

Principals as leading learners in Finnish curriculum reform

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Abstract: *The aim of the study was to gain a better understanding of principals as the leading learners in their working environment by exploring the possible variance in their perceptions of knowledge sharing in the curriculum process, its impact on school development, and the principal–professional community fit. The survey data included 142 principals, representing 71 schools across Finland. A K-means cluster analysis and univariate analysis of variance (ANOVA) were carried out to understand the principals’ perceptions of knowledge sharing, school impact, and the principal–professional community fit in the curriculum process. The results show that the principals who were less satisfied with the knowledge-sharing process and its impact on school development also perceived a weaker sense of recognition and a poorer working climate in the school. The principals who perceived the curriculum process to be a participatory and reciprocal learning process noted a greater impact on the school and more ownership in terms of the reform goals. The results suggest that both the principals’ individual sense-making process and their experience of the principal–professional community fit should be simultaneously shaped to support the principals’ position as the leading learner in the community.*

Keywords: Principal, curriculum reform, shared sense making, school impact, principal–professional community fit

1. Introduction

Reform of the national core curriculum is a central steering system in the development of schools, and such reforms help schools adjust to changes in surrounding society and culture (Elmore & Fuhrman, 1994; Westbury, 2008). Previous research has suggested that leadership plays a key role in the success of educational change (Conner, 1992, 1999; Higgs & Rowland, 2011; Kotter, 1996) and the leadership qualities of principals have a significant effect on the success or failure of a school reform (Day, Leithwood, & Sammons, 2008; Leithwood & Duke, 1999; Spillane, 2004). However, leading complex change is demanding, and even when conducted in the best way, large-scale school reforms are rarely realised in the desired manner or on the intended scale (e.g., Cheng & Walker, 2008; Hallinger, 2010; Harris, 2011; Levin, 2010). Educational reforms have been criticised for failing to bring system-wide sustained change to the everyday actions of schools (Fullan, 2006; Payne, 2008).

Large-scale reforms often fail to achieve their desired goals due to a lack of understanding of the policy’s intent (Coburn, 2005; Russell & Bray, 2013), a lack of ownership (Breiting, 2008; Ketelaar, Beijaard, Boshuizen, & Brok, 2012), or an inability to create shared and meaningful processes of learning (Boone, 2014; Fullan, 2002; Guhn, 2009; Hargreaves, Lieberman, Fullan, & Hopkins, 2009). The principals’ own commitment and orientation to leadership are crucial, as are their role-modelling skills (Battistich, Schaps, Watson, Solomon, & Lewis, 2000), since they hold the main responsibility at the school level for ensuring teachers’ commitment that leads to the translation of the curriculum goals into adaptable and feasible pedagogical practices in the everyday life of the school (Fullan, 2007; Guo, 2012; Kelly, 2009; Li & Ni, 2011; Moyer, Cai, Wang, & Nie, 2011). Successful school leaders manage to build a process of decision making that gives staff a sense of ownership of and control over the reform (Battistich et al., 2000; Woodruff, Shannon, & Efimba, 1998), and they succeed in fostering a supportive working climate to foster change (Guhn, 2009).

Even though school leaders are clearly positioned at the very centre of educational reforms (Gawlik, 2015; Volante, 2012), research is surprisingly scarce on reform implementation processes (Elias, Zins, Graczyk & Weissberg, 2003; Spoth, Greenberg, Bierman, & Redmond, 2004) and the principals' own perceptions of the reforms as learning processes in their working environment. Earlier literature on the collaboration between principals and teachers mainly focuses on different leadership styles and their connection to the quality of teaching and student performance (e.g. Marks & Printy, 2003). It can be assumed that there are discrepancies among the principals' learning process in the reform—more precisely in the experience of the knowledge-sharing process—and thus, the individual principal's view of the reform's impact on the school affects the success of the reform. A perceived fit with the professional environment in turn regulates the principals' learning, since social interactions among school staff form a major site for professional learning (Spillane, Healey, & Parise, 2009). This raises our interest in determining more precisely not only the process by which principals adapt the reform demands to their school environment (Brezicha, Bergmark, & Mitra, 2015; Clifford, Behrstock-Sherratt, & Fetters, 2012), but also in increasing our understanding of the reciprocal and dynamic nature of the individual principal's own experience of the reform process and working environment. In the context of a large-scale curriculum reform in Finland, this study focuses on the differences in principals' perceptions of the success of the reform's knowledge-sharing process and the impact achieved at the school. Using survey data from 142 principals, we sought to identify the different profiles of principals according to their learning and perceived fit with the working community.

1.1. Double-barreled leadership as a regulator of success in large-scale reforms

Earlier literature indicates that strongly performing schools function as learning communities (Kruse, 2003; Silins, Zarins, & Mulford, 2002) that build up a sustainable capacity for learning (Dinham & Crowther, 2011). Learning communities are built in collaboration with the working community (Blasé & Kirby, 2000), hence perceived recognition and respect from co-workers regulates the principals' motivation to promote a participative management style with collaboration that relies on mutual trust and an appreciation of the expertise of others in the professional community (Adams, 2013; Chow, 2013; Kondakci, Beycioglu, Sincar, & Ugurlu, 2015). Finnish curriculum reforms are based on an interactive and dynamic top-down, bottom-up approach, where different parties have an active and participatory role in the reform process (Pietarinen, Pyhältö, & Soini, 2017a). This balanced combination of reform implementation strategies has been shown to enhance commitment to the change and therefore result in sustainable development (Fullan 1994; Hargreaves & Fullan, 2012; Kim, Sting, & Loch, 2014; Petko, Egger, Cantieni, & Wesbi, 2015; Ramberg, 2014; Valli & Buese, 2007). In the professional community, the top-down, bottom-up approach is more efficiently used when the principal has adopted the "leading learner" or "learning leader" approach in his/her work. Fullan (2014, p. 29) describes such double-barreled leadership thus: "[the learning leader] models learning, but also shapes the conditions for all to learn on a continuous basis."

While acting as "leading learners," principals are simultaneously participating in reform work, they are also forming their own perception of the school's future vision and the reform's impact on the school while orchestrating the development work of others in the school community. When evaluating the performance of this double-barreled position, the principals' individual learning process in making sense of the reform should be taken into account as one indicator of success in effective educational reform (Ganon-Shilon & Schechter, 2017; Saltrick, 2010).

Knowledge sharing and the construction of new knowledge is an essential part of the collective sense-making through which individuals and groups construct the meaning of the reform (Coburn, 2005; Evans, 2007; März & Kelchtermans, 2013; Pyhältö, Pietarinen, & Soini, 2018; Spillane, Reiser, & Reimer, 2002; Weick, Sutcliffe, & Obstfeld, 2005). Active participation in the construction of shared knowledge during a reform has been shown to promote a more holistic understanding of the reform objectives, which in turn enhances the sense of ownership over the reform (Ketelaar et al., 2012; Pyhältö et al., 2012, 2014). Ownership is a crucial element in successful reforms (Barone, 2013; Boone, 2014; Pyhältö et al., 2012, 2015) because it makes the change meaningful and understandable, and therefore useful to implement. By acting as the leading learners of the community, principals sustain the reform implementation by supporting teachers' in their professional development and enable the generation of pedagogical innovations at the grass-roots level of schoolwork (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006).

Making sense of things involves constructing a reality by creating meanings from prior knowledge, experiences, values, and beliefs (Coburn, 2001; Spillane & Anderson, 2014; Weick, 1995). In effective school reform, principals succeed in creating a learning environment where a diverse range of knowledge-sharing mechanisms are used to fit new information into existing knowledge and beliefs that are related to the improvements needed in the curriculum (Fullan, 2007) and the fostering of perceived ownership (Priestley, Edwards, Priestley, & Miller, 2012). Knowledge sharing consists of a combination of interaction, dialogue, and negotiation through which individuals and groups construct the meaning of the reform (Coburn, 2005; Evans, 2007; März & Kelchtermans, 2013; Spillane et al., 2002; Weick et al., 2005); this then enhances the reformers' confidence in promoting change initiatives and taking risks to foster the implementation of the reform (López-Yáñez & Sánchez-Moreno, 2013).

The principals' own sense-making process occurs in the school's everyday work, and it is therefore influenced not only by their own set of values, but also by colleagues' values and the norms and traditions of the school (Ganon-Shilon & Schechter, 2017). On the other hand, while fostering a collaborative work environment and a collective learning process, principals shape the focus and direction of teachers' sense-making (Coburn, 2005; Fleming & Amesbury, 2012; Ganon-Shilon & Schechter, 2017; Rigby, 2015). They participate in reform work both as leaders shaping the school community's commitment to the content of the reform and as individuals building ownership of the change by evaluating the achievement of the reform in solving the school's everyday problems. Earlier literature has highlighted that principals need to shape and articulate a clear vision for the school (Blumberg & Greenfield, 1986; Leithwood & Jantzi, 1997, 2000; Leithwood, Jantzi, & Steinbach, 1999; Sashkin & Walberg, 1993; Vandenberghe & Staessens, 1991). Furthermore, in their reform work—especially within the framework of shared leadership—principals must create sustained collaboration in the working community for this purpose (Wahlstrom & Louis, 2008). This raises our interest in studying the intertwined nature of principals' perceptions of the reform process and their experience of the professional community fit.

1.2. Leading large-scale curriculum reforms in Finland

The Finnish educational system relies on flexible accountability structures and trust in schools, including the autonomy of schools and teachers; this is also the case during curriculum reforms (Aho, Pitkänen, & Sahlberg, 2006; Sahlberg, 2015). The foundation of the Finnish educational steering system is the national core curriculum, which applies all the districts and schools. The core curriculum describes the general goals, core contents, and the principles and guidelines for basic

education, but it does not offer standardized pedagogical solutions. Finnish school development and curriculum reform relies heavily on educational expertise at the school level (Sahlberg, 2015; Vitikka, Krokfors, & Hurmerinta, 2012).

The national core curriculum is reformed approximately every ten years. The reform is led by the Finnish National Board of Education, an independent governmental agency that is responsible for planning, organizing, and implementing the curriculum reform and inviting stakeholders to participate in the work. Large-scale school reforms in Finland—as in many other countries—are mainly initiated from the top down, in the sense that they are designed at the national level of administration, introduced at the local municipal level, and then implemented at the school level. The key points in the 2014 core curriculum are the promotion of student participation, collaborative classroom practices, and integration across school subjects. The core curriculum combines subject-based and competence-based learning by focusing on developing generic competencies in addition to subject contents (Finnish National Board of Education, 2016).

The core curriculum provides the foundation for district-level curriculum development work. The local curricula are constructed by the education providers, generally as a joint curriculum in the municipality or district. The district-level curriculum reform work is typically orchestrated by steering groups consisting of municipal actors and educational practitioners, such as principals (Sahlberg, 2015; Vitikka et al., 2012). Education providers, typically the municipalities, are responsible for constructing the local curricula based on the national core curriculum. The legislation offers only general aims for the reform while the responsibility for the implementation of the reform rests with the individual municipalities and schools (Aho et al., 2006; Johnson, 2006; Moos & Moller, 2003).

At the school level, leadership is usually distributed, meaning that in addition to the principals, there may be assistant principals and management teams consisting of teachers in charge of school leadership. Finnish principals are required to have a higher academic degree and teaching qualifications as well as adequate teaching experience and a certificate of educational administration. At the grass-roots level, leadership is based on professional cooperation between teachers and the principal (Hargreaves, Halász, & Pont, 2007). The principals' role in the Finnish context of curriculum reform is rather seen as that of a facilitator of teachers' growth; this entails empowering teaching staff to take responsibility for achieving goals (Robinson, 2010) rather than adopting a controlling and monitoring role.

School principals are strongly involved at the grass-roots level in translating the ideas of the school reform into the district's and school's development strategy and pedagogical practices. Finnish principals are also challenged to adopt a leadership style that includes participatory decision-making practices, such as appreciating and taking into account critical voices related to the development work and facilitating transparency and perceived empowerment in the local community. This also challenges the leadership competence of Finnish principals in terms of constructing and leading functional collaborative communities. In order to succeed in leading sustainable school development, the principals' own commitment and perceived ownership of the change, in addition to the perceived social support in the professional community, plays an important role.

1.3. Reform as a learning environment for principals

School-level reform work is the collective responsibility of the working community, and it requires the creation of new ways of doing things and the ability to cope in complex and uncertain situations.

Principals must balance their roles; they are managers responsible for controlling resources, but also facilitators of shared learning (Fink 2005; Lewis & Murphy 2008). Moreover, principals are seen as leaders; they stand in front of others, guiding the troops toward a relevant vision and reflecting the needs, interests, values, and beliefs of the school community (Pawar & Eastman, 1997). At the same time, especially in the Finnish context of high democracy and low organizational hierarchy in schools, principals are often viewed by teachers as “one of us,”— they are equal colleagues coping with same learning challenges as others. The interplay between the principal and the working community may be viewed as the principal–working environment fit (Cable & Edwards, 2004; Pervin, 1989), which the principal can monitor through the perceived work climate in the community and, at a more personal level, his/her own perception of appreciation and recognition by the community.

The perceived work climate is socially constructed, shared, and maintained by the principal and the teachers in the school community (Cohen, McCabe, Michelli, & Pickeral, 2009). Accordingly, the climate in the working community affects learning in the professional community (Collie, Shapka, & Perry, 2012). Future- and vision-oriented leadership behaviour has considerable potential to affect the climate of the working community (Kuenzi & Schminke, 2009). Leaders serve as interpretive filters of relevant organizational processes and practices for all group members, thus contributing to perceptions of the common climate (Kozlowski & Doherty, 1989). As Yukl (2010) puts it, leadership is described as a social interaction in which everything a leader says or does—or leaves unsaid or undone—influences his/her followers. Leaders who are excited, enthusiastic, and energetic are more likely to create a positive emotional environment, thus energizing their followers (Barsade, 2002). Conversely, leaders who feel distressed and hostile can display bad or negative moods and influence their followers negatively (Newcombe & Ashkanasy, 2002; Sy, Côté, & Saavedra, 2005).

By being solid members of the working community, principals both give and receive social support and feedback in the community. Perceived support from the professional community helps to control feelings of uncertainty in complex and burdensome working environments (e.g., Greenberg, Thomas, Murphy, & Dandeker, 2007) and supports the principal’s sense of acceptance and coping (Albrecht & Adelman, 1987; Albrecht & Goldsmith, 2003), thus providing crucial preconditions for an inspiring and supportive learning environment. Consequently, a central part of a good fit with the professional community is the perception of being valued and cared for by the community (Brown & Roloff, 2015; Rhoades & Eisenberger, 2002)—i.e., the principal feels appreciated as a member of the professional community.

Based on the earlier literature about the work climate and recognition and their meaning especially in situations where new ideas and learning are needed, it can be assumed that the principal’s personal experience of the reform work and his/her perception of the working environment fit are connected and simultaneously constructed as the reform process proceeds. Moreover, as reform work is often complex to orchestrate and lead in professional communities, it is relevant to study the perceived fit through the principal’s experience of the work climate and perceived acceptance and recognition by the community.

2. Aim of the study

The aim of the study is to gain a better understanding of principals as leading learners in their working environments by exploring how they perceive the knowledge-sharing process and impact of the curriculum reform on their school. We sought to identify different principal learner profiles

and study the perceived principal–professional community fit and its relation to these different profiles.

The following research questions were addressed:

- 1) How are the principals' perceptions of success in terms of participatory knowledge sharing in the curriculum process and its perceived school impact intertwined?
- 2) How are the different principal profiles, including the factors of knowledge sharing and school impact, related to the perceived work climate and received recognition by the professional community (i.e., the principal–professional community fit)?

3. Methods

3.1. Participants and sample

This study is part of a larger national research project titled “School Matters” (2014–18), which is linked to the implementation of Finland’s national curriculum reform as it affects teaching and learning in every school district and individual school (see e.g., Tikkanen, Pyhältö, Pietarinen & Soini, 2019; Sullanmaa, Pyhältö, Soini & Pietarinen, 2019). The national research project studied developmental processes in this large-scale school reform with a focus on the preconditions and processes for improving learning, increasing well-being, and supporting staff agency at every actor level in the school system. A total of 1,556 comprehensive school staff members in 71 schools completed a survey that researchers collected during their visits to the case schools in the fall of 2016. The criteria for selecting the case schools were the variation and representativeness of the sample. Primary, secondary, and comprehensive schools (grades 1–9) were included in the cases. The schools were of diverse sizes and at different phases in their reform work, and they were from various parts of the country. At the point of time the survey was conducted, all respondents had some experience in either planning or implementing the new curriculum as it was taken in use gradually in years 2016-2019.

The participants in this study were selected due to their position as school leaders, which they had self-reported when filling in the questionnaire. As leadership and school development is typically distributed in Finnish schools, the sample consists of all respondents who at the time given acted in a school level leader role, such as principals or assistant and deputy principals (N = 142; henceforth referred to simply as principals) representing all 71 studied schools. Schools’ leadership structure and principal roles depend mainly on the size and classes of the school meaning that larger and more complex schools had several persons in charge of leading the reform and therefore also more principal respondents in the survey. The majority of schools had one (n =16; 22%) or two (n=43; 61%) principals, and the remainder had three (n=9; 13%), four (n=2; 3%) or five (n=1; 1%) principals. Respondents work experience in school was reported as a background information in total years of experience, as in Finland all principals have teacher background, leadership is distributed and can be organised in various ways and roles may change according to prevailing need. Most of the respondents had many years of work experience, with 19% (n=27) having 30 years’ experience or more, 35% (n=50) having 20–29 years’ experience, and 35% (n=50) having 10–19 years’ experience. Ten respondents (7%) had less than ten years of work experience, and five participants (4%) did not state the length of their career. The participants are of both genders; 63% are female (n=89), 34% are male (n=49), and four (3%) participants did not reveal their gender.

3.2. Measures

The data were collected by using the Curriculum Reform Inventory questionnaire developed and tested earlier by a Finnish research group (Pietarinen, Pyhältö, Soini, & Salmela-Aro, 2013; Pietarinen et al., 2017a). The principals' perceptions were examined using four scales. The knowledge-sharing scale (henceforth KS) indicates how principals perceive their own opportunities to participate in the reform development and implementation process. The scale describes how well the participation and utilization of different stakeholders' competencies and opinions has succeeded, as well as how democratic, permissive, and encouraging the principals consider the overall development and decision-making atmosphere to be in the process. The school impact scale (henceforth SCI) describes the principals' perception of the reform's meaning for school-level development and its impact on solving the school's everyday problems. It indicates the principals' commitment to the content of the reform in terms of leading the school in the right direction by supporting the development work at the school level. The scales for KS and SCI were adopted from Pietarinen et al. (2017a).

The principals' perception of their fit in the professional community was studied using two scales: constructive and enabling working climate (henceforth CLI) and received professional recognition (henceforth REC). These scales were adopted from Pietarinen et al. (2013), and they draw originally on Bakker, Hakanen, Demerouti, & Xanthopoulou (2007) job resources components, which in turn were derived from the Healthy Organisation Barometer (Lindström, 1997; Lindström, Hottinen, & Bredenberg, 2000). Professional community fit scales indicate the principals' perception of their work environment in terms of the perceived climate and personal recognition. All scales are shown in Appendix 1.

All items were rated on a seven-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree). The survey was conducted at the early stage of the reform implementation, and as the curriculum implementation was planned to proceed gradually at different school levels, some participants had less experience of school-level implementation work compared to their peers. However, all respondents had some experience of the reform's main targets (SCI) and the implementation process (KS) by the time the data were collected. The survey took 15–30 minutes to complete. All participants received written information about the project and gave their consent to participate according to the clearance procedures of research ethics. Where data were missing for key variables, the respondents were excluded from the analysis.

3.3. Data analysis

Firstly, the descriptive statistics (i.e., the means and standard deviations) and Spearman's rank correlation coefficients were calculated from the knowledge sharing, school impact, and principal–professional community fit (i.e., working climate and recognition) scales. Secondly, K-means cluster analysis with the standardized values of KS and SCI was carried out in order to reveal the different clusters of principals in terms of their perceived success in knowledge sharing and achieving school impact. More specifically, in the K-means cluster procedure the number of clusters is chosen by the researcher, and cases are grouped into the cluster with the closest centre. Cluster solutions with two, three, and four clusters were estimated. The three-cluster solution gave the most homogeneous profiles and was in line with the theoretical presumptions, which suggested that principals might differ in terms of their views on orchestrating the curriculum process as a leading learner. Finally, the relation between three principal profiles and perceived professional community

fit was analysed by means of univariate analysis of variance (ANOVA). The analysis was carried out using IBM SPSS Statistics 24.

4. Results

4.1. Principals' experiences of knowledge sharing, school impact, and fit

The results showed that the principals perceived the success of the knowledge-sharing (KS) process (mean 4.6; SD 1.04) and the achieved school impact (SCI) of the curriculum reform (mean 4.8; SD 0.94) rather similarly (see Table 1). Moreover, the results indicate that the principals considered the principal–professional community fit—i.e., working climate (CLI) in the professional community (mean 5.4; SD .98) and received recognition (REC) as a principal (mean 5.7; SD .94)—to be at a significantly high level.

Table 1. Correlations, Cronbach's alphas, means, and standard deviations among the scales.

	1.	2.	3.	4.
1. Knowledge sharing	-			
2. School impact	.62	-		
3. Principal-community fit/Climate	.26	.33	-	
4. Principal-community fit/Recognition	.27	.29	.69	-
Number of items	10	6	3	3
α	.91	.90	.78	.89
<i>M</i>	4.62	4.80	5.40	5.73
<i>SD</i>	1.04	.94	.98	.94
Min	1.6	1.8	2.00	2.00
Max	6.8	6.7	7.00	7.00

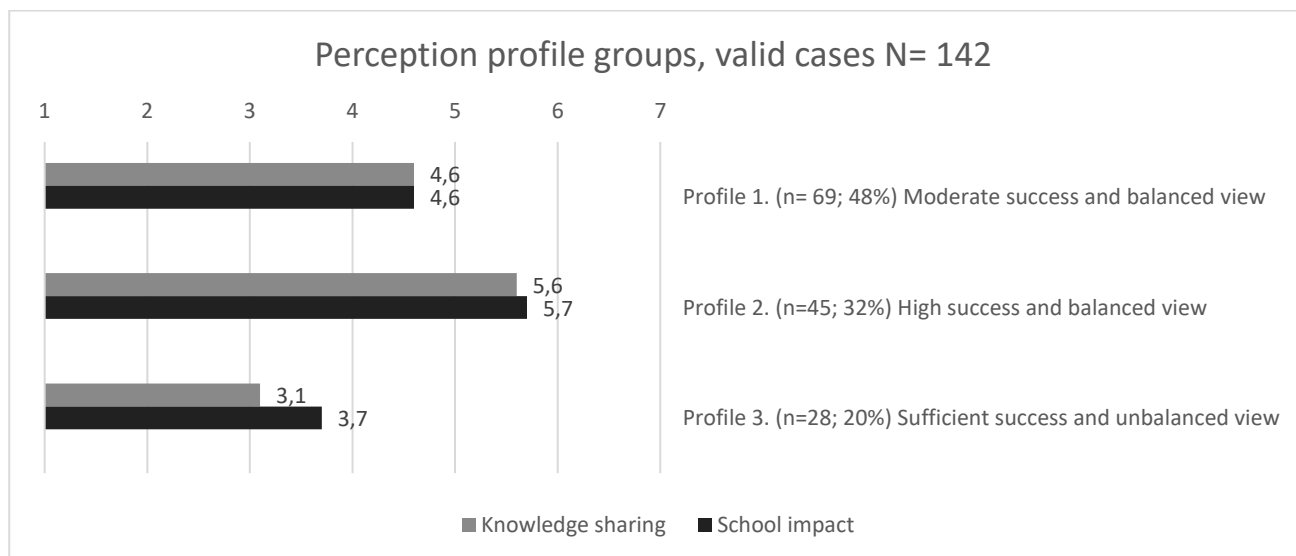
All correlations are significant at $p < 0.01$.

The results also show that all bivariate correlations among the sub-scales were statistically significant, and in the expected directions (see Table 1). More specifically, the principal's perceived success in the process of knowledge sharing correlated positively with the experience of the reform's impact on the school [$r = .62$] and, at the moderate level, with the perceived work climate and received recognition from the professional community [$r^{(\text{min-max})} = .26-.33$]. Moreover, as was expected, a positive correlation was also found between the perceived work climate and recognition received, which indicates the principals' personal evaluation of the monitored principal–professional community fit [$r = .69$]. Moreover, the Cronbach alphas indicated high reliability for the KS (.91) and SCI (.90) scales, and good reliability for the REC (.89) and CLI (.78) scales (Nunnally & Bernstein 1994, 264–266).

4.2. Principals' learner profiles in the reform process

The three cluster profiles illustrate the principals' level of satisfaction with the knowledge-sharing process and the impact achieved at the school, as well as the balance between these two dimensions in orchestrating the curriculum process as a leading learner. The largest group of principals (n=69; 48%) belong to the profile of "moderate success and a balanced view" in terms of the knowledge-sharing process and the impact achieved at the school. This group of principals was equally satisfied with both their participation in the reform process (KS mean 4.6) and the reform's impact on the development of the school (SCI mean 4.6). The second group (n=45; 32%) comprised the profile of "high success and a balanced view," in which the principals had a balanced view and even higher level of satisfaction with their involvement in the reform process (KS mean 5.6) and impact on the school (SCI mean 5.7) when compared to the first group. The remaining 20% of the principals (n=28) formed the third profile, named "sufficient success and an unbalanced view." This group of principals was, at the time of the survey, most critical both about the success of the collective sense making in the reform process (KS mean 3.1) and the achieved impact of the reform (SCI mean 3.7). In contrast to the two other profiles, the third group's perception of the scales was unbalanced. This third group was clearly more satisfied with the impact achieved at the school than with the knowledge-sharing process.

The profile groups are shown in Figure 1 below.



The findings show that majority of principals considered the reform's knowledge-sharing process to have been successful. This indicates that they have had opportunities to participate in the decision-making process, and they thought that the reform work was being done in a collaborative manner. The majority of principals also indicated their satisfaction with the impact achieved at the school, indicating a commitment to the reform's content and an agreement with the directed vision of the school development. However, there is a discrepancy among the profile groups. The third profile, "sufficient success and an unbalanced view" of the knowledge sharing process and the impact achieved at the school, represents a group of principals with an overall more critical view of success in the knowledge-sharing process and the impact achieved. Unlike the two other profiles, this third profile demonstrates an imbalance in the interaction of the two measured scales. The perceived school impact is higher than the satisfaction with the knowledge-sharing process. More specifically, principals in this group consider the curriculum reform to have a positive impact on the further

development of the school, but they are not satisfied to the same extent with the enabling and participatory learning processes in their school-level curriculum work. This indicates that a perceived high or moderate level of success in the knowledge-sharing process contributes to the level of perceived school impact.

The gender, location of the school (i.e., geographical region), and the principal’s amount of work experience had no statistically significant relation to the identified learner profile groups or experienced principal–professional community fit (i.e., climate and recognition).

4.3. Interrelationship between principal–professional community fit and profile groups

The results of the ANOVA in which the perceived climate and recognition by the working community were the dependent variables and the profile group was the independent variable showed that there were statistically significant differences between the profile groups in regard to perceived climate ($F(2, 136) = 12.13, p = .000, \text{partial } \eta^2 = .15$) and recognition ($F(2, 136) = 7.00, p = .001, \text{partial } \eta^2 = .09$).

Table 2. Descriptive data on the perceptions of climate and recognition in the profile groups.

Profile Groups perception of Climate and Recognit

	N	Principal-community fit/Climate				Principal-community fit/Recognition			
		Min	Max	Mean	SD	Min	Max	Mean	SD
Profile 1. Moderate success and balanced view	68	3.00	7.00	5,46 ^b	0.82	3.00	7.00	5.70	0.83
Profile 2. High success and balanced view	45	3.00	7.00	5,74 ^a	0.87	4.33	7.00	6,06 ^a	0.80
Profile 3. Sufficient success and unbalanced view	26	2.00	6.00	4,65 ^{ab}	1.14	2.00	7.00	5,23 ^a	1.22
Total	139	2.00	7.00	5.40	0.98	2.00	7.00	5.73	0.94

Note: One-way analysis of variance with post hoc comparisons assuming unequal variances between groups was used for examining the mean differences between profiles. Matching superscript letters after the statistics indicate which group means displayed statistically significant differences at the $p < .05$ level.

The results show that perceived success in the participatory knowledge-sharing process combined with a high impact in the curriculum work seems to relate to the recognition received as a leading learner and a better working climate in the professional community. More precisely, the principals with a satisfied and balanced view of the knowledge-sharing process and the impact achieved at the school also reported high levels of satisfaction with the working climate and feelings of recognition by their professional community. Profile group 3, namely “sufficient success and an unbalanced view,” reported the lowest levels of satisfaction both in the working climate and in terms of recognition, and this profile group differs statistically significantly from the two other groups. Members of profile group 3 perceived the working climate more critically compared to members of

profile groups 1 and 2. The perception of recognition in profile group 3 differs statistically significantly from the profile group 2 (“high success and a balanced view”). This implies that perceptions of professional community fit are constructed simultaneously within the reform process, and they differ especially in the extremes of the profiles.

5. Discussion

This study aimed to provide a deeper understanding of the principals’ own perceptions of school reform as a learning process by exploring the perceived success in the knowledge-sharing process and the reform’s assumed impact on the school. The results suggest that Finnish principals were reasonably satisfied with both the knowledge-sharing process and the anticipated impact on the school. This implies that overall, the opportunities for principals to experience the reform as a learning process in terms of the reform goals are good. This result is in line with the aims of the Finnish top-down, bottom-up curriculum reform implementation strategy, which appreciates the expertise of the participants from different interest groups in the shared sense-making process and drives for the strong engagement, involvement, and ownership of those who are affected by the reform, which targets successful development at the school level (Pietarinen et al., 2017a; Vitikka et al., 2012).

The three learner profiles identified in the study showed overall very good experiences of the reform process in terms of principal learning; most of the principals considered the process of knowledge creation to be successful and perceived the reform’s goals to be at least moderately meaningful. Moreover, it seems that the principals’ experience of participation in knowledge sharing was related to how meaningful the principals considered the reform goals at the school level. However, there were some differences in the profiles. One group of principals (20%, n=28) expressed less satisfaction with both the collective sense making and the influence of the reform on the school. Unlike the other two groups, this group noted an imbalance between the process and impact, meaning that they did have some trust in the reform to develop the schools in the right direction, but they were dissatisfied with the development process. Previous research has suggested that ownership in terms of reform goals usually requires success in the sense-making process (Pietarinen et al., 2017b; Priestley et al., 2012), and, as found also in this study, the experiences during the process are related to the anticipated impact. Accordingly, this finding suggests that the success in the knowledge-sharing process seems to determine the perceived impact of the curriculum process on the school, even though the principals as leading learners have critically reflected on the success of the participatory learning process in their professional community during the curriculum work. However, when the principals perceived a low level of success in terms of knowledge sharing in their professional community, they nevertheless tended to value the impact of the curriculum process a little higher. This may imply that principals can agree with the intent of the reform but still have difficulty in participating in or contributing to the sense-making process.

The principals in this study reported a relatively high level of satisfaction in the principal–professional community fit. This is noteworthy, because positive work relationships seem to predict the principals’ satisfaction with and commitment to their position (Farley-Ripple, Raffel, & Welch, 2012). The results may suggest that the Finnish system—in which schools have high levels of autonomy, the principals are teachers themselves, and leadership is distributed—facilitates mutual recognition and good relationships between the principal and the school’s working community.

According to our results, the process of engaging oneself in the reform and the perception of one’s own fit in the environment seem to be connected. This finding indicates that the perceived

principal–professional community fit is constructed by the shared objective of the activity, such as school-level curriculum work, which is highly significant and meaningful for the professional community. Shared sense making on the goals of the reform and the development work at the school level are orchestrated by the individual leadership practices adopted by the principals in the school's day-to-day life. Hence, the leading learner approach adopted by the principal may work as a crucial determinant in making large-scale educational reforms work at the school level.

The perceived recognition and working climate are distinct, especially with the two most opposed profiles groups, meaning that those principals with less recognition and support in their professional communities were also less satisfied with the reform process and its impact on the school, and vice versa. This may imply that school communities with negative and tense atmospheres influence the principals' learning—i.e., they are not ideal environments for principals to construct new knowledge and test ideas. Moreover, principals reporting high levels of success in terms of their learning also considered themselves to be highly appreciated by the professional community, and the difference here with the lowest learner profile was especially distinctive. The result implies that experiences of personal recognition in the immediate working environment are key for teachers and principals when ensuring successful learning in complex processes such as curriculum reforms.

In terms of the school as a learning environment for the principal, the results suggest that it would be fruitful to study further the reciprocal interaction between principals and co-workers in educational reforms, and, further, to explore the methods of fostering and developing local school cultures to support sustainable and collaborative school development. Accordingly, the principals' own sense-making and learning process should be studied in more detail. Indeed, the leading learner approach adopted by the principal may work as a crucial determinant for making large-scale educational reforms succeed at the school level. This, in turn, demands that the complexity and causality between the perceived success in knowledge sharing, the experienced school impact, and the principal–professional community fit (i.e., the development of the perceived recognition and working climate) be studied with longitudinal approaches.

5.1. Methodological reflection

This study reflects the Finnish educational system and leadership culture. Consequently, these findings cannot be directly generalized to other educational contexts. However, the size and representativeness of the sample was good, and even though a self-reported survey was used, the school leadership positions were clearly stated in the data by the respondents. Due to this, the results reflect well the reality and dynamics of the distributed leadership structure, where development initiatives can be shared informally and with a low hierarchy, especially in large-scale development processes. Thus, the main findings may have broader transferability, especially when sustainable school development is studied by combining learning in the professional community with the approaches and strategies of educational leadership.

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Appendix 1: Scales (translated from Finnish)

Knowledge sharing (KS)

KS01 I have been able to influence definitions and contents.

KS02 My competence has been utilized broadly.

KS03 Decisions are based on joint negotiations.

KS04 The feedback received has influenced the content of the curriculum.

KS07 Even radical ideas are welcome, and they are discussed jointly.

KS08 Work on the reform has been carried out jointly, not as a process dictated from above.

KS09 The competence of various actors has been utilized in an optimal manner.

KS10 The construction of an interactive atmosphere has been successful.

KS12 Working together is assessed on a regular basis.

KS13 The perspectives of the various teacher groups have been taken into account in an equal manner.

School impact (SCI)

Curriculum reform...

SCI01 Maintains active development work in the school.

SCI04 Commits teachers to working on developing the school.

SCI05 Helps the school community identify the core tasks.

SCI06 Directs development work to resolve problems observed in the everyday life of the school.

SCI07 Helps people develop solutions that work at the local level to organize teaching.

SCI10 Promotes the resolution of many problems related to basic education at the local level.

Principal professional community fit/recognition (REC)

FIT11 My colleagues are interested in my opinions.

FIT12 My colleagues provide me with encouragement and support.

FIT13 I feel my colleagues appreciate the work I do.

Principal professional community fit/working climate (CLI)

FIT21 My workplace has a good atmosphere.

FIT22 My working community deals with problems constructively.

FIT23 The work assignments are divided fairly among the teachers.