Unfolding teaching practices in higher education courses: Cases from school leadership programs

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A R T I C L E   I N F O

A B S T R A C T

This article provides insight into teaching practices in higher education. The empirical data are from master's programs in educational school leadership at universities in Norway and the United States (California). We employed a case study approach to investigate how teaching practices unfolded at the two sites. The data comprised textual materials and video data from two cases. Using Actor–Network Theory, we identified the key entities (social and material) that constitute the teaching practices. While the entities were fairly similar in the cases, the resulting relationships between them, while appearing distinctive, differed. Insights into how teaching practices unfold can offer valuable knowledge when evaluating existing programs and designing new programs in higher education.

1. Introduction

There is extensive literature on higher education (HE). The present study is specifically concerned with the literature on teaching. The literature on teaching in HE (see, for example, Marshall, 2019) covers a range of issues, such as modes of teaching, effectiveness, and quality of different approaches. In the literature, there has been limited focus on evolving teaching practices. We based our analysis on textual materials and video observations from classes in master's programs. This called for a practice-based approach (Hager et al., 2012; Nicolini, 2012) that allowed a close examination of how the materials, people, and infrastructures that make up the teaching practices under investigation are entwined (cf. Shove, 2017). Within the practice-based family of approaches, we specifically took inspiration from Actor–Network Theory (ANT), which is distinct from other practice-based approaches.[1] In particular, ANT is distinct in its attention to the emerging relationships among entities, such as people, devices, texts, procedures, and talk among actors in practices, as well the establishment of networks of entities (Latour, 2005; Law, 1994). The assumption is that human and nonhuman entities coalesce and construct networks through the relationships established between them. Things and actors are not preexisting but are the effects of relationships among entities. Fenwick and Edwards (2010, p. 17) explained, "A teacher, for example, is not a distinct entity that pre-exists her activities in a particular school…". Moreover, they explained that "the teacher is an effect of the timetable that places her in a particular room with particular students…" (p. 17). Maintaining a view of symmetry between the material and the social renders entities visible as integral elements in educational programs and hinders the categorical barrier created by the valuation of one above the other (Waltz, 2006).

ANT has been applied to science and technology studies to explore innovations in the field of health and in organizational studies

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[1] E.g., Complexity theory, activity theory, and theory on community of practices.

(e.g., Vickers & Fox, 2010), and more recently in research on educational issues (Fenwick & Edwards, 2010; Hamilton, 2013; Lunde & Ottesen, 2020; Mulcahy, 2011; Ottesen, 2018). ANT's sensibilities offer conceptual tools that afford an examination of the unfolding teaching practices in HE courses. Our aim in this study is to provide insight into teaching practices in HE courses with the help of ANT, which, to a limited degree, has so far been applied in HE research.

We selected university courses in school leadership.[2] The need for specific education for school leaders[3] is recognized internationally (Crow et al., 2008). Since the early 2000s, the research on the education of school leaders has expanded and includes countries in many parts of the world (Huber, 2004; Jensen, 2016; Lumby et al., 2008; Møller, 2016). In the literature, which is mainly based on self-reports from survey and interview data, researchers have provided knowledge about several aspects of such education, including pedagogy, curriculum, and the general facilitation of learning. Although many educational leadership programs are located in HE institutions, the researchers did not position their studies in HE research. Instead, the education of school leaders has developed as a separate field of research. In the present article, we aimed to contribute to the literature on HE based on data regarding the education of school leaders at universities, because this research has revealed that many pedagogical tools are involved in such education.

The present study is part of a larger study (Jensen, 2019) that examined how the education of school leaders is situated, experienced, and legitimated. We collected empirical data in two cases to bring to the surface various aspects of unfolding practices that show how the interplay of entities constructs patterns of teaching in situated practices. In the present substudy, we examined the teaching practices in master's programs, focusing on the entities and their relationships. The purpose of the substudy is to provide insight into teaching practices in higher education, with attention to the unfolding teaching practices in two master's programs. We selected a case from Norway (Case 1) and a case from California, U.S. (Case 2). The analysis of the data from the two cases aimed to elucidate aspects of unfolding teaching practices through in-depth analysis, making the phenomenon understandable (Ragin, 1994). The following research questions guided our analysis:

RQ1: What are the key entities in teaching practices in the two cases?

RQ2: How do the relationships among the entities constitute distinct teaching practices?

For this article, we reanalyzed the total corpus of the data to provide an overview of the main entities (RQ1). A crucial concern in ANT analysis is where to cut the network (Fenwick & Edwards, 2010). In this article, we concentrate on the relationships among the entities in the classroom teaching activities (RQ2), although we were aware that the relationships extended beyond this setting. An analysis of textual and video data enabled us to gain detailed insights into unfolding teaching practices.

Following this introduction, we briefly review the relevant research on teaching in HE before reviewing the education of school leaders. In the subsequent sections, we present our rationale for leaning on ANT sensibilities in our analyses. Thereafter, the methodology is detailed, the results are discussed, and a conclusion is formed.

2. Research on teaching practices in higher education

In the literature on teaching in HE, a variety of issues have been addressed. One may distinguish among a policy level, an institutional level, and a course level (Nerland & Prøitz, 2018). In the present study, the data were collected from the course level. Still, we presume that the tensions and dilemmas on the other two levels constitute the course level. Different pedagogical approaches, such as lecturing, seminars and organized discussions, and student-centered approaches are outlined in the HE literature with relevance to course level (see, for example, Damsa et al., 2015; Gosling, 2008; Morton, 2009).

Damsa & Wittek, 2020 built on the work of several authors (e.g., Baker, 1999; Barron, 2003; Damsa, 2014) when suggesting distinctions between an *epistemic dimension* of group learning (the action and interactions that lead to a co-construction of concepts, knowledge, and solutions), a *procedural* or *process regulative dimension* (collaborative tasks and responsibilities), and a *social–relational dimension* (where issues of power, role status, and engagement are addressed).

Although lectures in plenary teaching have been criticized (Young et al., 2009a, 2009b), based on observations of teaching in HE, de Lange et al. (2020) showed the potential of plenary sessions. The authors mentioned situations in which relationships were established between abstract concepts, professional practice, and opportunities for discursive engagement, as well as the opportunity to engage with relevant cultural tools (e.g., participation in buzz groups and plenary discussions).

The education of school leaders has been subject to research since the 1950s in the United States and since the 1960s in Canada, the United Kingdom, and New Zealand (Miklos, 1983). Since the early 2000s in other countries (Lumby et al., 2008; Young & Crow, 2017; Young et al., 2009a, 2009b), the research has maintained a strong focus on how the education of school leaders might stimulate meaning-making processes among students and how it might link the theories being taught on campus and the practices in schools (Taylor et al., 2009). Based on survey data, Huber (2004) found that connecting theory and practice was a central aim in providing leadership education programs in 15 countries (in Europe, Asia, Australasia, and North America). The various *pedagogical tools* that might be expected to facilitate the aims of constructing meaning and connecting theory and practice at work are common research interests in the education of school leaders (Taylor et al., 2009).

While there is an abundance of studies on the education of school leaders in Anglo-American countries, this is not the case in Norway. One reason might be that formal education for school leaders was not offered until the early 2000s (Møller, 2016). Reports

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[2] Various terms are used when referring to in "school leadership" in publications as a field of research, such as "educational leadership," "educational management," and "educational administration." In this article, we use the term "school leadership".

[3] In this article, we use the term "education of school leaders." The term refers to leaders who are formally in charge of leading schools, both pedagogically and administratively.

from the National Principal Education Program[4] have been commissioned by national authorities (e.g., Aamodt et al., 2019). Among the many issues discussed, mainly based on self-reports, are the pedagogies, which reveal a large variation across providers.

As mentioned, until now, research on the education of school leaders has mainly been based on self-reports (Jensen, 2016). While the studies mentioned above may provide insights into the types of processes and pedagogies in HE in general or the education of school leaders in particular, socio-material approaches that explore how human and non-human materiality combine to produce both purposes and practices are scarce in educational studies (Fenwick & Landri, 2012). However, ANT sensibilities have been used in studies to indicate how pedagogies or didactic approaches are technologies "doing" work in educational practices (Royle, 2021). For example, Koyama (2015) showed how people, things, and discourses serve as cultural actors in educational practices, and Sjödin and Wahlström (2020) investigated how social, discursive, and material artifacts make up the practices of assessment and grading.

As indicated in this review, we know that a plethora of individuals, teaching materials, curricula, and tools for teaching are in play in HE in general, and in the education of school leaders in particular, which makes this site relevant to select as a site of research. Our interest here is in how different teaching practices may emanate as effects of various interrelationships. ANT serves as a tool to delve into this puzzle and will be outlined in the next section.

3. Analytic framework

ANT makes it possible to "trace the process by which elements[5] come together and manage to hold together to assemble collectives or networks" (Fenwick et al., 2011, p. 10). Such achievements are provisional and situated in time and space. However, it is possible to identify patterns by carefully tracing the relationships between entities in networks. It provides a dynamic approach that allows us to trace the effects of emerging relationships among materials and talk among actors. To distinguish *talk* from what goes on in everyday conversations, we use the term *discourse* when referring to both talk about content and interactions among people with materials (Ottesen, 2006; Schmidt, 2008). Effects in ANT are not causal explanations in a traditional way; in ANT, the focus is on precarious correlations rather than cause and effect (Fenwick & Edwards, 2010). As they explain "The object is to understand precisely how these things come together – and manage to hold together, however temporarily – to form associations that produce agency and other effects: for example, ideas, identities, rules, routines, policies, instruments and reforms" (Fenwick & Edwards, 2010, p. 3). Thus, production, change, and development related to courses in higher education can be understood as the effects of assemblages of material and social actors (Fenwick et al., 2011; Ottesen, 2018). Educational research may neglect the qualitative and performative contributions of such materials (Waltz, 2006). Specifically, such entities are considered inert entities or ideas that are implemented in contexts, interpreted, and taken up by practitioners, or that control or regulate practices. They are constructed as objects, that is, tools to achieve the intentions of human actors or drivers of social interactions (Ottesen, 2018). In this way, neither material nor social entities have priority; rather, they "become" through their relationships. Teaching practices are performed into being because of the relationships and networks in which the various entities are located (Gherardi, 2001).

Networks of relationships are complex, dynamic, and procreative over time. "Practices organize and reproduce the distribution of power, knowledge, and the inequalities that go with them" (Nicolini et al., 2003, p. 24). The key points of departure in ANT are that humans do not have a privileged status in the networks and that networks are continually in flux, with entities working on each other, changing each other, and forming anew. Thus, ANT analyses help us to understand "why certain concepts and models, despite rigorous validation and promotion, fail to survive or influence practice, while others (…) spread rapidly to become extended and durable, despite much supporting evidence or scholarly approval" (Fenwick & Edwards, 2014, p. 40). By maintaining a focus on "the minute negotiations going on and the points of connections" (Fenwick & Edwards, 2012, p. 77), ANT-based analyses provide insight into the processes through which things are invited or excluded in ongoing activities. In our research, we conducted close-up and minute studies of the teaching that occurs in university courses for school leaders. In each case, we follow the movements of people and things and how they are performed in (provisional) practices. By approaching practice as performed rather than as something already given, it is possible to provide greater insight into the teaching of educational leadership in higher education and unfolding practices.

4. Methodology

The overall study was designed to allow a detailed and intensive analysis of single cases (Bryman, 2012). The purpose was to examine the unfolding teaching practice in two cases rather than designing a comparative study. Studying unfolding practices requires access to practices over time. Thus, we selected sites, programs, settings, and individuals through purposeful selection (Maxwell, 2008).

The sites of the research were a university in Norway and a university in the United States, each with a different history of educating school leaders, but with some similarities. At each university, we selected a master's program in educational leadership, which was established at the beginning of the 2000s. The setting under study was student cohorts in both cases, which comprised 22–25 students. The two cohorts were enrolled in several courses. We selected courses with a specific focus on leadership and governance. In Case 1, the aim was to help students strengthen their knowledge of governance and leadership, develop skills to analyze academic literature, foster and demonstrate a critical stance, and develop professional discretion. In Case 2, the purpose was to deepen the students' notion of what a socially just education means, to analyze challenges, and to imagine possible actions to be taken. Moreover, students had to be

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[4] The program is initiated and funded by the Norwegian Directorate for Education and Training.
[5] In the present study, we use the term "entity" instead of "element."

able to analyze the pros and cons of accountability policies. In both cases, the selected courses were led by university teachers who oversaw the courses and programs.

We used a video–ethnographic approach (Heath & Hindmarsh, 2002) to provide increased insight into the unfolding teaching practices, which made it possible to study activities in natural settings (Bryman, 2012). One of the authors collected the data through non-participative video observation. Seventeen hours of video recordings of whole-class activities in the courses were collected for each case from day 2.[6] The course in Case 1 lasted nine weeks, while the course in Case 2 lasted six weeks.[7]

The video recordings[8] from the plenary teaching comprised the data in both cases in the present article. Video data from days 2–5 were transcribed in both cases. The video recordings were accompanied by observable textual materials (e.g., syllabus, PowerPoint presentations [PPPs], and readings). A data corpus that included both video data and textual materials allowed us to identify the main human and nonhuman entities in the teaching practices in the two cases (RQ1).

Several strategies were used to provide systematic analyses of the overall study, such as organizing the data into episodes according to what was being worked on *in situ*, identifying the tasks being worked, the tools being introduced and used, and the discourses (Jensen, 2019). The organization of the data material into episodes was inspired by Barab et al. (2001), who suggested a methodology to identify relevant data from complex and evolving environments. An episode was signified by a thematic start or shift related to the topic being worked on in the teaching practice. In the overall study, we identified 34 episodes in Case 1 and 46 episodes in Case 2. The analysis of the episodes selected for the present study revealed the tasks being introduced, who was teaching, and whether the students worked individually or in pairs or groups. In addition, what was worked on in each episode was identified by analyzing the content of the talk between the teacher and the students, and the involved materials.

We selected one episode from day 2 in both cases to investigate in detail how the relationships among entities constituted specific teaching practices (RQ2). The episodes that were selected from each case were categorized as "action-relevant episodes" (ARE) (Barab et al., 2001) to answer RQ2 because they met certain criteria; that is, the episode included entities that were frequently identified in each case and portrayed how the relationships among the entities constituted the teaching practices. Because key entities can change their modes of interaction (Latour, 2005), we meticulously studied the data to identify the contents and agencies of the actors, such as the articles and PPPs that were introduced and used. We were attentive to changes over time in the shape, strength, and substance of the relationships (Fenwick & Edwards, 2010; Nicolini et al., 2003).

5. The result: unfolding teaching practices in courses

In this section, we first present what we identified as the main entities that constitute the teaching practices in the two cases (RQ1) before focusing on the relationships among the entities constituting the teaching practices (RQ2).

5.1. The main entities at work in the teaching practices

The main actors in the two cases were *university teachers* and *students*. In Case 1, six university teachers gave lectures (one at a time, including the university teacher who led the course). In contrast, in Case 2, the university teacher who led the course was the only lecturer.

In the two cases, we distinguished between *discourses in plenary sessions, discourses in groups,* and *discourses in pairs* (buzz groups). The discourses in the plenary sessions included relationships between the teacher and the students and diverse materials (cf. Schmidt, 2008). The discourses in groups and pairs were among the students and involved the materials. In Case 1, the duration of the plenary discourses ranged from two to six hours of the seminar days, including breaks, working in pairs, and working in groups with short time tasks. In contrast, in Case 2, the plenary discourses were shorter (often half an hour), but the work in the groups was longer than in Case 1 (often an hour). In addition, the students worked individually. In both cases, the students were expected to be actively involved in the discourses. Plenary discourses comprised teacher monologues and conversations that included the students and materials and were prominent in both cases.

We identified several material artifacts in the two cases. In Case 1, PowerPoint presentations (PPPs)[9] were a key entity in addition to the teachers and the students. The PPPs often included *references to the literature, procedures,* and *tasks* and contained 11–95 slides. A recurrent aspect of the PPPs was to offer an overview of the content of the lecture and a summary of the lesson. The slides included substantial information about research findings, theories, models and concepts, and references to policy documents. Questions for discussions in pairs and groups and a layout for the *structure* of the day were also commonly presented. In Case 2, only three PPPs were used, each of which was very short and contained just a few concepts and references. These entities did not overtly constitute a relationship with the structuring of the session. Our observations showed that the teacher's lesson plan for the day[10] functioned as a structuring mechanism. The teacher repeatedly consulted her lesson plan when presenting the day's agenda and before the activities changed.

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[6] The first day was only observed with the use of field notes.

[7] The last four days were not observed/recorded.

[8] The equipment was hired from the Teaching Learning Video Lab at the Faculty of Education, University of Oslo. https://www.uv.uio.no/ils/om/organisasjon/tlvlab/index.html

[9] One of them was a Prezi presentation in the Norwegian case.

[10] The focus and the sequences of the activities.

The length of the study *literature* was quite similar (i.e., around 700 pages). In the plan for the semester (Case 1) and in the syllabus (Case 2), two to four pieces of literature[11] were listed for each course day.

In both cases, the students engaged in working on tasks. In Case 1, the tasks were usually available in the PPP and comprised a few questions. In Case 2, the tasks were outlined in *handouts* that typically specified several questions, the amount of time to be spent on each question, and how to organize the group work for 60–90 min. Only one handout was observed in Case 1, where the students had to work for 60 min in groups. In Case 2, we also observed specific teaching strategies for structuring teaching practice. Table 1 summarizes the main entities[12] in the two cases.

Across time, these entities combine in networks that establish patterns in teaching practices. The networks in each of the two cases were quite similar. In Table 2 (Case 1) and 3 (Case 2), we show how the teaching practice is represented as sequences of episodes on day 2, the entities that are identified within these episodes, and their durations.

Table 2 shows that there were eight episodes on day 2. The duration of the episodes was 3–45 min. Minimal time was used for introducing the day (Episode 1) and wrapping it up (Episode 8). A total of 92 min were devoted to plenary discourse, while twenty-five minutes were devoted to discourses in groups (Episode 6).

On day 2 in Case 2, eight episodes were identified. Column 5 shows that the duration of the episodes is 2–65 min. Minimal time was used to introduce the day (Episode 1) and wrap it up (Episode 8). One hundred minutes were used in pairs and groups, and the students also worked individually. Thirty minutes were used for the plenary discourse. Scholarly articles were among the recurring nonhuman entities, as were diverse tasks, handouts, and teaching strategies. Table 3 shows the teaching practice on day 2 as an effect of relationships among the many entities, that is, teachers, students, lesson plan of the day, discourses in plenary sessions, pairs, and groups, teaching strategy, handouts, a chapter, and several tasks.

In both cases, the teachers' actions played an important part in making up the teaching activities of day 2. The relationship between the PPPs and the teacher in Case 1 worked to structure the activity, and together with the teacher discourse, it established a relationship with students' learning activities. In Case 2, the relationship between the teacher and the lesson plan provided the structure. The relationship between the students and the lesson plan was mediated by the teacher. Whereas the pattern in Case 1 seemed to be emerging relationships among students and a whole range of ideas, models, and approaches, possible relationships were limited to a few key pieces of literature in Case 2.

5.2. How the relationships among entities make up the teaching practices

In this subsection, we show how patterns of relationships among entities make up emergent teaching practices in the two cases. We focused exclusively on day 2 in the two cases. The chosen excerpts illustrate how the relationships make up teaching practices. The discourse shown in Excerpts 1 and 2 below consists of transcriptions from the start of day 2 in the two cases.

The relationships among entities in Case 1

Excerpt 1: Case 1

Actors	Plenary discourse	Materials
1 Teacher:	*From Episode 1:*	Slide 2
	"Today we are going to talk about different tools for governing in education (…) I have not uploaded the PowerPoint yet	(Focus)
	(…) I expect you to be actively involved, i.e., contributing with your experiences, posing questions, etc. (…)	Slide 3
	Internationally, including in Norway, the need for a quality system was raised."	(Background)
	From Episode 2:	
	"Concepts such as *output governance* and *public management* are used [in the research][13] (…). Merki, a researcher from	
	Austria, referred to two dominant methods: the introduction of standards (…) and the introduction of school inspection	
	or a combination of the two. Any questions?"	
2. Students:	"Yes, about standards. Are they assessment criteria?"	Slide 3
3. Teacher:	"Yes (…) it is a description of the desired outcome (…)"	Slide 3
4. Student:	"I am a teacher in upper secondary school. We do have standards for specific subjects (…)."	Slide 3
5. Teacher:	"So far, there are no national standards (…) The competence goals [in Norway] might be conceptualized as standards	Slide 3
	(….) Municipalities in Norway are developing systems to follow teachers' work, which is so-called *performance*	Slide 4
	management (…)."	(Webpage)
	From Episode 3:	Slide 5
	"Here is a model, a triangle that shows the government/parliament at the top, municipalities in the middle, and schools	(Model)
	at the bottom. There are arrows in the model that go in both directions. Does it make sense?"	
6. Student	"Yes. This is exciting when it comes to the role of the principal. I think it varies how principals look upon their roles, that	
	is, as a delivering role to the level above, or as a supporting role to those beneath (…)."	
7. Teacher:	"That is a good point. It's about the frames over governing and communication and how the principals perceive their	Slide 6 (Model)
	space of maneuver (…). We have *top-down dynamics*, but also *center–periphery dynamics* (…). We will discuss a task. In the	Slide 8 (Task 1)
	task, you are supposed to use a model of governing made by Schimank, who illustrates an equalizer with five buttons to	Slide 9 (Equalizer
	regulate low–high degrees of governance, that is, related to public regulations, external governance, professional	model)
	governance, self-governing, and competition. The task is: What does governance in and of schools look like in your	

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[11] Books, chapters, articles.

[12] There were also other entities, such as learning management systems (LMS), films, roleplays, and assignments, but they were not frequently observed in the teaching practices.

Table 1

The entities making up the teaching practices in the two cases.

	Case 1 (the Norwegian case)	Case 2 (the Californian case)
People	25 students	22 students
Discourses	6 teachers	1 teacher
	Discourses in plenary sessions (including lectures), pairs, and groups	Discourses in plenary sessions (including lectures), pairs, and groups, and individual reflection
Materials	PPPs (8), including references to regulations of the day, literature, and tasks	Study literature, PPPs (3), handouts, including regulations of the day and tasks

Table 2

Case 1: Teaching activities, entities, and duration.

Ep[14]	Teaching activities	Entities	Min[15]
1	Introduction—lecture about content and expectations	Teacher, students, slide 2	4
2	Lecture about the topic of the day and introduction to three analytic models, questions and comments	Teacher, students, models, discourse, slides 3–7	16
3	Introduction to task and student work in pairs	Teacher, students, model, discourse, slides 8–9, task 1	30
4	Discussion of student work	Teacher, students, plenary discourse, slides 8–9, task 1	13
5	Lecture; questions and answers, categories of governance tools, the Norwegian system, trends, challenges, and changes	Teacher, students; models for changes in governance; governing tools, plenary discourse, slides 10–43	45
6	Introduction to task / Student work in groups	Teacher, students, group discourse: experiences of governance, implications for practice, slide 44, task 2	25
7	Discussion of student work	Teacher, students, plenary discourse, slide 4, task 2	18
8	Wrapping up the day	Teacher, students, plenary discourse, slides 46–48	3

[14]The episodes.
[15]The breaks are not included.

Table 3

Case 2: Teaching activities and entities.

	Episode Teaching activities	Entities	Minutes
1	Introduction: structure and content	Teacher, students, plenary discourse, chapter 1, the teacher's lesson plan of the day	2
2	Walk and talk	Students, teaching strategy, handout (task 1), discourse in pairs, chapter 1	30
3	Identification of demographic characteristics and forms of evidence	Teacher, students, plenary discourse, chapter 1, task 2	30
4	Individual reflection	Students, chapter 1, task 3	5
5	Identification of evidence Discussion of concepts	Students, discourse in pairs, chapter 1, task 4	5
6	Examining the concept in detail "Number of heads together"	Teacher, students, discourse in groups and plenary session, chapters 1 and 2, task 5, teaching strategy	65
7	Unpacking concepts	Students, individual reflections, chapter 1, task 6	5
8	Concluding day's work, preparing for next course day	Teacher, students, articles 1, 2, and 3	2

(*continued*)

	context? How do you place yourself as an actor?"		
	From Episode 4:		
8. Teacher:	"Now I am very excited about what you discussed! (…)"		Slide 9
9. Student:	"Whether the degree of governance [regarding] self-governing etc. is high or low varies in the individual municipality (…)"		Slide 9
10. Student:	"It is dependent on how you define self-governing."		Slide 9
11. Student: w	"If the other [buttons] go up, self-governing goes down (…)"		Slide 9

[13]Authors' comment.

The video data shows the students were seated in a classroom with the teacher facing them and operating the projector at the front of the room. The physical placement of participants in the room establishes a specific relationship between the teacher and the students and shows how the physical environment also works as an entity that may affect teaching practice. In this case, there was tension between the teacher's discourse (1) ("I expect you to be actively involved…"), the content of slide 2, and the material setup of the teaching context. In Episode 3, scientific *models* and their representations on PowerPoint slides structured the teachers' discourse and hence the relationships among the teacher, the students, the material environment, and, at a greater distance, the researchers being referred to, such as Qvotrup, Ball, and Schimank. An effect of the emerging relationships between social actors and the PowerPoint slides is the control and regulation of the activity (cf. Damsa & Wittek, 2020), which helped to establish the uniqueness of this specific teaching practice.

A conspicuous detail in Case 1 is that the PowerPoint slides include an abundance of scientific concepts (cf. Vygotsky, 1978), for example, *managerial governance* (slide 2), *output governance, new public management, performance management* (slide 4), and *top-down*

dynamics (slide 6). The emerging teaching practice is forged through the characteristics of the relationships established among the ideas represented *on* the slides, the teacher's discourse *about* the concepts, the student tasks involved, and the discourse *about* the concepts. The students were encouraged to participate in the teaching activity by sharing experiences and asking questions, and they responded to these expectations. After working in pairs, the students were asked to share their analysis. The excerpts show the effect of the relationships among the task, the PPP model, the students' analysis, and critical comments in the plenary discourse.

Our analysis of the activities in Case 1 indicated that teaching practices are constituted in a relationship where the teacher emerges as a mediator in plenary discourses about the arguments and evidence of authors, and the students' relationships to scientific chapters and article is that of analysts and providers of practical experience.

The relationships among entities in Case 2

Excerpt 2 consists of transcriptions of the plenary discourse of day 2 in Case 2.

Excerpt 2: Case 2

Actors	Plenary discourse	Material
1.Teacher:	*Episode 1:*	Lesson plan
	"We are going to have a conversation as a whole group, and then you are going to have an opportunity to go for a walk (…). And you will be able to have a conversation about the evidence that is presented in this chapter, but it will be a structured conversation around some questions that I did like you to explore with one partner, OK? After those 30 min, you are going to come back, and then we are going to debrief and talk about the implications for the kinds of evidence that are presented in this chapter for the opportunity gap and for what we think of as a socially just school, OK? (…)."	Teacher strategy Task 1 Handout 1 Chapter 1
	Episode 2: No interaction data from the Walk and Talk.	
	Episode 3:	
	"So, if you were to describe the American students, just demographically, to somebody who is not from this country, and you had this chapter to call on for sources of evidence, how would you describe the American student population in public schools? What do they look like?"	
2. Student:	"Oh, just that it is *diverse and segregated.* There is not one way to describe the American student because it's such a diverse place (…)."	Chapter 1
3. Teacher:	"Ok, segregated in what sense?"	
4. Student:	"Um, I would say *by race* and *socioeconomic status*, like even at my school we were evenly divided between black, Latino, and white. We are unofficially tracking the kids. When you are going to an advanced class, it is predominantly white. If you are going to a regular class, it's the colored kids. (…)."	
5. Teacher:	"So, all these forms of *inequality* then produce a very unequal opportunity to access high-quality schools (…). We are talking about *a gap in opportunity* that is based on *unequal conditions* to being with—the starting point is already unequal, OK? Now I want to talk a little bit about the method that she [the author of the chapter] and her colleagues use to present this argument in Chapter 1 (…). What forms of evidence do they call on?"	Chapter 1 Syllabus
6. Student:	"Graphs."	Chapter 1
7. Teacher:	"Graphs that show different…, the longitudinal data."	Chapter 1
8. Student:	"Pictures."	Chapter 1
9. Teacher	"Yeah, pictures, right? (…).	Chapter 1
	So, they did not purely write paragraph after paragraph; they interspersed these statistics, the quantitative evidence, with qualitative evidence, right, with stories from teachers (…). That is the way I want you to think when you are writing your paper. (…) But what do the conditions in my school look like? Think about the conditions that Oaks and her colleagues wrote about. I would like for you now to begin to think about what your school looks like."	Assignment Syllabus Task 1

The video data showed the students seated in groups in a classroom with the teacher facing them at the front of the room. The students had the study literature close at hand on their desks. The physical arrangement of the students and the artifacts pointed to a relationship in which the students were participants in collaborative work guided by the teacher. There were relationships between the teacher and her lesson plan (not available to the students) and other materials on the students' desks, such as a handout, a chapter by Oaks et al., and the assignment (in the syllabus). We observed the teacher introducing a teaching strategy ("Walk and Talk"), in which groups of students were requested in a handout to talk about the chapter of the day, identify conditions inside and outside schools, and discuss how these conditions might contribute to an opportunity gap. In this way, relationships were forged between the literature and the students' experiences. A subsequent plenary discourse strengthened this relationship when the teacher asked questions with reference to the chapter and referred to the evidence of the arguments by the authors, and the students referred to the chapter and to their own school contexts. The chapter, the handout, the task, and the plenary conversations all revolved around inequalities and the opportunity gap in the U.S. population. Moreover, a specific relationship emerged between the plenary discourse and the assignment when the students were challenged by the teacher to use evidence to ground their arguments in the assignments.

Our analysis of the activities in Case 2 indicated that teaching practices make up a relationship in which the teacher emerges as a mediator in plenary discourses about the arguments and evidence of authors, and the students' relationships to scientific chapters and articles are those of analysts and providers of practical experience.

6. Discussion and conclusion

Without attempting to generalize, we conducted an in-depth analysis of two cases. Our analysis of the teaching activities in HE courses at the two universities showed that several entities were similar across the two contexts (Table 1). This indicates that certain entities, such as students and teachers, and discourses in pairs and groups, might be recurrent in HE and in the education of school leaders across contexts. As de Lange et al. (2020) argued, resources for making meaning are generally constructed over time within

sociocultural practices. However, a close-up analysis reveals a more nuanced picture when devoting attention to precarious relationships among entities (cf. Fenwick, 2010; Fenwick & Edwards, 2011). Among the precarious relationships are the process regulative dimension, the epistemic dimension, and the social–relational dimension (cf. Damsa & Wittek, 2020).

While the teacher in Case 1 (Excerpt 1) explained the focus of the day and the expectations with the help of a PPP, the teacher in Case 2 (Excerpt 2) explained the shifting activities of the day with the help of her lesson plan. The PPP and the lesson plan seemed to regulate not only the beginning of the day but the whole day. The PPP in Case 1 and the lesson plan in Case 2 were materializations of the teachers' design of the sessions in terms of teaching arrangements (cf. de Lange et al., 2020). In both cases, a relationship emerged between the teacher and the materials for structuring the day. These materialized teaching arrangements strongly affected the probable or possible patterns of action during each individual day. The relationship was first and foremost between the teacher and the PPP/lesson plan and the content.

Another effect of the relationships between entities is related to the "epistemic dimension" (cf. Damsa & Wittek, 2020). There are relationships between the PPP (including tasks and literature) and the plenary discourses in which the teacher and the students were involved in Case 1. Excerpt 1 showed how the students tried to connect with the many new sources by linking what was presented to their own practices on the surface. They came up with their experiences without activating the theories and concepts being presented, which may reflect the fact that the students had to cope with many sources they had not read in advance. Based on the analysis, we perceived that the relationships among the lecture, the study literature, and the plenary discourse were weak. In Excerpt 2, the effects of the relationships among the plenary discourse, the study literature, and the handout became visible, where the teacher and the students co-constructed the meaning of many concepts in the chapter. This effect may reflect the facts that the chapter was read in advance, the teacher used the concepts in her teaching, and the chapter was connected to the assignment, which strengthened the relationships among the entities.

The plenary teaching in Case 1 took 92 min, whereas the plenary discourses in Case 2 took 30 min. This finding may reflect the fact that, despite criticism of lectures (cf. Damsa et al., 2015; Taylor et al., 2009), lecturers constitute a prominent entity in both programs, although in different ways. The theory being presented is related to student practices and the use of tasks, which andragogy learning theories hold to be essential (Taylor et al., 2009). Although lecturers have been criticized for years, lectures are considered to have potential when the teachers provide opportunities for the students to link abstract concepts to professional practice (cf. de Lange et al., 2020). In both programs, the students are invited to link abstract concepts to their practices in ongoing plenary discourses. However, the question is whether the effect of the relationship between the lecture and the study literature in Case 1 would be stronger if the literature was invited into the discourse and read in advance, as in Case 2. However, being introduced to new sources in the moment may stimulate the students' expertise in conducting ongoing meaning construction in their practice.

The students worked with a short task presented in the PPP in Case 1 and with a long task presented in a handout in Case 2. Whether the tasks are short or long may not be consequential. The short task in Case 1 was related to the information provided by the teacher in her lecture, while the long task in Case 2 related to the study literature. In Case 1, the task (Excerpt 1) explicitly asked the students to apply a model to their own contexts. This set up a relationship between the students and the model. The effect of this relationship was that the students used the model to reflect critically on their own practice (Task 1). Our analysis indicated that the formulation of tasks and the presentation and representation of ideas in teaching practices are not trivial. This was also documented by Rasmussen and Lund (2008), who argued that there may be a match and a mismatch between the first stimulus (the task) and the second stimulus (the tool to work on the task) in what Vygotsky (1978) conceptualized as "double stimulation."

In Case 2, several teaching strategies were used to mediate teaching activities and student learning. In the case of walk and talk, the strategy first and foremost moved the conversation and the work with a talk from inside to outside as a mode, varying the physical setting for the teaching activity. As we did not record the students' work outside, we could not know the relationships among the strategy, the study literature, and the discourse in pairs. Other teaching strategies were used in the classroom. Although strategies were not explicitly introduced by name in Case 1, this does not mean that the teacher did not use teaching strategies. The use of several theoretical models as a departure point for the analysis of one's own practice is one example. Breaking up the lecture with short tasks in buzz groups is another.

As Waltz (2006) argued, although educational artifacts are noticed in practice, the research neglects the performative aspect of materials. The present study showed how integral materials are in the teaching practices of school leaders' educational programs. The analysis showed that it is the relationships among the entities rather than the entities themselves that constitute teaching practices. Depending on the purposes of the programs, there is potential for strengthening the relationships between specific entities to increase the effects of the network of entities in teaching practices to support student learning.

The findings suggest that the main relationships between student–teacher discourses and PPPs constitute teaching practice in the Norwegian case, while the main relationships among student–teacher discourses, literature, and handouts constitute teaching practice in the Californian case. Nevertheless, the implication for educators is to be conscious of the different patterns that may emerge when revising and designing programs. Ongoing attention to the relationships being shaped and their strengths or weaknesses is important for developing the quality of teaching practices.

The limitation of the present study relates to the number of cases included—there was only one case from a Norwegian context and one from a Californian context. There is a need for more cases from different contexts, as the education of school leaders is a global issue. Additionally, there is a need to include entities and their relationships beyond campus, as the education of school leaders needs to be related to the purpose of education (cf. Huber, 2004).

The analysis shows how social, discursive, and material artifacts make up practices (cf. Sjödin & Wahlström, 2020) and that things and discourses, not only people, serve as cultural actors in educational practices (cf. Koyama, 2015). The implication is that, in the future, researchers need to pay more attention to the networks of entities in teaching practices and to their relationships. This requires

data from situated practices in addition to self-reports. We argue that it is necessary to study ongoing activities (the "doing" work; cf. Royale, 2020) in detail to understand how entities such as people, devices, texts, regulations, and discourse are assembled in the making of teaching practices.

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