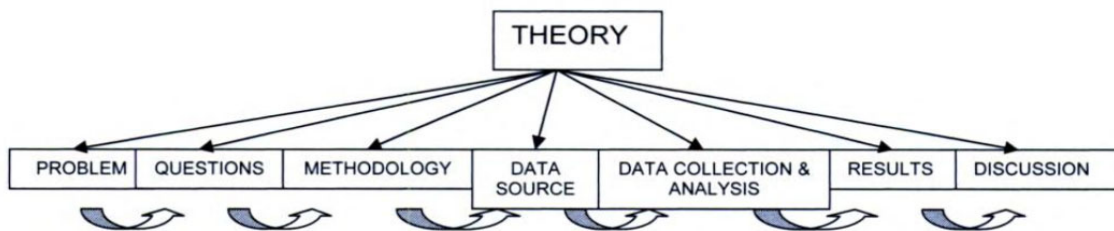

Figure 2. The pervading role of theory (Kawulich 2016): "The theoretical viewpoint guides my thinking in developing research questions, selecting participants, collecting data in various ways, in analyzing that data and in presenting it." (p. 41)

If we exclude few exceptions guiding students and researchers in performing data analysis in the social sciences (Tjora 2018), the role of theory across the whole research process in the frameworks that we use to illustrate research methods to IS students is often taken for granted or left unquestioned and rendered as a flat, input-output process. In general, although frameworks to teach methods in computing education exist (Holz et al. 2006), they fail to take the dynamic role of theory in the research design process to the foreground.

An illustration of this shortcoming is the framework by Oates (2006), one of the most popular tools for students that I also adopt in my courses in the absence of better resources (Figure 3).
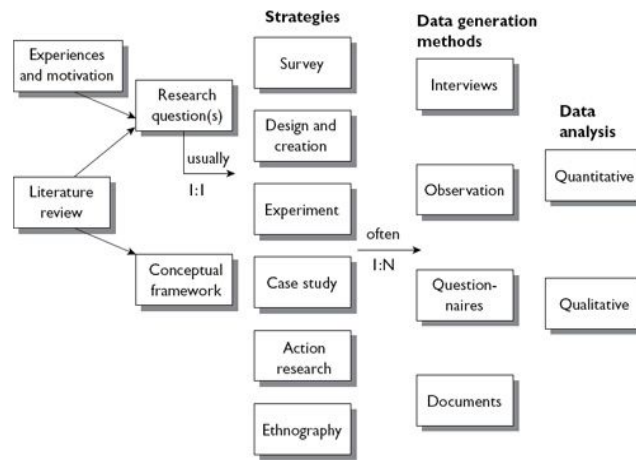
Figure 3. A common representation of a typical empirical research design process (Oates 2006)

One additional obstacle is that extant research design frameworks are based on a positivist paradigm where data collection and analysis are mostly quantitative. As interpretive or critical qualitative methods become important in IS to study digital systems during their development and use, additional resources are needed to make explicit the specific interplay between theory and practice in qualitative research methods (Galliers and Huang 2012). In lack of textbooks, syllabi based on academic papers are a possibility, but as students point out (see below), these can be cumbersome for them to approach for the first time, especially at the master level, where the students are still not familiar with the academic literature.

In sum, what these insights point to is a need for *flexible* approaches in teaching practices. Flexibility is important in order to lower the threshold for the students to approach theory in research. I find that principles derived from agile methodologies are a valuable avenue that I aim to pursue further in this project. I am in particular inspired by the directions proposed by Krehbiel and colleagues (2017): (1) Adaptability over prescriptive teaching methods; (2) Collaboration over individual accomplishments; (3) Achievement of learning outcomes over student testing and assessment; (4) Student-driven inquiry over classroom lecturing; (5) Demonstration and application over accumulation of information; and, (6) Continuous improvement over the maintenance of current practices.

3.2 Own experience

Although in this project I focus on teaching research methods on the master level, my observations are also derived from my experience as a student and as a supervisor.

As a student, I was never trained in empirical research methods during my master, only during my PhD in IS. My concern with the role of theory stems reflexively from (1) dealing with the analysis of the empirical data in my PhD thesis via an inductive-deductive approach (2) refining my data analysis and convince reviewers and co-authors of the soundness of my finding. In both cases, the constant dialogue with my PhD advisors was fundamental to develop such awareness. I have published one article in a journal to elaborate explicitly on the role of reflexivity throughout the qualitative research process, that I hope can be a resource for other PhD students (Parmiggiani 2017). Although the article is not centered on the role of theory in teaching research methods *per se*, it is however explicit about the ways in which theory has influenced my research from inception to end.

As I began supervising PhD and master students myself, my concern with this theme grew as I realized that students struggle greatly to understand the interplay between theory and data. I find this theme to be of great importance for the development of academics in the future: whereas it is possible (although short-sighted) to have a master thesis approved despite several shortcomings, in the case of PhD students obstacles related to the theory/data interplay might lead to a lack of publications and hence failure to complete the PhD degree. With reference to Figure 2, the main pain points for master and PhD students that I have supervised so far relate to (1) the definition of research questions that are grounded on a theoretical problem, (2) the (inductive-deductive) analysis process, and (3) the writing up of the discussion, where the results of the analysis have to be put in dialogue with the relevant literature.

Although the framework by Tjora (2018) is useful to address (2), the other two pain points have been more cumbersome to tackle.

3.3 Colleagues

Critical colleagues such as supervisors, co-teachers, and mentors have been important to first develop the above reflections and to evaluate and validate the problem definition and proposed framework idea.

Based on these conversations, I observed that the problems addressed by this project seem to be more recognizable by teachers involved in teaching and researching subjects with a stronger social (or sociotechnical) element, such as the social sciences and the humanities in addition to the 'soft' branches of computer science (IS, Human-Computer Interaction, Computer-Supported Cooperative Work, and so on). All scholars I interacted with in these fields recognize and struggle with the finding a way to convey the role of theory in research to students.

To further systematize my reflexive approach to the research method process also on the teaching level, together with three colleagues at the Department of Computer Science at NTNU, I have been actively involved in building a community of practice called TeRMIS[1] on the Scandinavian level. TeRMIS is a social learning community concerned with developing a curriculum and a set of shared resources for teaching research methods in IS. We have organized a half-day workshop to address this theme prior to the 10th Scandinavian Conference in Information Systems in August 2019, in Nokia, Finland. 15 scholars of varied experience in terms of teaching and supervising participated.

During the workshop, the group first broke down the theme into a course- and supervision- context (left-hand side in the picture below). Participants then identified a few challenges that have so far hindered the development of a shared framework to teach the role of theory in IS research (Figure 4).

On the *epistemological* level, the theme was linked to the broader need to understand how to teach students to think critically, also of the phenomenon of inquiry (right hand side of picture above and right-hand side of picture below). Gradually, these larger issues were linked to challenges on the *practical* level. Internal issues were associated with the size of a course and the difficulties in actively involving students in some cultures, such as Norway or Finland. I explain in the next section how we addressed this issue in practice in a course I am involved in.

Concerns related to tailoring the teaching of research methods to ensure the future employability of our students also emerged during the workshop, but they are outside the scope of my project.
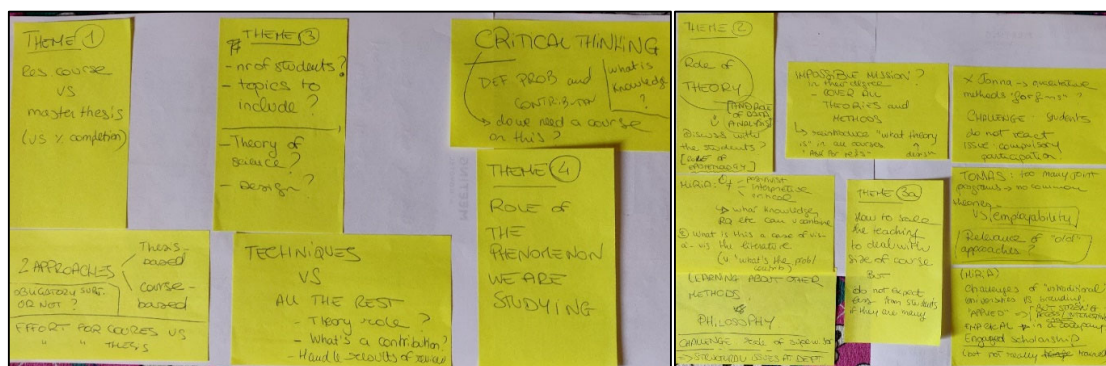

Figure 4. A Snapshot of the main themes and challenges identified during the workshop. Notes taken by the author during the presentations by the workshop participants.

3.4 Students

My co-teachers and I have systematically collected students' feedback through informal Q&A sessions, reference group meetings, and end-of-semester surveys. The students' comments largely overlap with the challenges found in the literature. They struggle to see where and how theory plays a role. During reference group meetings, several master students have told me that they are not trained in approaching the literature from previous courses in IS and/or Computer Science. They perceive this as a great

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[1] https://termiscommunity.wordpress.com/

obstacle to overcome during one semester when they must complete several other courses at the same time.

To make the most out of the available teaching and study hours during the semester, my colleague Babak Farshchian and I experimented with active and reflective student participation in the whole research circle. It is our shared hypothesis that the challenges listed above can be (at least partly) addressed in this way.

Based on the students' feedback, a possibility to systematize the feedback loop is the adaptation of a lecture sequence based on very short loops and an agile practice (Krehbiel et al. 2017), where the students' understanding of the role of theory and progress is constantly tested. The feedback loops must be clearly identifiable by the students.

Active student participation is not straightforward, as also my Nordic colleagues observed. As a first step to ensure such students participation, as described above Babak Farshchian and I re-arranged the IT3010 course as a student conference. This structure was generally welcomed by the students (despite some challenges in communicating the evaluation criteria). As a result, I decided to take it as a starting point and modularized and re-adapted it in a smaller format in the TDMA5004 course (see next section).

Developing a reflective approach emerged as a more problematic issue to overcome. One deliverable of the IT3010 course consisted of a reflection report to be written individually by each student after the conference. According to the end-of-semester survey, students have had a varying attitude towards it. Some students defined it "meaningless" (Figure 5, left).

Some students also complained about the time required by the data analysis phase (Figure 5, right). Although in negative terms, I find this feedback to be a sign of the students developing awareness of the time-consuming nature of this phase. In the subsequent courses, I have made this point clearer at the beginning of the semester.

Figure 5. Two snapshots from the student responses to the 2017 end-of-semester evaluation survey for the IT3010 course. Questionnaire administered by Babak Farshchian.

4   A PROPOSED APPROACH: A FLEXIBLE AND MODULAR LECTURE SEQUENCE

As part of this project, I have developed a prototype of a flexible lecture sequence that places explicit emphasis on the role of theory in qualitative research methods. This concept was first tried out as part of the course TDMA5004, co-taught with Associate Professor Olav Skundberg. My role was that of lecturer for the whole course, while Olav was the course coordinator and participated to almost all sessions in class, including the facilitation of the group work and student presentations. In the following, I present what we did to embrace the perspectives reviewed above, with a special attention to incorporating the IT3010 students' feedback.

First, we insisted on letting the students begin from practical problems that were interesting for them.

Given the success of the conference-like structure adopted in IT3010 in collaboration with my colleague Babak Farshchian, I took this format as a point of departure for this course as well because I find that this structure helps to foreground the feedback loops between theory and empirical data in the writing process. This is generally in line with Krehbiel et al.'s (2017) principle stating that student-driven inquiry should be prioritized over classroom lecturing.

To further emphasize this aspect, together with Olav Skundberg we broke down the feedback loops into smaller modules. It is my hypothesis that the students would develop a stronger awareness of the ongoing interplay between the theory and the practice of research by addressing different real-world problems, first as part of smaller tasks, and gradually moving towards more substantial ones. In so doing, the students would carry out real research tasks of and produce project plans and research papers of increasing scope. This choice was also motivated by the complaint from some students in IT3010 regarding the long time required by the data analysis phase

The conference-like structure was therefore broken down into three smaller modules ('bolk') with more contained deliverables:

1. Introduction to research design. Deliverable: proposal of a case study topic and setting.
2. Mini case-study. Deliverable: A 4-page research article
3. Planning of research project. Deliverable: the research plan for the master thesis.

A detailed overview of all the lectures and activities is provided below. While the three modules are presented one after the other in TDMA5004, they can also be adapted in terms of duration, number and types of activities, or even taught independent of one another to allow for the flexibility required by the varying nature of research methods courses in IS (ethnographies being usually more temporally extended than surveys, for example).

The *first* module is aimed at providing the students with the core toolbox to understand research design. Every lecture in the first module is organized into three subparts:

- Frontal presentation of the main concepts by the lecturer
- Group discussions facilitated by the teacher
- Group activities without the teacher (results of which to be presented and discussed in class during the subsequent lecture)

The group activities are run during each module (both in class with the teacher(s) and without the teacher(s)). They are aimed at: (1) enhancing student active participation; (2) giving students more time to get used to reading the academic literature and familiarize with the existing theories hands-on, as part of small and self-contained exercises (see for example Figure 6).

Some of these exercises are based on good examples of either earlier master theses, short articles written by earlier students as part of the IT3010 students conference, or other academic articles. Given the pain points identified in the problem analysis, a strong focus is set in the beginning on the definition of a research problem and a research question based on a practical and/or a theoretical problem and motivation.

The activity-based approach has also the additional aims of (3) giving regular feedback to the student, and thus having an ongoing dialogue with the students (4) and producing tangible results early on. Both aspects are crucial to increase their self-confidence and awareness in their own learning process (Krehbiel et al. 2017).

Figure 6. A snapshot from a group activity facilitated by the teacher. The students are handed a short academic paper and they are asked to map the practical problem and the research problem, i.e. the problem based on the existing theories in a field. This paper was selected because it was written by earlier master students in the IT3010 course and graded A. It is well written and clear but still quite easy to understand.

In the *second* module, the students are asked to begin testing what they have learned so far by running a small case study. The aim of this module is for the students to acquire more hands-on experience of what it means to conduct a full cycle of research and interact with the academic literature in doing so. They are allowed to work in pairs. In this case, the role of the teacher and the follow-up provided varies depending on the topic addressed by the students. There are no more frontal lectures, but the teachers are available in the timeslots scheduled for the course to answer questions or help the students figure out their research design in conversation with them. Regular short presentations are organized, so that both the teachers and the other students in the class can provide additional feedback on the ongoing research work. Module 2 is concluded by a mini conference where all students present their research plans in front of all the teachers in the Master in Digital Collaboration.

In the *third* module, the students choose the theme for their master thesis in collaboration with a supervisor and are asked to produce a two-page research plan. The module is kicked-off by a lecture which is entirely dedicated to summarizing the main concepts in the course as well as the role of theory in research. This lecture is purposefully provided at this point, to make sure that the students can refer to the (even though limited) experience of defining a research problem and conducting empirical research acquired in module two. Figures 7 and 8 provide two snapshots from two of the most important slides. This lecture can be moved to other modules if needed. The remainder of module 3 is organized in a similar fashion to module 2, i.e. with continuous teacher feedback and student presentations. If needed, module 3 can also be concluded by anther mini conference where all students present their research plans in front of all the teachers and supervisors interested.

Figure 7. A snapshot from a lecture on the role of theory in a research article. This slide is meant to let the students reflect on what it means for one of their assignments (deliverable of module 2)

Figure 8. A snapshot from a lecture on the role of theory in a research article. Extracted from an interactive exercise where students read a few examples of academic papers. The blue arrows are supposed to appear as part of an open conversation between the teachers and the students.

The following three tables illustrate the lecture plan for the three modules (source: snapshots from a file written by Olav Skundberg). The course is allocated one day per week. Lectures and sessions with the teachers are marked in pink (typically a morning, 8:15-12:00), group work and student activities are in white (typically afternoons from 13:00; sometimes a full day).

Bolk 1: Introduksjon, bli kjent med formatet på masteroppgaven

Utbytte: Kunne planlegge forskningsdesign. Vurdere form og innhold på 2 gode masteroppgaver. Beherske referansebruk, dataanalyseverktøy og gjøre artikkelsøk

Arbeidsform: Forelesninger, studere masteroppgaver individuelt, oppsummere i grupper

Innlevering: Forslag til mini problemstilling og Case

Uke	Tema	Aktiviteter
1	Introduksjon, gjennomgå semesterplan Forskningsdesign.	Hva er et forskningsspørsmål?
	Hva er en god masteroppgave? - Del 1 2 gode eksempler er tilgjengelig på BB	Vurdere iht design og casebeskrivelse
2	Datainnsamling metoder Intervju, observasjoner,	Mini-øvinger underveis i forelesning
	Hva er en god masteroppgave? - Del 2	Vurdere iht metode, resultater og analyse
3	Dataanalyse konsepter Kvantitativ - kort repetering Kvalitativ - Åpen koding	*Etablere grupper*
3	12.15 - 15.00 Gruppediskusjon "Hva er god masteroppgave" Del 1 og Del 2 oppsummert	Lage en skriftlig vurdering
4	Litteratur review. Bruke et mini-case som tema.	Miniøvinger
4		**Innlevering**: Forslag til mini problemstilling og case (BB)

Bolk 2: Case-øving (mini casestudie)

Utbytte: Kunne formulere en problemstilling, kunne skrive og presentere en vitenskapelig artikkel.

Arbeidsform: Gjennomføres som gruppearbeid

Uke	Tema	Aktiviteter
5	Introduksjon til oppgaven - gå gjennom mal	Problemstilling, starte datainnsamling
5	Gruppearbeid	
6	Hver gruppe presenterer sitt case	Artikkelskriving
6	Veiledningsmøter, tilbakemeldinger fra faglærere	
7	Undervisningsfri	
8	*Presentasjoner av mulige masteroppgaver fra andre faglærere i miljøet*	
8	Presentere egen minicase artikkel (10min). Oppsummering: Hvordan ser en forskningsplan ut?	

Bolk 3: Planlegging av eget forskningsprosjekt

Utbytte: Ha klargjort for fullføring av masteroppgaven. Tegnet masterkontrakt og evt ekstern standardavtale.

Arbeidsform: Gjennomføres som Gruppe/individuelt (slik det blir i masteroppgaven)

Uke	Tema	Aktiviteter
9	Del 1. Oppsummering hovedkonsepter som forberedelse til masteroppgave skriving Del 2. Spørsmål og svar om plan og oppgave	Begynn med literature review
9	Skriving egen plan; faglærere er tilgjengelige for tilbakemelding	Lage avtaler med veileder og bedrift
10	Møter med veiledere etter behov Skriving egen plan	
11	Studenter presenterer sine planer i plenum, diskusjoner + tilbakemeldinger	
12	Skriving egen plan; faglærere er tilgjengelige for tilbakemelding	
13	Innleveringsfrist på forskningsplan + avtaler med virksomhet + NSD søknad	

5 EVALUATION AND DISCUSSION

In this section, I shall discuss my initial results from the perspectives considered in this report: the literature, my own experience, my colleagues' point of view, and finally the students'.

5.1 Literature

There is not one-size-fits-all recipe to teach students the role of theory in research methods. My proposed approach aims to be flexible enough to teach the students that research design and methods are a "craft" that is learned by doing and through coaching (Hammersley et al. 2004). Referring to the framework in Figure 2, the role of theory is represented by the little arrows linking the various phases of research to the next one (Kawulich 2016) in different iterations and via continuous feedback.

In so doing, I took inspiration and adapted some of the principles from Krehbiel et al.'s (2017) Agile manifesto for teaching and learning. Accordingly, the students in TDMA5004 did not follow a rigidly defined set of tasks throughout the course. Rather, they worked in cycles, using frequent, time-boxed, learning-driven (as opposed to test-driven) iterations, something which allowed for regular check-ins with and feedback from the other students and the teacher[2]. Metaphorically speaking, this approach helped me to sew theory into every step of the research design process, following the arrows in Figure 2.

This approach worked well in my opinion because it allowed me to provide the students with an account of research methods practices that was standardized enough according to the existing literature (especially in module 1) while conveying that theory is tightly embedded with the specific research design. At the same time, it avoided giving the students the (wrong!) impression that the knowledge grounded in the theory they used as their frameworks and that they were generating with their work was disconnected from the research process (Hammersley et al. 2004). Making the role of theory a self-standing, independent module would according to this line of thinking also be counterproductive. As my colleagues and I observe in a report to appear in the Scandinavian Journal of Information Systems

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[2] It is important to remark that we purposefully did not introduce the Agile Manifesto terminology (backlog, sprints, retrospectives, etc.) for the students, because our focus was on the approach, not on developing the students' awareness on Agile methodologies.

(Farshchian et al. forthcoming), theory plays different roles in different disciplines (Corvellec 2013) and, as such, discipline-agnostic approaches to teaching its role are unlikely to be effective.

5.2 Own experience

According to the constructivist approach (Biggs 1996), this modular teaching structure still requires careful preparation, but allows for the flexibility to (a) adapt to the emerging and partly unforeseeable context; (b) build upon the students' previous knowledge or learning trajectory. This is in line with a view of learning as a process that involves a change in students' knowledge which is rooted in the students' active involvement (Ambrose et al. 2010).

My first observation after going through one cycle of teaching a course with the proposed lecture sequence, however, is that foregrounding the role of theory in the teaching of research methods is harder than I thought. One of the Agile principles for teaching and learning states that continuous improvement should be prioritized over the maintenance of current practices. What this implies is that adopting an Agile-inspired approach to teaching also affects the teachers' work, both inside and outside the class. Course design and teaching are not static but quite dynamic, as they follow the student learning process. As such, they are permanently-in-construction (Krehbiel et al. 2017). I observed that, especially during the first part of the course, this increases the amount of work and attention that the teacher must dedicate to the course. On the long run, however, this effort paid off as I spent considerably less time in introducing these aspects to the master thesis students I supervised. This has enabled me to "test on the ground" that my concerns (see "Own experience" in "Problem analysis") were addressed. The students I supervised were able to understand how to ground a research question on a theoretical problem (see point 1) and engage with the literature in their discussion sections (see point 3), to a very satisfactory degree.

5.3 Colleagues

The course design I propose in this report is developed in close and constant dialogue with my colleague and co-teacher Olav Skundberg. His role is important in terms of opening a space for me to contribute to the course, probing the emerging issues, testing solutions, and ask critical questions. He was also present during the feedback sessions with the reference group.

Similarly, I often discuss the emerging issues and proposed solutions with my colleague and former co-teacher Babak Farshchian, with whom I co-author an article to appear in the Scandinavian Journal of Information Systems, where we present the results of the ongoing work in the TeRMIS community in general and the role of theory in research methods in particular (Farshchian et al. forthcoming). An important observation raised by Babak is that we should overtake the distinction of students between producers and consumers of research (cf. Earley 2014). Terminology associated with producing or consuming something does not do justice to the participatory and co-constructed nature of the learning process. Similarly, contrary to the Agile Manifesto for Teaching and Learning, however, I think that students are not our customers (cf. Krehbiel et al. 2017), but rather participants in teaching and learning.

Unfortunately, however, due to the sudden shift to home office and reshuffling of tasks that followed from the Covid-19 pandemic in Spring 2020, I was not able to evaluate my proposed approach further with a second TeRMIS workshop involving colleagues from other Scandinavian universities. I hope to be able to do so in Spring 2021.

5.4 Students

To understand how the students reacted to the proposed agile lecture sequence, I relied on (1) open dialogue with them; (2) two reference group meetings; (3) continuous dialogue with two of the students whom I supervised during their master thesis projects in Spring 2020.

The activities and discussions arranged during the lecture facilitated the dialogue with the students. The students recognized in class that the threshold for giving feedback to both the teachers and the other students was considerably lowered. I also interpreted as positive feedback the fact that all of them, after an initial short period in which they had to get used to the course, interacted regularly with me. It was a good sign that a couple of students whom I did not supervise reached out to me to help them work on their theoretical motivation and problem definition at the beginning of the following semester.

In general, students seem to appreciate the reflective approach promoted in class when I asked them for direct feedback during or at the end of the lectures. This was of course facilitated by "class feeling" that a group of only 8 students developed throughout a master's degree lasting 2 years.

Two reference group meetings were also organized. Here too the feedback from the students was very positive (the most positive I have every received for a course I was involved in!). The two main comments that we received where the following, according to the concluding report:

«God kvalitet på forelesninger og innhold i emnet.»

«Studentene hadde ønsket at presentasjon av masteroppgave-tema kom mye tidligere. På den måten kunne flere fått lengre tid med å velge oppgave, og kanskje gjøre øvingsoppgavene i emnet mer rettet mot eget tema for masteroppgave. Utover dette har det ikke vært noe å utsette på emnet.»

The students recommended in other words to start earlier with the introduction of the options available in terms of master thesis projects. Although this is partly outside the control of the TDMA5004 course, it is also very indicative of the willingness and interest that the students developed towards real-world, concrete problems to address.

6   CONCLUDING REFLECTIONS AND WAY FORWARD

The approach proposed above is of course not a final solution by a first step. I think of it as a prototype.

Towards the students, based on the results so far, I plan to revise my approach further together with my colleagues in the incoming semester (Autumn 2020). Gradually, I will adapt it to larger courses in 2021 and 2022.

Towards the academic literature and community, I hope that my work will be important to develop a sensitivity towards (1) foregrounding the role of theory in all research methods teaching; (2) evaluate the viability of more flexible lecture sequences that better adapt to the students' learning process. As a critique towards the application of Agile-inspired approaches to teaching and learning, I would like to stress the fact that we as a community should steer away from metaphors of students qua customers. Students co-produce the lecture space together with the teacher. The reflective abilities they develop actively as part of the process are and will be fundamental to societal development.

To conclude, unfortunately, Covid-19 did not allow me and my colleagues to organize a workshop with Scandinavian colleagues for evaluating the proposed framework in Spring 2020 in light of the first reflections developed the previous year.

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