

Social-Cognitive Outcomes of Teachers' Engagement in Community of Practice
Evidence from Finnish Basic Schools

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Teachers' social learning in communities of practice has become a focal point of school improvement research during the last decade (Marks & Louis, 1999; Printy, 2008). As noted, "how teachers teach, depends on knowledge, skills and commitments they bring to their teaching and the opportunities they have to continue learning in and from their practice" (Feiman-Nemser, 2001:1051). A community of practice is most commonly understood as a professional grouping where teachers meet and create applicable knowledge through joint reflection and face-to-face interaction, most typically within their own subject department (Hodkinson & Hodkinson, 2004). Moreover, dynamic learning in these groupings is triggered by strong ties to external affiliates, such as colleagues in other departments and schools (Printy, 2008). The perspective taken for this paper recognizes that teachers' engagement in communities of practice might also lead to social-cognitive outcomes, such as the teachers' commitment to their school (Somech, 2005) as well as the perception that their work has positive impacts for their students (Short, 1994). The paper is based on a field study in Finnish basic schools, where teachers assess their engagements in community of practice, their sense of impact on the pupils' learning and their organizational commitment.

Context

Since the first OECD - PISA ranking in 2001, Finland has been consistently the world's number-one performer in literacy, math and science for 15-year-old students (Väljjarvi, Linnakylä, Kupari, & Arffman, 2002). And notably, the Finnish basic school system boasts some of the narrowest achievement gaps in the world (Väljjarvi, 2006). A well-cited reason behind the Finnish performance success is the high standard of the teacher profession. Finnish basic school system has been founded on highly educated teachers - now for thirty years have teachers graduated with a Master's degree from research orientated programs. We also see an educational landscape where only a tenth of applicants are chosen to study in a teacher qualification program (Sahlberg, 2007). Moreover, high social status of teachers, high level of professional expertise and societal trust in teachers' work has been stable system characteristics in Finland (Simola, 2005). At the local level, Finnish teachers enjoy substantial pedagogic freedom in their municipalities. Within broad guidelines in national frameworks, "highly qualified teachers create local

curriculum together with their school leaders in each municipality for the students they know best” (Hargreaves & Shriley, 2009: 32). But does professional autonomy transform into work in isolation, or does it transform into a collaborative school culture? The existing research suggests that Finnish teachers in general are in a gradual process from separate entrepreneurs to team-orientated professional individuals (Kärkkäinen, 1999). This current study follows this line of research by investigating teachers’ collaborative learning and its possible manifestation in motivational outcomes.

Theoretical framework

The notion behind the community of practice is that when teachers within a subject domain solve problems of practice and share their knowledge, they can improve their pedagogical competence. Through the give and take in such group interactions, they will share a unique opportunity to improve their understandings of the way in which students learn and how to apply pedagogical techniques that best help the students to succeed in that manner (Printy, 2008). This property is conceptualized by the term *shared repertoire* (Wenger, 1998), where the critical point is that teachers encourage each others to try out new teaching methods. But it is also well-documented that tightly knitted groupings may develop dysfunctional sides, such as group-think, over-confidence and exclusiveness (Janis, 1971; Wenger, McDermott, & Snyder, 2002) which again can deflate its learning curve. It is therefore important to involve external professionals, i.e. teacher colleagues from other departments and other schools, and this point is captured by the term *mutual engagement* in Wenger’s terminology. This dimension describes that teachers absorb knowledge from external colleagues and thereby contest their perspectives and competence. Printy (2008) found that high-school teachers’ learning in community of practice encourages them to direct their energies in productive ways, towards raising the standard of their classroom work. This current study goes a step further, by assuming that similar community of practice engagement might also increase the teachers’ organizational commitment, defined as “the relative strength of an individual’s identification with and involvement in a particular organization” (Mowday, Porter, & Steers, 1982:27). The construct describes teachers’ willingness to put more effort than required into various domains of their school work, which again is associated with loyalty, identification and involvement. We see this point as important, due to accelerated demands for change and school improvement, which calls for willingness and commitment to exert considerable effort in their professional work. On this ground, we hypothesize:

H1: Mutual Engagement (ME) is positively related to organizational commitment (OC)

H2: Shared Repertoire (SR) is positively related to organizational commitment (OC)

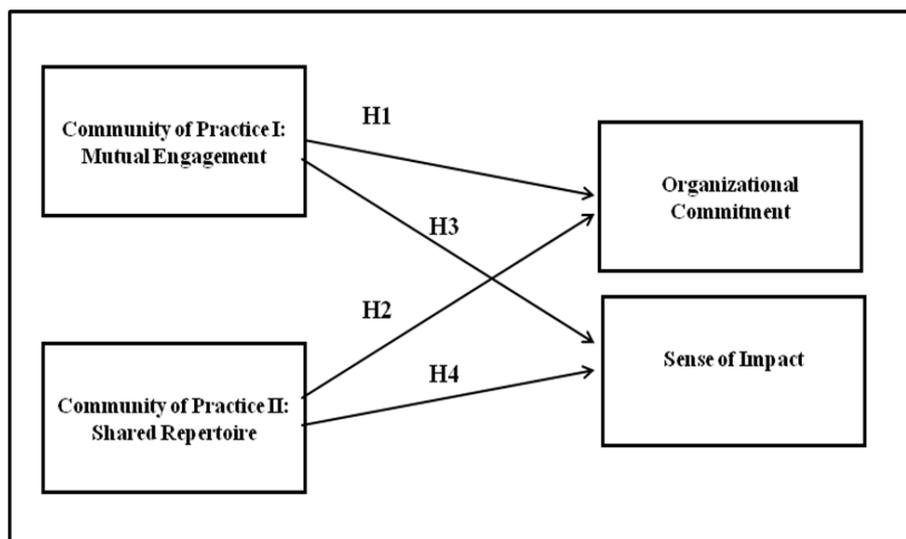
A complementary cognitive outcome is the teachers’ self-perception that their work can influence positively on the students’ learning behavior as well as on the work of their teacher colleagues, conceptualized by the term sense of impact (Short, 1994). We also hypothesize this asset as an outcome of community of practice engagement:

H3: Mutual Engagement (ME) is positively related to sense of impact (SI)

H4: Shared Repertoire (SR) is positively related to sense of impact (SI)

The conceptual model of our study is showed in *figure 1* below:

Figure 1: Conceptual model



Method

We conducted a non-experimental theory-based evaluative correlation design (Shadish, Cook, & Campbell, 2002) of a single-level unit model (Kozlowski & Klein, 2000), where the unit of analysis is the individual teacher. On this ground, a field sample of 246 individual teacher responses from 10 schools was examined in order to test the hypotheses.

Analysis

Model fit. All four constructs are slightly modified versions of well established constructs, however, carefully adapted to the Finnish linguistic context. Nevertheless, as all measures were collected from the same questionnaire, with possible signs of inappropriate common method biases, we needed to inspect whether the factor structure was appropriate. First, we ran an exploratory factor analysis (EFA), and the result of the analysis is found in the *table 1* below.

Table 1: Result of exploratory factor analysis

	Component			
	1	2	3	4
(Organizational Commitment)				
I praise my school to my friends as a great work place	.85		.16	.11
I am very glad I chose this school as my workplac	.84		.20	.12
I work in a school where pupils are prioritized	.69		.19	.15
I care a lot what happens to my school	.64	.22		
(Mutual Engagement)				
I regularly discuss about the issues relating to my subject with teachers not belonging to my subject group		.82		.13
I discuss teaching methods regularly with the teachers outside my subject group		.75	.19	.24
I discuss about the pupils' performance (classroom behaviour, homework, exams, grades) with the teachers outside my subject group regularly	.11	.72		.14
We regularly compare grading practice outside my subject group		-.71		.22
(Sense of Impact)				
I think that I can influence as a person other teachers and pupils	.10	.16	.83	
I feel that I can influence other teachers and pupils through my actions	.26	.15	.78	
I feel that I can influence positively on pupils through my work	.28		.70	
I feel that I help the pupils to grow into skillful learners		.11	.63	
(Shared Repertoire)				
I discuss regularly about practices related to pupils' exams with my subject group teachers	.13	.12		.79
Others often encourage me to try new teaching methods		.11		.74
I consciously work to plan the contents of the subject I teach with other teachers		.19		.70
I often receive suggestions for teaching material from the teachers in my subject group		.18	.17	.14

Rotated Component Matrix^a. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

The Kaiser–Meyer–Olkin (KMO) measure of adequacy of the investigated sample was .80, and Bartells' test of sphericity was 1193 (df = 120, $p < .001$), which confirmed the appropriateness of the data for the factor analysis. The exploratory factor analysis (principal component with varimax rotation) of the 16 items revealed a clear factor solution, with no cross loadings above .28, and a drop in eigenvalue between the fourth significant factor and the fifth insignificant factor from 1.18 to .82. The four factors explained 60% of the variance in the matrix. Based upon the EFA analysis, we investigated the model to confirm whether the data matrix had appropriate fit to the model. In contrast to traditional exploratory factor analysis, confirmative factor analysis (CFA) requires the investigator to specify both the number of factors and the specific pattern of loadings of each of the measured variables on the underlying set of factors. In typical simple CFA models, each measured variable is hypothesized to load on only one factor. A CFA was conducted by using the LISREL 8 program with maximum likelihood estimates on the data (Jøreskog & Sörbom, 1993).

Results

Based upon our research model (*figure 1*) and our joint measurement model, we designed a structural equation model (SEM) to investigate our hypotheses. The model consists of two independent variables, mutual engagement and shared repertoire, and two dependent variables, organizational commitment and sense of impact. All constructs are measured with 4 items, respectively. The SEM model converged, and the chi-square statistic was 161, with 99 degrees of freedom ($p < .01$). The RMSE was .053, which is approaching close fit, and the 90% confidence interval for RMSEA was from .038 to .068. The overall absolute goodness of fit indicator, GFI, was .92, and the incremental indicator NFI was .91, and CFI was 96. The normed chi-square was 1.62, which is below the traditionally suggested upper threshold of 2.00. Taken together, the statistics indicates that the covariance matrix of the data and our model under investigation fits well, and no signs of inappropriate common method bias were found. The correlation between the two latent independent variables, mutual engagement and shared repertoire, was .50. Mutual engagement (ME) predicts organizational commitment (OC) significantly ($\beta = .32$, $t = 2.97$, $p < .01$), and Hypothesis 1 is supported, But shared responsibility (SR) is not related to organizational commitment, and Hypothesis 2 is not supported. The structural equation on organizational commitment is $OC = 0.32*ME + 0.067*SR$ ($Errorvar.= 0.87$, $R^2 = 0.13$). From the equation we notice that mutual engagement and shared repertoire together are explaining 13% of the variance in organizational commitment. Further, mutual engagement is not related to sense of impact (SI), and Hypothesis 3 is not supported. However, shared repertoire predicts sense of impact significantly ($\beta = .29$, $t = 2.89$, $p < .01$), and Hypothesis 4 is supported. The structural equation on sense of impact is $SI = 0.047*ME + 0.29*SR$ ($Errorvar.= 0.90$, $R^2 = 0.10$), and we notice that mutual engagement and shared repertoire explain 10% of the variance in sense of impact.

Discussion and implication

Our test supports a perspective on school improvement and change as an outcome of teachers' collaborative learning in community of practice. Specifically, the study suggests that important social-cognitive outcomes, i.e. commitment and sense of impact, may result from productive learning, which adds value to the existing research in this field. The test suggests that social learning among professional colleagues within the same subject department supports the cognitive sense of impact on students learning. These endeavors did, however, *not* support the teachers' commitment to their school. On the other hand, engagement with external colleagues supported organizational commitment, but *not* sense of impact. Taken together, our study suggests two partial social-cognitive outcomes of two distinct aspects of community of practice work in concert, which expands the knowledge about benefits of teachers' engagement in community of practice settings. Further, our results suggest that both sides of community of practice engagement must be supported by school leaders simultaneously, and we recommend further research on this specific aspect in an enlarged sample setting.

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