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Successful Teacher Teams in Change: The Role of Collective Efficacy and Resilience

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Teachers' competence in launching and managing pedagogical change collaboratively is crucial for the continuous development of their work as well as for meaningful student learning. However, research on how teachers can thrive in their profession in the changing higher education environment is limited. This study investigated the experiences of teachers in managing pedagogical innovation when working as a team and implementing integrated competence-based learning modules. Strength-focused concepts like collective efficacy and resilience were used to extend the understanding of the phenomenon. Five teacher teams were analyzed in relation to the change itself, as well as to protective and risk factors that had an impact on teachers' collective efficacy and resilience to the change. The data consisted of group interviews and individual questionnaires collected during the process. The findings indicate that stronger collaboration creates significant changes in teachers' work and students' learning, and success is based on teacher teams' capacity to craft their common work practices.

The need for pedagogical change and teacher learning to provide essential competence for the continuously evolving world of work has been widely recognized in higher education (e.g., Aggarwal, 2011; European Union, 2010; Goodyear & Zenios, 2007; Toom, 2012). The change from traditional subject-based teaching to a learning-focused approach in teaching and competence-based learning entails creating innovative pedagogical practices based on team teaching, collegial collaboration, and networking with the world of work (Barnett & Coate, 2005; Benjamin, 2010; Biggs & Tang, 2007; Lakkala, Toom, Ilomäki, & Muukkonen, 2015). In this change, higher education teachers play an important role as creators of new collaborative practices with their colleagues, students, and professional networks beyond the school. However, the focus of teacher collaboration can be diverse and can range from a superficial level to intensive collaboration. Vangrieken, Dochy, Raes, and Kyndt (2015) call a continuum ranging from teams as mere aggregates of individuals to strong levels of team collaboration as the degree of team entitativity. They also discovered a lack of clear and empirical insights into the phenomenon of teacher collaboration itself, especially in higher education (Vangrieken et al., 2015). Besides this, the need to make extensive changes in the way teachers initiate more intensive levels of collaboration has raised the question of how teachers' efficacy and resilience can be developed successfully. Collective efficacy (Bandura, 1997, 7) refers to a teacher team's beliefs concerning managing with the change, while resilience means a capacity to recover when changes occur (Luthans, 2002). In the change process, teachers face several challenges when trying to learn new ways of working and sustaining their motivation (Keesing-Styles, Nash, & Ayres, 2014). Investigating their experiences regarding the capacity of their teams will help us to understand the phenomenon of teacher collaboration and the kinds of support that teacher teams require to enable them to transform their practices in a successful way.

The aim of this study is to investigate the experiences of higher education teachers in changing their collaborative practices. The focus of the pedagogical change was to improve competence-based education by reconstructing curricula into broader competence modules in which the previous subjects were integrated, and teachers were organized to work as teams responsible for planning and implementing the module together. The development goal was also to create flexibility and innovativeness for student-centered tailoring of the learning process by changing the individual and fragmented nature of teachers' work to be more collaborative. Also, with students, collaborative learning and authentic real-life projects were emphasized in order to create the alignment between work-related competence and pedagogical practices. In this study, the focus was especially on investigating the teachers' experiences about their teams' efficacy and resilience in managing this change successfully.

Theoretical Framework

Making the transformation from a traditional individualized working culture towards more collaborative work entails several changes which can also be experienced from the teachers' perspective as both challenges and adversities. However, emerging positive approaches to development (see, e.g. Luthans, 2002; Mills, Fleck, & Kozikowski, 2013; Oades, Robinson, Green & Spence, 2011) highlight concentrating on how these challenges and adversities can be improved and turned into new capabilities. Interrelated concepts *collective efficacy* and *resilience*

focus on optimal functioning, so that is why they can lead us to a deeper understanding of teachers' successful collaborative processes during the pedagogical innovation phase.

Collective Efficacy and Resilience in a Changing Educational Context. Collective self-efficacy "represents a group's shared belief in its joint capabilities to organize and execute courses of action required to provide given levels of attainment" (Bandura, 1997, p. 477). Regarding teacher teams, collective efficacy perceptions are future-oriented beliefs about how teachers can succeed as a team in their joint efforts to plan and implement the new collaborative working model. As Bandura puts it (1997, p. 7), "Collective efficacy is not simply the sum of the efficacy beliefs of individuals. Rather, it is an emergent group-level attribute that is the product of coordinative and interactive dynamics." The success of teacher teams lies in teachers' sense of collective efficacy, the belief that they can solve the problems they face and improve their work through unified efforts.

Goddard (2001) states that collective efficacy has been a neglected construct in research on school development, but recent studies endorse its importance. Teachers' beliefs about their collective efficacy have been positively and significantly related to advancements in student achievement (Goddard, Hoy, & Hoy, 2000; Moolenaar, Sleegers, & Daly, 2012), teachers' commitment to their students (Lee, Zhang, & Yin, 2011), and trust among colleagues (Goddard et al., 2000), and they have served as indicators of teachers' professional commitment (Ware & Kitsantas, 2007). Lim and Eo (2014) suggest that collective efficacy plays a mediating role between the organizational climate and teacher burnout. A socially supportive teaching environment increases collective efficacy, and it has a positive impact on teachers' job satisfaction. Additionally, the findings of Salanova, Rodriquez-Sanchez, Schaufeli & Cifre (2014) suggest a reciprocal relationship between collective efficacy and collective flow over time. Efficacy beliefs have an influence on feelings in the group and their perceptions of their own capabilities to cope with challenges.

For complex changes and challenging environments, the importance of resilience as a strength-focused concept has been recognized (Luthans, 2002; Caza & Milton, 2012). It is not just a personal capacity, but also a characteristic of successful organizations and teams. The concept of resilience has been utilized in many professional fields, and it refers to the positive psychological capacity to rebound: to "bounce back" from adversity, uncertainty, conflict, failure, or even positive change, progress, and increased responsibility (Luthans, 2002). In the educational context, resilience is conceptualized as "the ability of an individual, team, or school to adapt to changing demands, to recover, and to remain vigorous after the changes have occurred" (Schelvis, Zwetsloot, Bos, & Wiezer, 2014, p. 631). Regarding teacher team, collective efficacy and resilience are intertwined in teachers' own perceptions about the success of the team's joint effort, leading to greater persistence and resilience. Based on their review of teacher resilience, Beltman, Mansfield and Price (2011) present resilience as a complex, idiosyncratic and cyclical construct involving dynamic processes of interaction over time between a person and an environment. They also indicate a relationship between motivation and self-efficacy, "as teachers experience success in their work, this builds their self-efficacy, which then leads to greater persistence." Therefore, the question regarding teacher resilience is not just how to survive, but how to thrive in the profession (Beltman et al., 2011). According to Gu and Day (2007), resilience is a multidimensional, socially constructed concept that is relative, dynamic, and developmental in nature, and it provides a promising perspective for understanding the ways in which teachers manage and sustain their motivation and commitment in times of change. Beltman et al. (2011) have highlighted the need for more empirical studies in different contexts, and also the role of teachers themselves in developing resilience.

Sources of Collective Efficacy and Resilience. According to Bandura (1997), successful teams have a strong sense of efficacy and resilience. The growth of self-efficacy and resilience has been noted as interacting at the individual level. A high level of self-efficacy is important for teacher resilience, and self-efficacy can be enhanced as teachers encounter and overcome challenges. At the group level, there is a need to deepen our understanding of how these two concepts interact at the collective level and how they affect the way teacher teams construct their collaboration.

Even though teachers' collective efficacy is more than the sum of individual efficacy and is a qualitatively different construct, the four sources of individual efficacy (mastery experience, vicarious experience, social persuasion and affective state) are also fundamental to the development of collective teacher efficacy (Bandura, 1997; Goddard et al., 2000; Lim & Eo, 2014). Hence, collective and individual efficacy are intertwined. According to Goddard, Hoy and Hoy (2004), a mastery experience is the most powerful source of efficacy information. The perception that a performance has been successful tends to raise efficacy beliefs and contribute to the expectation that the performance will be proficient in the future. In contrast, the perception that one's performance has been a failure tends to lower efficacy beliefs and contribute to the expectation that future performances will also be inept. Attributions also play a role (see, e.g. Bandura, 1997; Pintrich & Schunk,

2002). If success is attributed to internal or controllable causes, such as ability or effort, efficacy beliefs are enhanced. But if success is attributed to luck or the intervention of others, efficacy beliefs may not be strengthened. Observing others creates a vicarious experience for reflecting on collective efficacy. Social persuasion, such as verbal communication, coupled with models of success and positive direct experience can encourage teachers to give the extra effort that leads to success; thus, persuasion can support persistence and persistence can lead to solutions to problems (Goddard et al., 2000). The affective state of a group affects how it interprets and reacts to challenges.

Meister and Ahrens (2011) discovered three main factors that improve teacher resilience: leaders providing autonomy and support for teachers' enthusiasm and growth, the affirmation of having a positive effect on students' lives, and collegial interactions. In their review, Beltman et al. (2011) investigated the individual and contextual protective and the risk factors for teacher resilience, focusing on factors that sustain teachers in the profession. The key individual protective factors are related to self-efficacy and intrinsic motivation, while at the contextual level support from colleagues and working with the students are the main protective factors. The most frequent challenge related to the school or classroom has to do with behavior management and a lack of time due to having a heavy workload at a more general professional level. In a school-level study, Ebersöhn (2012) focused on resilience via the mobilization of resources through relationships: school communities construct networks around relationships to buffer adversity and promote resilience. Additionally, Moolenaar et al. (2012) found that dense networks, both personal and work-related advice relationships support and nurture teachers' collective efficacy beliefs. Schelvis et al. (2014) propose four perspectives on resilience for the educational sector that can be used as reflective and proactive tools in development: 1) the focus should be on the ability of an individual, team, or school to *function (*or behave) effectively and safely; 2) variability should be promoted, such as the individual differences between teachers in maintaining a manageable workload; 3) the focus should be on using available resources proactively in turbulent times; and 4) failures or unwanted outcomes are not breakdowns of normal system functioning, but represent the lack of timely adaptations to changing circumstances. They conclude that resilience theories provide several ways for teachers to increase their resilience by developing their abilities to anticipate, monitor, respond, and learn at school, at both the team and individual levels, by attending to demands and resources.

Collective efficacy and resilience are socially constructed in a specific context. They can both be analyzed via factors identified as successful and protective or, on the other hand, as risks and challenges. In the specific context of this study, we want to explore the factors affecting the perceptions of teacher teams regarding their collective efficacy and resilience in managing the new collaborative working model. The focus is on "we" instead of "I" (see Goddard et al., 2004) in order to answer the question of how the teacher teams managed to change their ways of working. Even though collective efficacy is a group-level property, the "minds of the individual members who make up the group are the locus of collective efficacy assessment" (Stajkovic, Lee, & Nyberg, 2009, p. 815). Increasing teacher collaboration has positive outcomes for teachers' efficacy and resilience (e.g. Bandura, 1997; Gu & Day, 2007; Lim & Eo, 2014). Investigating teacher teams' own experiences with the factors affecting their collaborative work can help us understand more deeply the new nature of teachers' work.

The Aim and Research Questions

The aim of this study is to examine the collective efficacy and resilience of teacher teams by investigating what makes the teacher teams and their collaboration successful when implementing new pedagogical practices and managing the resulting change. This study explores teacher teams' experiences during the change, as well as the factors affecting their capacity to adopt the new collaborative working model successfully.
The research questions are as follows:

(1) What changes did teachers experience as team members during the pedagogical innovation process?
(2) Which factors did teachers as team members experience as both protective and risk factors for their collective efficacy and resilience?
(3) How did the teams differ in their process of adopting the new collaborative working model?

Method

Context of the Study

The study was conducted in the context of a pedagogical innovation process at a university of applied sciences (UAS) in Finland. At the organizational level, it was decided that all the bachelor programs starting in September 2014 would be implemented in a new way. Curricula were reconstructed into broader and integrated competence-based modules, and teachers were organized to work as teams. This context offered unique circumstances for exploring teacher collaboration in a process of change at the deeper level, concentrating on the experiences of

the teacher teams about their capacity to manage the change successfully.

The change process began in autumn 2013, when teacher teams started to design the new implementation process. The modules were planned during 2013–2014, and the first new modules were implemented in September 2014. The learning process and environment were organized according to the principle of constructive alignment (Biggs & Tang, 2007), in which the intended learning outcomes direct the design of pedagogical practices, as well as more integrated and authentic learning environments. Teacher teams were collectively responsible for designing and implementing the modules. Teams could decide themselves how to organize their work (e.g., whether to use co-teaching or only one teacher at a time). The goal was to inspire students to take more responsibility for their learning and to study more collaboratively by giving them authentic real-life learning assignments and by offering continuous guidance and feedback. However, teams were flexible and also worked with other teachers, utilizing their expertise when needed.

A Multiple Explorative Case Study

The study was an explanatory multiple case study consisting of five cases (Yin, 2009). The aim is to increase understanding about the phenomenon investigated through cases (Merriam, 1998) and to create analytic generalizations that can be applied to other concrete cases and situations (Yin, 2014). The processes of each team composed a separate case, and the data were collected from everyone involved in one of the cases (Yin, 2014). As a result, the method involved aggregating individual assessments to evaluate collective efficacy and resilience at the group level (see Bandura, 1997).

Participants

The criteria for selecting the teacher teams for this study were as follows: the teams worked in the same unit; the modules were equally long, eight weeks; and they started in August or September 2014, which made the teacher processes comparable. The five cases selected had a more intensive time frame for the implementation process than the other cases, and the teams already had some experience in working collaboratively. The teams represented the following fields in bachelor-level education: agricultural industries, biotechnology and food engineering, sustainable development, landscape design, and plant production (both within the domain of horticulture). Each of the five teams consisted of three persons, so 15 persons (11 females, four males) participated in the study. Teachers participated in the study voluntarily.

Data Collection

The data were collected both through team interviews and individual follow-up questions in four phases from May 2014 to December 2014. First, the data collection began with a team interview during the planning stage in May 2014. Next, the first follow-up questions were sent by e-mail to each team member in October 2014, when the implementation process of reforming pedagogical practices towards competence-based learning was going on. After that, the second follow-up questions were sent in November 2014 when the implementation had ended. The data collection ended with a second set of team interviews in December 2014.

The team interviews consisted of the following themes: the changes teachers experienced, what they found inspiring and challenging, the reasons for success and failure, and what the new competences needed by a teacher were. The questions of the semi-structured interviews were created to be very open, to capture the experiences as comprehensively as possible. The time taken for each interview was approximately 60 minutes. The interviews were recorded and transcribed. The interviews were used to answer all the research questions. The open e-mail follow-up questions were used because in the individual follow-ups it was possible to find out about experiences that had not been mentioned in team interviews. With the individual questions, teachers were asked to describe their team's successes and failures, and the reasons for them. The responses to these follow-up questions were used to answer the second research question.

Analysis

The data were analyzed using abductive strategy, which utilizes both deductive and inductive approaches (Atkinson & Delamont, 2005; Creswell & Plano Clark, 2007). The unit of the analysis was an expression focusing on one idea, which sometimes consisted of couple of words (e.g., Inspiration of students) and sometimes of several sentences (e.g., "It is about the openness. I think we said the bad things as well, and if something went wrong with your own doings, we communicated in an honest way, didn't try to feign/fake.") First, using deductive strategy, the interview data were coded into the main categories: changes, protective factors and risk factors. Because the interviews were semi-structured in nature, the same themes came up during the various phases of the interviews, but the categories were exclusive, and each unit was assigned only to a single category. The data from the follow-up questionnaires were also coded into the main categories of protective factors and risk factors. The detailed analysis framework is

Table 1
The Main Categories Answering the Research Questions

Research questions	Main categories
Research question 1.	Changes related to students' learning Changes related to teachers' teamwork Changes related to teachers' competencies
Research question 2.	Protective factors related to students' learning Protective factors related to teachers' teamwork Risk factors related to students' learning Risk factors related to teachers' teamwork

presented in Findings when describing the results (i.e., the number of units).

Reliability and Validity of the Study

The first author did the first coding, and the coding was discussed over and over with the second author. As a result, some changes in coding were made, and exclusive categories were created for the research questions (Table 1). After this, using an inductive strategy, the first and the second author developed the final subcategories over several iterations. The units of analysis were also compared with each other. To support coding reliability, intercoder reliability (Whitley & Kite, 2013) was used. A colleague with the same type of work background as the first author used the classification schema to analyze 10% of the randomly selected units from the categories (1,180 units all together, approx. 100 used for testing reliability from interviews and questionnaires). The coding differed in only 15 of the units. Thus, five of the codes were renamed to describe the content of the code better, six units were divided into two categories, and four codes remained the same after discussion. To ensure validity, various pieces of qualitative data were collected during the four phases and by several means (individual e-mails, team interviews). This triangulation supported the legitimacy of the conclusions (Hamilton & Corbett-Whittier, 2013). Because the data collection varied and teachers used time differently in answering the questions, the numbers of units were not directly comparable; the different content of the units was important.

We followed the research ethics guidelines approved in the context of the study. Further, the director of the institution had given his permission to conduct the study as a part of the change process, and the voluntarily participating teachers gave their personal permissions for the data to be used for research purposes.

Results

Teachers' Experienced Changes during the Pedagogical Innovation Process

The changes experienced by teachers (Table 2) were related to pedagogical practices with students (45%), to collaborative work among teachers (23%), and to more general teacher competencies needed for the changed working model (32%). At the time of the first interview, teachers had already planned the forthcoming module, but they had not yet implemented it. However, they already had some previous experience with teamwork and organizing project-based collaborative learning among students, so they were able to evaluate the forthcoming practices. By the time of the second interview, after the implementation, the teachers were more focused on the protective and risk factors, and for this reason, the number and the variations in the answers (f= frequency of analysis units) related to changes were richer in the first interview (f =184) than in the second one (f=85).

The changes experienced in students' learning were the intended outcomes of the new model, such as integrated learning entities and authentic learning, or direct consequences of the outcomes, such as increased student-centeredness and notable changes in the roles of students and teachers. Some of the changes experienced were less expected, such as sense of a supportive atmosphere. In the new model, the teachers felt that students learned to work more collaboratively and to take more initiative and responsibility while teachers acted more like facilitators of learning. The changed role of a teacher was clearly the main change experienced after the implementation. Particularly during the planning phase, all teachers emphasized integrated learning entities and authentic learning,

Table 2
The Number of Units Related to the Changes Teachers Experienced (f= frequency of analysis units)

Main categories	Sub categories	Example	First team Interview % (f)	Second team Interview %(f)	Total % (f)
Changes related to students' learning	Teachers' coaching role	"It is like a step down from the traditional role of a teacher"	5.4 (10)	15.3 (13)	8.5 (23)
	Students' more responsible and collaborative role	"Responsibility for studying and learning is shifted to the students themselves"	8.7 (16)	7.1 (6)	8.2 (22)
	Increased student-centeredness and supportive atmosphere	"Interaction and succeeding in it are emphasized, compared to traditional lecturing. We are much closer to the students."	6.5 (12)	10.6 (9)	7.8 (21)
	Diversification of pedagogical practices	"… All kinds of methods and tools, it has been diversified a lot."	6.0 (11)	9.4 (8)	7.1 (19)
	Integrated learning entities	**"**Currently, we are striving to address bigger themes, which will cover the previous subjects."	8.7 (16)	2.4 (2)	6.7 (18)
	Authentic learning	"We have real-life projects in the background, to inspire the students."	6.0 (11)	3.5 (3)	5.2 (14)
	Holistic and integrated guidance and assessment	"On a weekly basis, we are following the development of students; then assessment is always related to guidance of learning."	2.7 (5)	-	1.9 (5)
Changes related to teachers' teamwork	Increased collaboration	"Collaboration with teachers has increased greatly. Previously, we did discuss things, but everybody did their own thing. It is different now."	9.8 (18)	9.4 (8)	9.7 (26)
	Shared responsibility and common aim	"We have a common thread here."	5.4 (10)	7.1 (6)	5.9 (16)
	Increased planning and preparation work	"We started the planning work earlier and the amount of it has increased a lot"'	6.0 (11)	-	4.1 (11)
	Organization of teachers' work	"Teacher's job description and planning of working hours is quite different. It is more like an empty canvas, try to do this and that. It is not so precisely counted how the hours are spent."	4.3 (8)	-	3.0 (8)

Changes related to teachers' competence	Self-regulation: adaptation and practical management	"You need to start from the beginning, to think about how you will act."	13.6 (25)	11.8 (10)	13.0 (35)
	Collaborative competence	"Team working skills…"	8.2 (15)	12.9 (11)	9.7 (26)
	Open-mindedness and flexibility	"You need to step out of your comfort zone."	7.6 (14)	10.6 (9)	8.5 (23)
	Broader consciousness about the world of work	"You need to know the world of work, and understand what kind of skills students will need."	1.1 (2)	-	0.7 (2)
Total			100 (184)	100 (85)	100 (269)

Table 3
Number of Analysis Units Related to Protective Factors at the Level of Students' Learning (f= frequency of units)

Protective factors related to students' learning	First team interview % (f)	First E-mail questions % (f)	Second E-mail questions % (f)	Second team interview %(f)	All units %(f)
Students' motivation, inspiration and engagement	22(10)	23(6)	15(8)	24(24)	21(48)
Peer learning and students' collaboration	15(7)	15(4)	27(15)	18(18)	19(44)
Succeeding in organization of student-centered learning and assessment practices	0(-)	31(8)	18(10)	18(18)	16(36)
Authentic learning environment	30(14)	12(3)	11(6)	12(12)	15(35)
Building trust and positive atmosphere for learning	7(3)	8(2)	20(11)	17(17)	15(33)
Holistic and flexible framework for teaching and learning	26(12)	12(3)	9(5)	11(11)	14(31)
Total	100(46)	100(26)	100(55)	100(100)	100(227)

together with holistic guidance and assessment, as important changes, which illustrates the tangible transformation from individual teacher planning to a more collaborative and integrated approach. Furthermore, according to the teachers, the new model increased the variation in pedagogical practices, like the use of digital tools and variety of learning methods, and this diversification was mentioned in both interviews.

Related to teachers' teamwork, the main change in both phases was increased collaboration. Also, shared responsibility and a common aim were mentioned in both interviews. The changes, such as increased planning and preparation work, and new ways of organizing teachers' working hours were only mentioned in the planning phase. Furthermore, teachers recognized new competence demands, which illustrated teachers' resilience during the phase of adopting the new collaborative model and managing the changes. The most affected competencies had to do with teacher self-regulation, especially adaptation and practical management. Participants highlighted the ability to learn, revitalize, and regulate their actions continuously while working, as well as having more accountability while co-creating new practices. Further, collaborative competence, flexibility, and open-mindedness were experienced as being important in both phases.

Experience of Protective and Risk Factors for Teams' Collective Efficacy and Resilience

The teacher teams' descriptions of the protective and risk factors for the success of the change illustrate how they socially constructed their collective efficacy and resilience (see Beltman et al., 2011 Goddard et al., 2004). The factors were analyzed at the level of students' learning and also at the level of teachers' work. The number of units related to protective factors was larger (551 units altogether, combining the total numbers in Tables 2 and 3) than the number of risk factors (362 units combining the total numbers in Tables 4 and 5).

Protective Factors Related to Students' Learning. At the level of students' learning (Table 3), teachers reported, "Students' motivation, inspiration, and engagement" had a strong impact on teachers' feelings of success with the new model. "This is inspiring and gripping from the students' perspective," was one of the comments made by teachers. This factor was emphasized during all phases. Therefore, students' motivation had a significant impact on the teacher teams' experience of their collective efficacy. Also, successfully organizing "peer learning and student collaboration" in learning created a good foundation for resilience in the new model. According to one participant, "The grouping of students went well, and it created good team spirit for working." Even during the first interview, teachers reported that they expected this to improve practices. During and after the implementation phase, it became clearer that teachers felt that the new kind of situation, in which peer learning plays a larger role, creates success. Furthermore, "[s]uccessfully organizing student-centered learning and assessment practices" was a meaningful factor for the teacher teams. Instead of lecturing, they created learning activities during which students took more responsibility and were more active. They also reported these kinds of activities to be meaningful from the students' point of view. These factors illustrate teachers' feelings of success when creating new motivating practices for students as a team, and this had an impact on the collective efficacy they experienced.

In the planning phase, two factors especially increased the teachers' feeling of success: firstly, an "authentic learning environment," including increased opportunities for practice-based learning and collaboration with the world of work and secondly, a "holistic and flexible framework for teaching and learning." Participants reported that the newly integrated competence-based modules were meaningful, and the fragmentation of learning had been successfully overcome. Further, they felt they could work in a more flexible manner by organizing their collective actions according to the needs of students, as well as be more open to the affordances of companies to create practice-based learning. Because teachers were able to regulate and control their practices in this new framework, this also increased their collective efficacy and resilience. Further, especially after the implementation, teachers recognized that "building trust and a positive atmosphere for learning" was a meaningful factor. More intensive interaction with the students helped to "create the right attitude" and a sense of "achieving trust." The new model brought students and teachers closer to each other, and this relatedness affected the feeling of success.

Protective Factors Related to Teachers' Teamwork. Regarding teachers' teamwork, participants identified eight protective factors for collective efficacy and resilience (Table 4). Important in the planning phase especially, each teacher's "own development and broader consciousness" as a result of team collaboration was a supportive factor. "I have found entirely new aspects of myself," said one teacher. Teachers noticed that they could learn much from each other while working as a team and utilizing mutual feedback. They also recognized that they had become more aware of their colleagues' competencies and work practices. In the final interview, the main protective factor was "trust in succeeding and overcoming challenges." The teams emphasized that they had not been afraid of failure, but had been persistent in finding solutions to challenges.

Further, teachers experienced **"**collective agility and flexibility" to influence their success in the new model. They expressed the view that they continuously evaluated their work as a team, and when recognizing the need to make improvements, they reorganized their common work practices immediately. They learned that as a team, they could solve the problems they encountered in a more flexible manner by utilizing the different strengths of individuals and by "feeding each other's thinking." "Collaboration itself" was deemed "rewarding" in all phases of the study. Increased collaboration created good team spirit and resulted in more team support and fruitful interaction with colleagues. Teachers reported that the positive affective state of working together supported collective efficacy, even though in the final interview it was not mentioned so often. Also, the teacher teams' "engagement and inspiration for change" were recognized as being essential factors for feelings of success. The change itself was experienced "as a great opportunity," coupled with the sentiment that "nobody would like to change back to the old way, even though it has been hard." The willingness of the teacher teams to embrace the changes created the foundation for collective efficacy and a resilient way to handle adversity.

Many teachers reported "increased effectiveness**"** to be one protective factor for teams' resilience. Besides this, "shared responsibility and trust" in a team helped relieve and lighten the workload, as the team

Table 4
Number of Units Related to Protective Factors at the Level of Teachers' Teamwork (f=frequency of units)

Protective factors related to teachers' teamwork	First team interview % (f)	First E-mail questions % (f)	Second E-mail questions % (f)	Second team interview %(f)	All units %(f)
Trust in succeeding and overcoming challenges	12(14)	12(6)	16(7)	27(30)	18(57)
Collective agility and flexibility	14(16)	21(11)	16(7)	14(16)	15(50)
Collaboration itself rewarding	16(18)	21(11)	25(11)	9(10)	15(50)
Engagement and inspiration for change	16(18)	15(8)	11(5)	10(11)	13(42)
Increased effectiveness	11(13)	6(3)	18(8)	14(16)	12(40)
Shared responsibility and trust	11(13)	15(8)	7(3)	12(13)	11(37)
Own development and broader consciousness	18(21)	0(-)	0(-)	6(7)	9(28)
Allocating and investing time for collaboration	2(2)	10(5)	7(3)	9(10)	6(20)
Total	100(115)	100(52)	100(44)	100(113)	100(324)

Table 5
Number of Units Related to Risk Factors at the Level of Students' Learning (f= frequency of units)

Risks related to students' learning	First team interview % (f)	First E-mail Questions % (f)	Second E-mail Questions % (f)	Second team interview %(f)	All units %(f)
Obscurity of new practices and unfit administrative tools	16(9)	29(5)	55(12)	27(20)	27(46)
Risk in not succeeding in assessment	15(8)	18(3)	14(3)	13(10)	14(24)
Risk of failing to create student motivation, responsibility and self-directedness	22(12)	0(-)	5(1)	12(9)	13(22)
Improvements in practices needed	0(-)	29(5)	27(6)	12(9)	12(20)
Recognizing and responding to students' needs	7(4)	6(1)	0(-)	19(14)	11(19)
Risk in failing to guide peer learning	16(9)	18(3)	0(-)	8(6)	11(18)
Challenge of integrating different themes	16(9)	0(-)	0(-)	3(2)	7(11)
Uncertainty about the new model	7(4)	0(-)	0(-)	7(5)	5(9)
Total	100(55)	100(17)	100(22)	100(75)	100(169)

supported its members: "The nicest thing is that you are not solely responsible for everything. You can share things. It is really great; if problems arise, there are two colleagues with whom we try to figure out how to proceed. This is the greatest thing for a teacher." Furthermore, "investing and allocating time for collaboration" helped to create a foundation for collective efficacy, and this was somewhat more evident during and after the implementation process.

Risk Factors Related to Students' Learning. In the new model, participants identified several risk factors related to students and their learning (Table 5). The main issue diminishing experiences of collective efficacy was the "obscurity of the new practices and unfit administrative tools." Teachers felt that the administrative digital tools were not designed to fit the new practices. They also reported that there were confusing guidelines, which they could not influence, and this diminished their sense of team efficacy. This factor was especially highlighted during and after the implementation process.

The sense of "risk in not succeeding in the assessment" was evident during all phases of the study. In the integrated model, in which learning was strongly based on student teamwork, the competence-based assessment and feedback given to students raised several questions, and the new solutions were not easy to find. This illustrates the fact that creating new assessment practices requires more support and persistence so that the teacher team will feel confident. Teachers also recognized the "risks of failing to create student motivation, responsibility and self-directedness" in the first interview, when they had not yet started working with the students. Their experiences were based on previous comparable praxis: "This is a big change for students compared to traditional schooling, so big that you can easily fall by the wayside." In the first interview, teachers highlighted the motivational aspects, but after the implementation phase, they emphasized more the challenge in creating a sense of student responsibility and self-directedness.

The factor "improvements in practices needed" illustrates the challenges teachers recognize that need to be solved during the next implementation process. Thus, they are not necessarily diminishing the sense of collective efficacy, but there can also be motivational challenges that teacher teams can overcome together and, in that way, build their resilience.

In the new model, teachers felt that "recognizing and responding to the various needs of students" and the "risk in failing to guide peer learning" diminished their sense of collective efficacy. Teachers wanted to strengthen their competence in coaching and guiding students, especially in how to get students to work successfully in groups. Furthermore, many teachers emphasized the "challenge of integrating different themes" in the first interview, but not later during the implementation phase. So, the challenge in giving up traditional courses can be overcome via planning. There was also general "uncertainty about the new model," which diminished the sense of team efficacy.

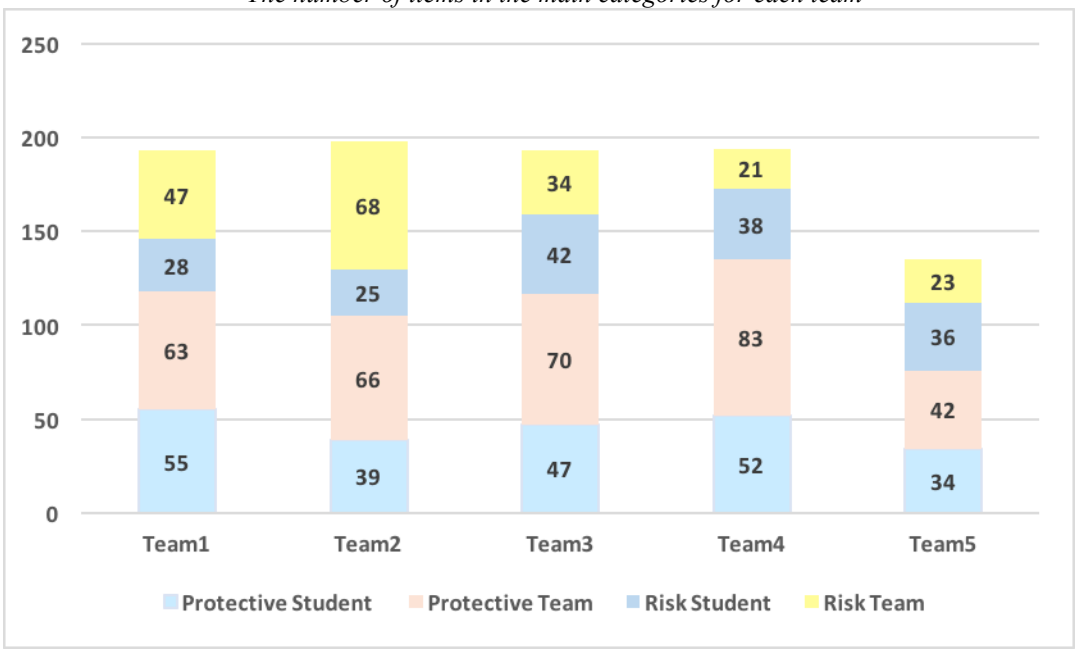
Risk Factors Related to Teachers' Teamwork. The main risk for a team's collective capacity to work effectively (Table 6) was "time management and excessive workload," which was experienced in all the phases. Teachers had many other responsibilities besides working with a team. They were also teaching older classes, which operated in a traditional manner and generated problems with respect to the time scale. Teachers complained about the lack of resources, being overly busy and a lack of time, all of which diminished the capacity of the teams to succeed in their work, and this problem was experienced during all the phases of the study. In the planning phase, there were two risks, which were mentioned less often in latter phases. First, teachers experienced the "difficulty in adapting to the new model" as challenging. As an example, one of the teachers said: "One problem is that you cannot decide everything by yourself and you need to give up something." They recognized that diversity among teachers demanded that they learn to adapt to working as members of a team. Second, "insufficient engagement with collective work" diminished the teams' sense of efficacy, while some of the other co-operating teachers did not abide by the common agreements, but instead continued working in their own way.

Especially during and after the implementation phase, teachers reported that "insufficient interaction and communication" within their teams presented challenges and diminished their sense of collective efficacy. The teams felt that they did not have enough time to evaluate and create common guidelines for effective joint practices. They also recognized the need for systematic knowledge sharing during the implementation process so that they could better succeed in their work and be more creative as a team. Further, teachers felt that "vague roles and guidelines" decreased their efficacy, and this feeling of confusion was even stronger in the final phase. They felt that the autonomy of a team was not clear, and that more specific guidelines would have helped. Also, in some cases the roles within a team were ambiguous, and there was some confusion about the roles and relations with the other teachers. This factor resulted in contradictory situations in which the teams found it difficult to find solutions by themselves. The teams also felt that the "heaviness and vulnerability of teamwork" prevented them from succeeding in their collective work. They reported that it was difficult to learn to work as a team. Some team members reported feeling a sense of vulnerability when they were not able to participate in teamwork activities,

Table 6
Number of Units Related to Risk Factors at the Level of Teachers' Teamwork (f= frequency of units)

Risks related to teachers' teamwork	First team interview % (f)	First E-mail questions % (f)	Second E-mail questions % (f)	Second team interview %(f)	All units %(f)
Time management and workload	34(25)	31(8)	44(12)	24(16)	32(61)
Insufficient interaction and communication	8(6)	54(14)	22(6)	18(12)	20(38)
Vague roles and guidelines	12(9)	12(3)	15(4)	27(18)	18(34)
Difficulty in adapting to new working model	29(21)	0(-)	0(-)	9(6)	14(27)
Insufficient engagement with collective work	14(10)	0(-)	7(2)	6(4)	8(16)
Heaviness and vulnerability of teamwork	0(-)	4(1)	11(3)	13(9)	7(13)
Lack of supervisor's support and involvement	3(2)	0(-)	0(-)	3(2)	2(4)
Total	100(73)	100(26)	100(27)	100(67)	100(193)

Figure 1
The number of items in the main categories for each team



and that increased the workload for the others. Besides these factors, some participants mentioned that the "lack of supervisor's support and involvement" posed a risk to the collective efficacy of the teams.

Results of the Differences between Teams While Implementing the New Model. In general, with four of the teams, the total number of items concerning the protective and risk factors related to students and to teachers' teamwork was almost the same, but the number of items in categories was different for each team, as shown in Figure 1. Team 5 was the only exception. All the teams experienced more protective factors than risks, which illustrates the team members' general feelings of success about the new model.

The number of items for each team was analyzed using the chi-square test, and the analysis showed the following statistically significant differences between the teams:

- Team 1 differed from Team 4 ($X2=14.278$; $df=3$; $p<0.005$) and from Team 5 ($X2=8.399$; $df=3$; $p<0.05$);
- Team 2 differed from Team 3 ($X2=16.447$; $df=3$, $P<0.001$), from Team 4 ($X2=31.262$; $df=3$; $p>0.000$) and from Team 5 ($X2=18.661$; $df=3$; $p<0.000$).

The division of items in the sub-categories was also considered, and there were interesting differences between the teams.

Each team had to build its resilience and efficacy collaboratively in its own way. During the planning phase, each team considered the protective factor concerning its "own development and broader consciousness." To a certain extent, it was replaced by items falling under the category "improvements for practices needed," which emerged during the process as the work was being conducted in a new way. Some of the sub-categories emerged during the implementation process, such as "students' motivation, inspiration, and engagement," as well as "peer learning and student collaboration," which helped strengthen the resilience and efficacy of every team, but especially Team 1. Also, in all the teams, trust in succeeding and overcoming challenges increased.

In this study, teachers in Teams 1 and 2 experienced a sense of "external disruption," which they could not themselves effect, and this had a strong influence on the teams' work. Participants in these two teams provided more comments about team-related risks than did the other teams, and the teams resembled each other more than the other teams did. The external disruption experienced by Teams 1 and 2 was due to the fact that team members had other responsibilities and other work to do, which diminished the amount of time for developing team work and presented challenges with respect to "time management and work load." Team 1 had more supportive items regarding student work, and this was probably the major motivation for the team to overcome the challenges in working collectively as a team. Further, Team 2 experienced an "external disruption" caused by another teacher, who interfered with students' work without negotiating and sharing enough information with the rest of the team. This diminished the team's entitativity because members could not control their work as a team. Team 2 had more items in the following sub-categories than did the other teams: "insufficient communication," "difficulty adapting to new model," and "insufficient engagement, heaviness, and vulnerability." In this study, Team 2 was a problematic team that did not succeed in building up its resilience to solving the problems during the process.

Team 3 was an average team. Trust in the team's capacity for team development increased during the process. Especially during the planning process, the team members showed a capacity for engagement and were inspired to make changes. Teams 1, 2, and 3 had more items in the sub-category "vague roles and guidelines" than did Teams 4 and 5.

With Team 4, similarly as with Team 3, trust in the team's capacity to develop increased during the process. This team most likely experienced a sense of flow while overcoming the challenges, and the members identified more supportive items than did the members of other teams. In general, this team was successful and could use the team itself as a factor for creating resilience and entitativity, not only student-related factors.

Team 5 in general discussed and reflected on the issues less than the other teams. It did not analyze the process or its progress as extensively as the other teams. During the planning phase, the members were worried about how to succeed in organizing students' learning, especially in motivating them. With Team 5, the sub-categories regarding student-related protective factors, as well as risks, were somewhat different than in the other groups: they had fewer supportive factors and more risks during the process. However, in the final analysis, they had a profile similar to the other teams.

Conclusions and Discussion

In this study, the changes teachers experienced in their work practices during the pedagogical innovation process were significant. The transformation from working individually to engaging in teamwork changed the way teachers interacted with students, how they collaborated with their colleagues, and how they regulated themselves and their work. The main change the teachers recognized at the student level highlighted changes in the collaborative learning environment, such as teachers acting more like facilitators of learning and students more like collaborators. We think that the experience of a supportive atmosphere and strengthened teacher team entitativity also created space for diversification in pedagogical practices. The main

change experienced relating to teacher competence was self-regulation, which highlights the need for continuous adaptation and the significance of teacher resilience. All these changes created a novel picture regarding the phenomenon of teacher collaboration in higher education and emphasizes its importance as a way to create a successful environment for promoting students' learning.

The transformation in teaching practices can serve as an effective learning process for teachers, during which teachers as a team can feel that they successfully build new student-centered practices and strengthen their collaboration. The findings related to team members' beliefs about collective efficacy and resilience at the student level indicate that students' motivation and engagement is the main protective factor. Observing students' inspiration created a vicarious experience (see Goddard et al., 2000) for teachers to reflect on their collective efficacy. The successful change was created with the students, not just for them. Teachers also succeeded in overcoming the challenges when creating new practices, which enhanced their collective efficacy and persistence, as in the study undertaken by Beltman et al. (2011). The reasons for success were related to issues they themselves had created and resolved, which corresponds with the findings by Goddard et al. (2000): when success is attributed to internal and controllable causes, efficacy beliefs are enhanced. Similar phenomena were also found at the team level, as the main protective factors were trust in overcoming challenges and collective agility and flexibility, which indicates each team's own capacity to craft its collective work according to the emerging needs. This trust even increased during the process. As demonstrated in the following words of one teacher, we can recognize a reciprocal relationship of collective efficacy and social flow (Salanova et al. 2014): "It was our inspiration. We were so motivated about our new operations, we just wanted to progress, go forward, and that's why we succeeded so well."

The risks for each team's collective efficacy and resilience with students' learning were mainly related to the challenges in creating new practices. Many of these challenges not only diminished resilience, but also created new challenges for the teams to overcome together. When teams successfully meet such challenges, they can increase their resilience and sense of collective efficacy. This kind of mastery experience (see Goddard et al., 2004) can be a powerful source of efficacy information, and through that, build the team's resilience. The main risk, obscurity of new practices and unfit administrative tools, was an external factor which the teachers felt they could not have an impact on themselves, and this feeling even increased during the process. At the first implementation of the new model, it is understandable that organizational structures had not been comprehensively developed, and traditional ways of working still live on in people's minds, thereby making the new practices seem even more obscure in their nature. Nevertheless, when moving towards a collaborative working model and student-centered organization of learning, it is essential to build administrative and organizational guidelines that enable and support the innovation process (see also Smith, 2012; Kunnari & Ilomäki, 2016). The best solution for increasing collective efficacy and a sense of ownership would be to allow the teams themselves to create the guidelines for their work. In this way, by taking the responsibility upon themselves for finding solutions in how to succeed, they can learn to be more resilient.

The main risk factor found in teachers' work, "time management and workload," is supported by the findings presented in previous studies (e.g., Beltman et al., 2011; Kunnari & Ilomäki, 2016). Teachers need to be allotted enough collective time to be able to clarify obscure practices. At the team level, the risks "insufficient interaction and communication" and "vague roles and guidelines" can also be connected to a lack of shared time to solve the problems. If there is insufficient time for social engagement within a team, such as communication and the sharing of positive experiences to support persistence and problem solving, then the efficacy beliefs of a team can be diminished (see Goddard et al., 2000). These findings highlight the demand for sufficient team entitativity and deep-level collaboration when working with students (see Vangrieken et al., 2015). Likewise, if collaboration itself strengthens resilience, then time management issues need to be taken seriously.

This study draws a picture of successful teams dealing with change and socially constructing their collective efficacy and resilience. In this case study, the teams can be described as successful because they all found more protective factors than risk factors for their collective efficacy and resilience. However, even though these teams represent a special group, the findings can be used to facilitate teacher development in many contexts. Referring to suggestions by Schelvis et al. (2014) about how to increase resilience, the main point is that teachers need to find a new mindset for how to create new work practices collaboratively. This means adopting a positive and open-minded approach, like focusing on the resources available through collaborative work with the whole community, with students and with teacher teams. Teamwork can create a space for increasing the awareness of common resources. In addition, increased teamwork is a good example of teachers' workplace learning, social learning in small groups or teams of teachers (Imants & van Veen, 2010) as an essential source of individuals' as well as teams' professional development.

From the organizational standpoint, based on this study, the new kind of collaborative culture in teachers' work can be achieved through raising 'organizational mindfulness' (Weick & Sutcliffe, 2006) as a shared awareness of personal and organizational goals and as an ability to recognize and interpret different signals together in a time of change. Further, providing teachers with personal as well as external resources with which to be flexible and adaptable, and therefore the competence to improvise successfully in the face of uncertainty, may serve to foster teacher teams' resilience in higher education (Mills et al., 2013; Sutcliffe & Vogus, 2003). Collaborative working culture demands a different kind of focus at the organizational level, and the message needs to be clear: the new autonomy of a teacher is socially constructed in collaboration with other teachers. The teacher is the main actor participating in building new practices, not as an individual, but as part of a community, taking students' needs and colleagues' needs into account. Current research related to wellbeing at work (e.g., Tims, Bakker, & Derks, 2013) has also revealed the direct effects of crafting work to meet challenging demands in terms of increased well-being. Therefore, teachers should be encouraged to craft their own jobs in innovative ways and build their collective efficacy and resilience in the change.

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