Article

A Complexity Perspective on Parent–Teacher Collaboration in Special Education: Narratives from the Field in Lebanon

Jennifer Aouad [1] and Fabio Bento [2,*]

[1]   Rudolf Steiner University College, Prof. Dahls gate 30, 0260 Oslo, Norway; jenniferaouad2@gmail.com
[2]   Department of Behavioural Science, Oslo Metropolitan University, Stensberggata 26, 0170 Oslo, Norway
*   Correspondence: fabben@oslomet.no

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Abstract: Several studies have highlighted the importance of parent–teacher collaboration (PTC) in special education (SE). In Lebanon, there is a widespread perception among practitioners that out of many educational challenges facing SE organizations, there is the need to consolidate successful parent–teacher partnerships. We contribute to research on PTC by applying a conceptual framework from complexity science to investigate the interaction between teachers and parents in one SE organization in Lebanon. The interaction between teachers (internal agents) and parents (external agents) constitute an important dimension of the information flow between the school and its surrounding environment. We follow a narrative approach aiming at grasping the temporal dimension of teachers' experience related to interacting with parents. Findings from this study indicate that teachers play an important role in sensing educational challenges and reaching out for a collaboration. However, although they gain access to valuable information regarding students' background and social environment, several organizational factors restrain internal knowledge-sharing and communication about innovative practices. Teachers' narratives depict learning on an individual level, but organizational barriers in the form of negative feedback loops for knowledge-sharing at the organizational level. This study recommends facilitating adaptive processes deriving from PTC. This demands positive feedback loops that facilitate behavioral variation, open communication, and thereby the exploration of innovative practices.

Keywords: special education; parent–teacher collaboration; complex adaptive system; adaptive processes; learning in organizations

1. Introduction

Today, there is a global acknowledgment of the positive impact of parent–teacher collaboration (PTC) in special education [1]. Research has shown that interprofessional collaboration, including close collaboration with parents of students with special needs (SN) is a key factor in reaching maximized student learning potential efficiently and cost-effectively [1]. Over time, educational reformers have tried to move PTC relationships from autonomous entities working on separate accounts towards a more collaborative relationship where shared responsibilities and teamwork are emphasized [2]. PTC has become part of legal policies and mandates in many countries [1].

Unfortunately, while schools in Europe and America started shifting to more family-centered and community-centered approaches to special education, Lebanon has remained far behind. The complex and dynamic nature of the political, social, cultural, and economic situation in the country has impeded the development of special education services [3]. Global special education trends such as inclusion are still in their primitive stages in Lebanon and face many challenges in development

amidst the reality of this complex environment [3]. Instead of inclusive settings, SE organizations cater to the education of special needs students. In most cases, the Lebanese Ministry of Social Affairs (MOA) covers the tuition fees of enrolled students. Nevertheless, due to the complicated political and economic situation, payments from MOA are not consistent and not always sufficient, rendering it more challenging for SE institutions to provide proper quality services and education. The reality is that institutions catering to special education services are overcrowded with students who have diverse needs. The latter include medical, social, economic, physical, and other needs. SE institutions strive to adapt to ongoing environmental changes and challenges. This year, several SE organizations went on strikes asking for governmental and community support for survival and sustainability in the complex attitudinal, environmental, political, and economic situation. Unfortunately, two of these organizations closed, leaving SN pupils in their homes.

The interconnectedness and interdependence that exists between the SN organizations and the political/economic/social sectors have left the organizations striving for survival and adaptability. This unfortunate reality has left little room for the development and advancement of special education to fit the global standards. Due to autonomous aspirations for professionalism, several SE organizations have been inspired by the US Individuals with Disabilities Education Improvement Act (IDEA) and have established systems in which the parents, teachers, and therapists of the child meet together to plan annual goals for the student to achieve. However, despite these efforts, there still lies a gap between the desire of these organizations to achieve collaboration and its actual implementation. Up until today, there is no known law supporting parental partnerships in SE organizations, and little research is available on such collaborative and engagement practices in Lebanon.

The results and insights from this study contribute to the enhancement of PTC in SE institutions in Lebanon. According to this study, parent–teacher collaboration not only plays a vital role in student development, but is also a key aspect of organizational development and adaptability. From this perspective, the study recommends the acquisition and implementation of new organizational strategies that could benefit several recipients including the students, parents, teachers, and organizational management. The findings demonstrate barriers to communication that inhibit the emergence of new practices. In this regard, setting grounds for prosperous collaborative relationships between the teachers and parents would ultimately lead to overall school development, student progress, teacher role fulfillment, and parent satisfaction.

Engaging families and learning from recommendations from parents can be quite challenging. From the perspective of the school, facilitating collaboration with parents means an increase in information flow and internal complexity. Deriving from that, there is also an increase in system uncertainty. This is often difficult to be embraced by policy-makers, school managers, and different agents in the school community. However, as highlighted by the conceptual framework that we apply in this study, schools face the adaptive challenge of matching the complexity of their social environments by facilitating interaction, variation, and the exploration of new possibilities.

2. Conceptual Framework: A Shift from Ecological Systems Perspective to Complexity Perspective

The conceptual framework of this study starts with concepts on collaboration from the ecological systems perspective leading to concepts of adaptation and self-organization from the complexity theory perspective. According to the ecological system's perspective, the developing organism is hugely influenced by the interactions that occur with and between its surrounding environments. According to Bronfenbrenner, the child's environmental context is made up of several nested layers (microsystem, mesosystem, exosystem, and mesosystem) that are connected and interactive [4]. The ecological systems perspective has tremendously contributed to recognizing the importance of the environment on the development of the child. Many studies, based on this perspective, encourage the development of collaboration between the school and the family given its crucial role in the healthy development of the child. These studies have led to the establishment of programs and models that

encourage the development of PTC like Joyce Epstein's famous family partnership model [5] and Sheridan and Kratochwills' conjoint behavioral consultation model (CBC) [6,7]. Nonetheless, there is a general agreement that the collaborative process is complex and rarely can any model cater to the diversity of factors and situations that might affect PTC especially in the changes and complexity of our world today. In other words, there is no one-size-fits-all model for PTC in schools and educational systems given the diversity and complexity of parents, teachers and their environment [8].

In this study, we present a different approach to investigating PTC. The complexity theory perspective views the organization as a complex adaptive system (CAS) that is adapting through the interaction and the interconnectedness to its environment [9,10]. Therefore, rather than seeing schools as static entities, we look at them in the context of dynamic interactions with their environment. This differs from previous studies by looking at PTC in the context of adaptive practices. In this regard, the parent–teacher interaction may lead to the emergence of innovative practices rather than only incremental change.

Although there might not exist a single unified theory of complexity, it is possible to identify six common underlying features of CASs as suggested by Preiser [11]:

1. Constituted relationally: emergent networks structures;
2. Adaptive: decentralized control meaning that structures and functions change over time as a consequence of internal dynamics and environmental changes;
3. Dynamic: the behavior of the system is maintained or restricted due to negative or positive loops of feedback;
4. Radically open: flexible boundaries and constantly exchanging information with the environment;
5. Contextual: changes in functions as system changes and sensibility to initial and environmental conditions, and;
6. Complex causality: non-linear relations and causality meanings that multiple factors interact.

PTC can be conceptualized and typified under such six features of CAS. It is possible to observe emergent webs of interaction among students, teachers, managers, and parents. Rather than being internally or externally designed, their interactions are seen as parts of an emergent network structure constituted relationally (feature 1). Even when internal policies aimed at supporting collaboration between teachers and parents, the network structure of interactions and possible outcomes will always have an emergent character, which can never be fully predicted or controlled (feature 2). There are formal and informal processes of communication in which agents are constantly constraining and enabling each other through positive and negative feedback loops (feature 3). Looking at PTC from the perspective of complexity means that interaction can open the space for the radically new in the school depending upon different feedback loops. The cooperation takes place in the context of flexible boundaries between the school and its environment. PTC constitute channels for information exchange with the environment. For example, the teacher may reach out for cooperation when he or she feels the need for information about the student's family environment or behavior outside the school setting. On the other hand, parents' expectations are an important dimension of the social environment around the school. In this context, teachers are internal agents interacting with parents typified here as external agents (feature 4). In school settings, there is the interplay of multiple factors such as interest from different stakeholders, interaction at different levels, and the need to adapt to external changes. Therefore, both the internal and external contexts matter (feature 5). The interplay among different factors means that different causes co-exist. This demands different levels of analysis and recognizing non-linear processes from which novelty may emerge (feature 6). For instance, teachers' learning processes deriving from interacting with parents may bring changes in practices at the school level if by facilitated by positive loops. Such processes are always non-linear and highly dependent on contextual factors. Overall, we can say that the questions that we raise from the perspective of complexity are not restricted to improvement but adaptation and the emergence of new practices and ideas.

2.1. Analyzing the Organization Using the CAS Approach: Variation, Interaction, and Selection

Adaptation usually means matching the complexity of the environment by facilitating interaction and variation. In this case, variation is a necessary component of the system whereby possibilities for new successful strategies for adaptation are present. In other words, variation is "the raw material for adaptation" [12] (p. 32). Axelrod and Cohen [12] state that "variety turns up repeatedly in complex systems as a crucial factor in their development. When the world is changing and the current agents are far from best possible, variety can have value and homogeneity may be a hindrance" [12] (p. 34). However, extreme variation can also be a hindrance. For the organization to benefit from what it has already acquired, constraints have to be placed on the extent of variation within the system. When approaching variation in CAS, there is the challenge of finding the balance between variety and uniformity. From the evolutionary point of view offered by Axelrod and Cohen, there is a need to balance between the constraint of variation to maximize standardization of processes and to facilitate variation to find new solutions in a continuously changing environment [12]. In the case of organizations such as schools, this involves positive feedback loops that amplify the outcomes of small disturbances facilitating the emergence of changes. In systems of human organization, this involves patterns of interactions that enable the emergence of novelty [13–15].

Interaction is another hallmark in the CAS framework. All unfolding changes and events taking place within the system are a result of the non-linear interactions among different agents or artifacts [12]. Looking at the structure of a CAS, one can realize that it is not a regular organization chart where lines of command and role distribution are linear. On the contrary, the structure of CAS is more like a web or network of interactions [16]. Usually, in CASs, the interactions of the different agents give rise to regularities forming different patterns of interactions [8]. These interaction patterns are "neither random nor completely structured" [12] (p. 63). In other words, beyond formal structures, the organization has its structures of interactions that have emergent patterns [12,13]. For Sandaker [17], a CAS "allows a 'web of influence, i.e., facilitating variation in interaction independently of divisions, departments or levels of administration" (p. 277). In many ways, the web of interactions does not always correspond to the formal boundaries of the organizations and the interaction between teachers and parents may provide a good example of this. In CASs, independent agents interact in a nonlinear manner, and the whole is not the sum of its parts, meaning that there are no straightforward cause and effect relationships. Instead of being controlled, agents function in response to the exchange of information and feedback loops within and across the system [13,18].

2.2. SE Organizations as CAS and the Role of PTC

Morrison [19] claims that schools hold many characteristics of CASs. This is also true for institutions that provide special education services. The SE institution is nested into larger systems constituting of the ministry of social affairs, the community, and the government. It also includes smaller systems within itself constituting classes and departments. Theses nested environments are continually changing requiring the institution to respond to these changes while trying to maintain its core structure. This adaptation occurs through the nonlinear interactions of the different agents involved including the staff such as teachers, administrators, therapists, and the parents. These agents come from diverse cultural and ethnic backgrounds and have different values and perspectives.

Many external and internal nonlinear interactions take place within and between the different nested systems in the institution. Parents, teachers, administrators, and therapists exchange feedback loops in formal and informal ways through their interactions. Relationships between agents vary in intensity, and daily information is exchanged amongst them in many directions. The exchange of information between the internal and external environment of the school plays a vital role in the adaptation and progress of the organization. Moreover, teachers collaborating with parents serve as portals for such an exchange to occur. Among all the diverse internal staff members and roles in the organization, teachers form the most significant number of interactions with the environment through their relationship with parents.

Teachers as internal agents, act as sensors interacting with parents who are considered as external agents, allowing the organization to exchange energy and information with its environment, as demonstrated in Figure 1.
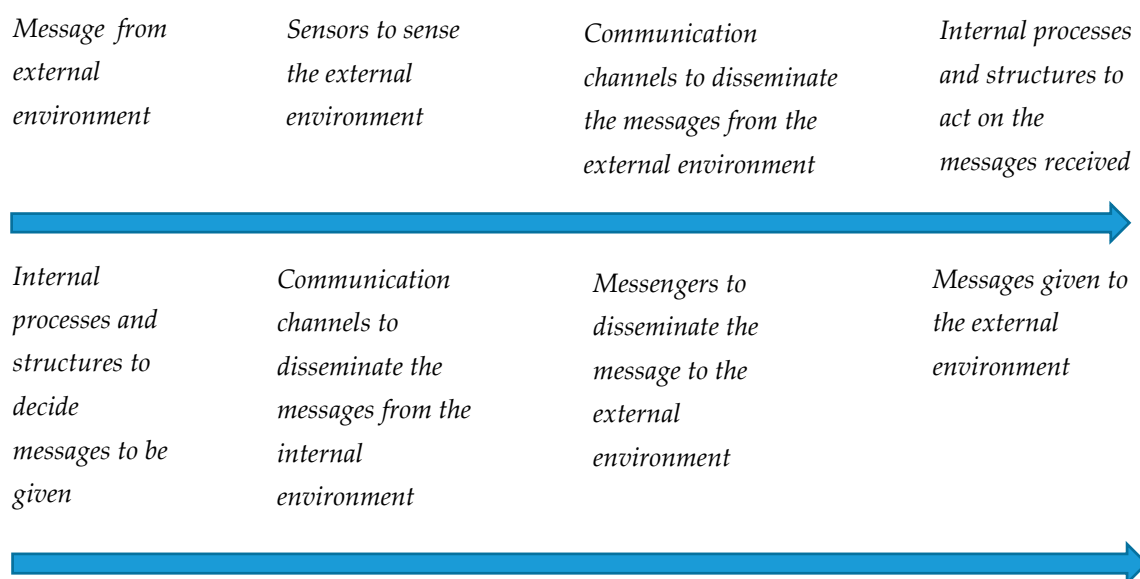
Message from external environment　　*Sensors to sense the external environment*　　*Communication channels to disseminate the messages from the external environment*　　*Internal processes and structures to act on the messages received*

Internal processes and structures to decide messages to be given　　*Communication channels to disseminate the messages from the internal environment*　　*Messengers to disseminate the message to the external environment*　　*Messages given to the external environment*

Figure 1. Schools sensing and responding to their environment. Adapted from Morrison [19] (p. 121).

2.3. Communication and Information Exchange

The complex adaptive system framework in schools supports collaboration and networking internally and across the boundaries. This calls for a change in the managerial approach of the organization whereby leaders and managers should allow room and make fertile grounds for collaborative relationships to prosper and self-organization to occur. This is established by focusing on ways to harness complexity through variation, interaction, and selection.

When it comes to the SE institutions, parents collaborating with teachers form the highest percentage of cross-boundary networking and interactions between the internal and external environment of the organization. In fact, "Individual teachers and groups of teachers have expert knowledge of the most appropriate links with those aspects of the external environment with which they are involved" [19] (p. 123). Teachers act as the sensors of the system that receive and give away the information from and to the organization. As referred to in the literature on CAS, to harness emergence and self-organization in CAS, reconsiderations must occur on the structural and interpersonal levels of the organization. Open lines of communication and proper scanning of the environment should take place via collaboration.

In schools, open lines and occasions for communication exchange can take many forms including written documents, visits to homes, visits to schools, formal meetings and associations, school events, informal meetings, and others. Moreover, to secure the dissemination of information to the right people at the right time, internal communication among the different staff members emerges. Also, internal processes and structures within the system are developed and made flexible to be able to adapt to the information and messages received correctly. This means that changes in processes and procedures in the institutions occur regularly as a response to the messages received from the environment.

2.4. Learning in SE Organizations

Stacey [20] distinguishes between organizational learning and learning organization. Organizational learning is concerned with studying the processes of learning that occur on an individual and collective manner apart from the organization itself while learning organization relates to the methods used to help in the enhancement and evaluation of the quality of learning inside an

organization as a whole. Following complexity theory, Stacey uses learning organization to give insights on learning and change in an organization. Stacey [20], defines organizations as "patterns of power relations sustained by ideological themes of communicative interaction and patterns of inclusion and exclusion in which human identities emerge" (p. 330). The organization, informal groups, and individuals are all facets of similar processes of interaction amongst people. For Stacey [20], organizations cannot learn. Leaning, on the other hand, emerges from the context of interactions among individuals. It is not the organizations that learn, but the individuals interacting together within that organization that do so. Stacey [20,21], mentions that in complex responsive processes when individuals interact together, knowledge and behavioral patterns emerge in the form of themes. These themes make up the individuals' experiences of working together. Although they take the form of habits, these themes can transform the individual and the system. For Stacey, when individuals interact together, knowledge is constantly repeated, and patterns emerge with a capacity to transform. The learning process is looked at as an emerging shift in the patterns of interactions, or as Stacey [20] calls, 'thematic patterns' that occur between individual people. In other words, "Leaning is the activity of interdependent people and can only be understood in terms of self-organizing communicative interaction and power relating in which identities are potentially transformed" [20] (p. 331).

2.5. Teachers as Sensors of the Environment and Possibilities for Open Innovation

In CASs, leadership has a fluid character, and webs of influence of change do not necessarily correspond to the formal organizational boundaries and structures [22]. In CASs, the notion that change and emergence can occur anywhere and sometimes unpredictably in the organization is highly acknowledged. The adaptive perspective to leadership highlights the importance of shared arenas to discuss practices in a blame-free environment [23]. Nickse [24] argues that teachers can play an important role in change processes because they often have a sense of the history of the school community and organization. Hence, school leaders should benefit from providing teachers with opportunities to participate in the design of innovative practices actively.

Several studies have highlighted the dependence of open innovation dynamics on the flow of technology and knowledge beyond formal organizational structures and borders [25–28]. The micro and macro capabilities of open innovation is characterized by a complex interplay of different actors such as government, industry, society, and universities. It would be beyond the scope of this article to articulate the agency of schools in such contexts. However, we can recognize school as spaces of development of innovative practices. Therefore, the role of teachers in sensing educational challenges and reaching for collaboration with external agents (parents) raises questions about the possibilities for innovation in educational settings beyond formal organizational boundaries. It is also important to recognize that often innovation in educational settings emerges from local processes of interactions rather than deriving from the initiative of formal leaders [29].

We look at the SE institutions as systems that interact and respond to their complex environment as they strive to adapt. From this perspective, we examine the role and processes of collaboration in these institutions, precisely that of parent–teacher collaboration. We interviewed six teachers working in an SE organization in Lebanon and followed a narrative approach aiming at grasping the temporal dimension of the experience of teachers related to collaboration with parents. Through their stories of successful and unsuccessful collaborative relationships, we looked into how the teachers perceived the role of their SE organization in supporting them with their collaborative endeavors. We also investigated whether or not the information they got out of their collaborative relationships resulted in changes in their practice. We based our study on the following research question(s):

How do teachers describe and reflect on the processes of collaborative relationships they build with the parents of their students?

- How do the teachers, as employees perceive the role of their organization in supporting them with their collaborative efforts?

- How does the information they get out of their collaborative relationships affect their practice on an individual level and organizational level?

3. Methods and Research Design

The term "collaboration" is too context-specific and dependent on the complexities of human interactions [1]. Hence, when studying collaboration, we give attention to the setting in which it takes place and the different people involved. In other words, we investigate the context in which such relationships are embedded and the behaviors and interactions of the different people involved using the qualitative approach through the stories of teachers in that organization [30]. Tsoukas and Hatch [31] refer to Bruner's two modes of thought to show how a qualitative approach, specifically narrative design, contributes for studying complex systems. Different from the logico-scientific mode of thought to theorizing complexity, Tsoukas and Hatch [31] encourage the use of the qualitative research and narrative analysis. They describe the concept of 'second-order complexity' whereby consideration is given to the thinking of organizations as CASs [31] (p. 986). The characteristics that make a system complex such as non-linearity of interactions and emergence are terms that are described by the observer as part of her/his interpretation and vocabulary. The narrative approach to complexity proposes that our knowledge of CASs and their characteristics remain rooted in the stories we tell about them.

3.1. Narrative Approach

Currently, in the field of organizational research, there is increasing recognition of stories as necessary resources of communication and knowledge in the organization [32]. When looking at organizations as CASs, we use the narrative approach to investigate collaboration through the temporally and spatially structured stories of the employees or teachers [33]. We look for certain patterns of behavior and events among the different stories told by the different agents in the same organization. Moreover, agent perspectives on how they experienced their collaborative process with the parents are more important than the mere listing of the events that happen. Through the use of the narrative mode of thinking, the emphasis is put on the context and the reflexivity of the participants [31]. Rather than providing implicit justifications, the focus consists of understanding the statement of purposes and motives set forth by the participants. Moreover, special recognition is given to temporal sensitivity [31]. The narrative approach has gained the interest of researchers from multiple disciplines, and there are different views on the definition of a narrative approach found in the literature [32]. For Riessman [34] (p. 6): "Narratives do not mirror; they refract the past. Imagination and strategic interests influence how storytellers choose to connect events and make them meaningful for others. Narratives are useful in research precisely because storytellers interpret the past rather than reproduce it as it was".

An important way to understand human experiences and meaning-making is by listening to their stories [34,35]. Usually, participants narrate experiences that are exceptional or deviating from the normal [34,35]. Whenever participants are asked to tell stories about their collaborative practices, they are usually driven by memories of either exceptionally successful or unsuccessful collaborative relationships. Hence, narrative analysis of detailed stories including interactions, structural factors, context, characters, and turning points that have been constructed by the narrators can result in a better understanding of the parent–teacher collaboration. The narrative methods have been applied to grasp the temporal and experiential dimensions of complex change in different organizational settings [36]. This is a small qualitative study and, therefore, does not provide the space for statistical generalizations. This may be seen as a limitation of this study.

3.2. The Institution, Sampling, and Interviews

In this study, six teachers working in the same institution were interviewed. The institution is specialized in the education and therapy of around 300 pupils with diverse special needs, including

autism, Down syndrome, and cognitive delay. It has around 80 teachers and 20 administrators. At the organization, there are several programs and PTC meetings to ensure parental involvement. Throughout the year, parental training sessions are offered to parents, and parental guidance meetings are provided from the institution's psychologists and social workers whenever there is a need.

We used non-structured interviews through which we aimed to get an in-depth understanding of how the teachers experience PTC in that organization. This means that we did not use a classical interview guide, but a list of topics that we further enquired while participants were presenting their narratives. As further explained in our presentation of findings, some topics emerged from the narratives while others had been informed and prompted during the interviews. All interviews were conducted in Arabic, given that the participants felt more comfortable expressing themselves using their native language. We asked them to tell stories about either successful or unsuccessful collaborative relationships they have encountered throughout their practice. In case we wanted to know more, we would use 'probe questions' to help the participants further explain themselves. The probe questions were informed by our conceptual framework and focused on the above-mentioned topics. Interestingly, most of these themes were spontaneously brought by participants without the need of being prompted by the interviewer. Interviews lasted for approximately one hour.

The participants were all teachers in SNI with varying years of experience and teaching students of diverse ages and needs. For the scope of this study, only teachers working with children and adolescents with diverse special needs were selected. Surprisingly, most of the narratives throughout the interviews involved students with autism. An email and flyers about the study were sent to all the teachers at the school. Eight female teachers showed interest in participating. Among whom, one canceled her participation and another replied after the deadline. No male teachers signed and this explains the gender imbalance among participants. Selection criteria were based on diversity in years of experience, departments, and educational background.

Table 1 presents more detailed information about the six participants.

Table 1. Presentation of participants.

Teacher	Years of Experience	Age of Students	Educational Background
Nayla	1	37	Special education
Jen	5	3–7	Education + SE training
Raya	4	8–14	Business + SE training
Layla	2	14–21	Special education
Tara	6	8–14	Education + SE training
Lena	>8 years	21–25	English literature + SE training

The reason why we chose to interview teachers and not parents is that we were interested in investigating how the teachers, as internal agents in the complex adaptive system, perceive the processes of their collaborative relationship with the parents who are considered as external agents. This was seen as a necessary delimitation in this study. We inquired how the information they got out of their collaboration influenced their practice. We also paid attention to the processes of exchange between the organization and the environment (internal/external communication, scanning changes in the environment, and adaptation to changes and the processes of learning in the organization).

3.3. Data Ethics and Analysis

The main ethical consideration of this study consisted of protecting the anonymity of participants and the institution. The first is related to the anonymity of the setting in which the study is conducted. SNI is one of a few other institutions in Lebanon. However, there are a few facts about the institution related to the philosophy by which it is inspired by that we cannot identify for the sake of keeping it anonymous. Also, in order to protect anonymity, we have used aliases instead of real names when

presenting findings. Although we aimed at having a gender balance in our pool of participants, only female teachers agreed to participate. The interviews were transcribed and translated into English.

As described by Riessman [35], the analysis of narrative data differs from other qualitative methods such as grounded theory. Although we did label segments of narratives that were particularly relevant, this is not the same as coding in methods deriving from grounded theory. These passages have to be understood in a sequence of events rather than temporally isolated codes. In other words, they only make sense as seen in a sequential perspective. Therefore, the main objective of data analysis was not to break the data in codes and categories as in most qualitative studies, but to identify recurrent themes as presented in the temporal dimension of the narratives. We strove to preserve this temporal dimension in the presentation of findings. This is also different from coding in grounded theory which usually involves identifying stable concepts that will be the basis to theorize across cases. On the other hand, narrative analysis has a case-centered commitment [34], aiming for contextuality [31] and providing the opportunity to reflect upon existing conceptual constructs.

We conducted a thematic analysis focusing on the content rather than on the linguistic structure of narratives [34,35]. The findings consist of both themes that emerged from the interviews and themes that were informed by our conceptual framework and prompted during interviews.

The process of narrowing down the data presentation into these three phases and several sub-phases results from a back and forth analysis between the similarities across findings and concepts from the conceptual framework. As mentioned earlier, we chose to present recurrent themes which were articulated in more than half of the interviews. The similarities of the processes involved in the development of the collaborative relationships across the different stories led to the emergence of themes that took part in the constitution of the temporal phases and sub-phases. However, the constitution of these phases was not only based on emergent themes. Some themes were indicated in the literature and prompted throughout the interviews. For example, the temporal dimension of the pre-collaborative phase was based on recurrent descriptions of similar events in more than half the stories which led up to meeting the parents for the purpose of collaboration. The subthemes in the pre-collaborative phases emerged from back and forth analysis between corresponding story events and concepts from the literature. For instance, sensing the need to reach out (a sub-phase of the pre-collaborative phase) is derived from recurrent statements from the different teachers in the different stories in addition to the concept of 'agents in schools acting as sensors to the environment' which is indicated in the conceptual framework and prompted throughout the interviews.

Narrative analysis has an intrinsic interpretive character. However, we took measures to strengthen the validity and reliability of our analysis. First, we chose to analyze and present only recurrent themes. Not one of the themes or subthemes was solely based on one or two stories. Second, the two authors kept a routine of discussing and triangulating alternative interpretations of the data. This peer examination process contributed to reduce possible research biases and to strengthen the reliability of the analysis.

4. Findings

We present the data in a temporal dimension and sequential logic based on the conceptual framework of information exchange between the internal and external environment of a complex adaptive system via internal and external agents mentioned in Figure 1. Based on the framework and on common patterns of events that emerged amongst the different collaborative stories, we present the processes and trajectories of the different collaborative relationships in three phases, which include the pre-collaborative phase, the collaborative phase, and the post collaborative phase described later.

Figure 2 depicts the temporal order of the presentation of findings highlighting topics prompted during narrative interviews and recurrent themes at each stage:
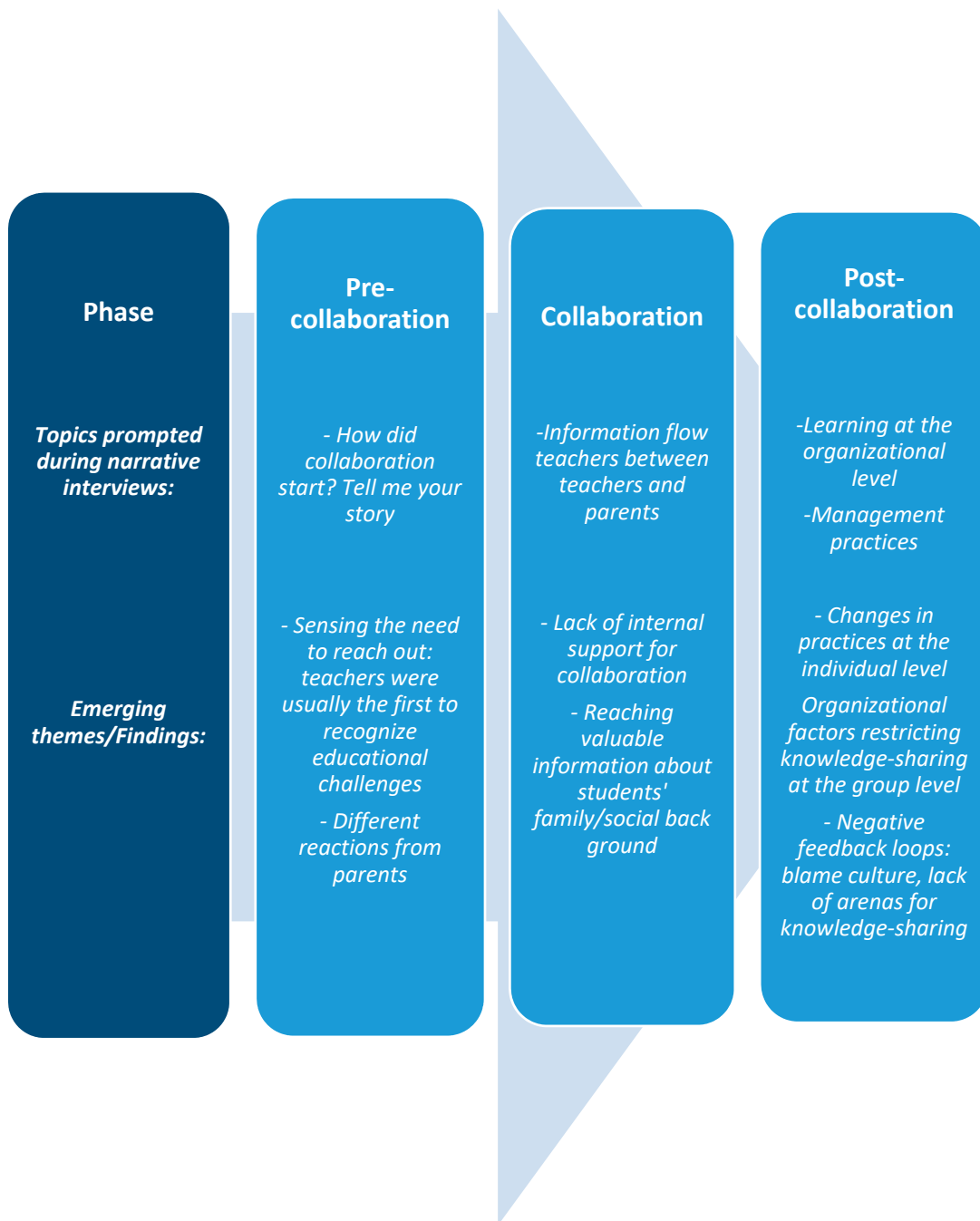
Phase	Pre-collaboration	Collaboration	Post-collaboration
Topics prompted during narrative interviews:	*- How did collaboration start? Tell me your story*	*-Information flow teachers between teachers and parents*	*-Learning at the organizational level* *-Management practices*
Emerging themes/Findings:	*- Sensing the need to reach out: teachers were usually the first to recognize educational challenges* *- Different reactions from parents*	*- Lack of internal support for collaboration* *- Reaching valuable information about students' family/social back ground*	*- Changes in practices at the individual level* *Organizational factors restricting knowledge-sharing at the group level* *- Negative feedback loops: blame culture, lack of arenas for knowledge-sharing*

Figure 2. Temporal presentation of finding in the three phases of narratives.

In this section, we present extracts of narratives told by the different teachers that we regard as representative of recurrent themes. We refer to the pre-collaborative phase as the one between the time the teacher senses the need to collaborate, reaches out, receives the message, and disseminates the message to other internal agents. The collaborative phase takes place after the meeting with the parents that sets the grounds for the collaboration. The journey is characterized by conflicts and solutions that may arise, as seen in the different stories. The latter ends with the result of the collaborative relationship being either successful or unsuccessful. Lastly comes the post-collaborative phase or the after effect. This phase deals with the information received from the collaborative relationships, whether or not it brings changes to the teachers' practice on an individual or systemic level and how it does so.

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4.1. The Pre-Collaborative Phase

The patterns and events of the different stories, the pre-collaborative phase, can be divided into three sub-phases during which the teacher senses the need to reach out to the external environment, reaches out, receives messages about the environment, and then spreads it internally.

4.1.1. Sensing the Need to Reach Out

From all the stories told, the teachers were usually the first ones to recognize changes in the students' behaviors, leading them to reach out. Their continuous presence with their students rendered them first-line sensors. All the participants started their stories with the realization of change in the behavior of their students. The nature of the teachers' profession rendered them in close contact with their students throughout the day and allowed them to receive messages from their students through the changes in their behavior and routine. Another thing noticed is that every one of the teachers experienced the receiving of messages in different ways. With the right observation skills, the teachers were able to sense something change regarding the students and their environment. They experience between the first ones to identify educational challenges in the school setting. Also, the teachers shared a sense of curiosity to know more and reach out to the parents of their students especially since their students were not capable of verbally expressing themselves.

4.1.2. Processes Involved in Reaching Out and Establishing Contact

Despite being the first to recognize the need to reach out and collaborate, the process of initiating communication and establishing contact with the parents was not as easy as expected. All teachers expressed difficulties throughout this process; however, all of them received valuable information to go about dealing with the situation. Some of the difficulties included: the presence of hierarchy and fear at the organization and general blaming environment whereby there is very little room to make mistakes. For example, Nayla stated:

"Even if I get the ok for contacting a parent or intervening in a specific way with a child, if I do wrong, fail or upset the parent, I get held accountable, and I would need to do lots and lots of explaining. Oh, and whenever you do something wrong, the whole school knows, and you would need much time repairing your image. It needs guts to take risks!"

None of the teachers established contact with the parents without asking and consulting the coordinator at first. This is described by Tara in the following terms:

"I can go give a direct call to the mother and visit her without the knowledge of the coordinator, but I do not ... why? Because I am scared, I would be blamed for doing something wrong . . . it's against the rules to call parents without the coordinator's approval. Some coordinators and more flexible than others with regards to that issue."

Other participants expressed through their stories restrictions in policies and procedures, unpredictable reactions received from the parents when reaching out, and imbalanced power dynamics between teachers and parents.

4.1.3. Receiving and Internally Disseminating the Messages

In all the narratives, receiving the messages and information about the student's environment and the different people involved led to the beginning of the collaborative journey. Although somehow, the teachers were the first ones to sense and receive the messages from the external environment, they were indeed not the ones that spread the information to the considered personnel internally. As described by the teachers, the managers and the therapists were the ones mostly involved in the process. Instead of serving as consultants to different situations, the managers and therapists served as the decision-makers in the different situation leaving the teacher aside. For example, Raya said:

> "The thing I could not understand is that I am not the one making the decisions, although I am the teacher, and I am the one spending most of the time with him. For me, all my intentions were for the good of the student, but for my manager, it was different. Her actions and decisions portrayed her intentions of not wanting to lose a customer."

Moreover, all information received by the teachers from the environment was filtered through the managers who decided where and to whom it is disseminated. The messages received from the environment via the teacher ended up in the offices of the different department managers, which either acted directly upon them, neglected them, or handed them to the school psychologists, and the school social workers.

4.2. Collaborative Phase

From the different narratives, there was no linear sequential order leading to the starting point of the collaborative relationship. Although all the issues that called out for collaboration were discussed in meetings with parents at home or in school, not all the meetings included the teachers. Nevertheless, in one way or another, each teacher found her way collaborating with the parents towards a common goal. Some teachers felt like active collaborators, while others felt that they had more passive roles. Not all relationships were easy nor were they all successful.

4.2.1. Success Stories

One story of a successful relationship whereby the teacher felt as an active collaborator was that of Layla, who had been detecting behavioral challenges with one of her new students and felt the need to collaborate with the parents. However, the mother's profile, a high social status made it difficult for Layla to reach out. Layla felt intimidated from the mother's profile and was not at all open towards sharing information with her. She confessed that her lack of experience and fear of being accused of not being good enough scared her from reaching out for the mother. Throughout her struggle to collaborate, the teacher bumped into a sample assignment on Pinterest that would help her to communicate with the mother about the issue without having to meet with her face to face. In the assignment, the parents were asked to write a text on how they perceive their child in terms of her/his strength, weaknesses, interests, etc. in addition to a section where they had to say what they expected from their child and if they had any comments about the child for the teacher. After the department manager gave Layla her consent, she sent the assignment to all the parents in the classroom. A couple of days after sending the assignments, Layla got a rich response from the mother telling her many useful facts about her student which made Layla more knowledgeable of the possible causes of the student's disruptive behavior. This helped her shape a well-fit class behavioral plan for the student which in turn enhanced the participant's self-confidence and willingness to meet up with the mother and discuss solutions rather than only sharing.

> "The assignment I found on Pinterest helped me a lot with getting to know my student from the perspective of her mother without me portraying a negative image of a 'nagging teacher' to the mother. Moreover, it provided me with the knowledge I needed to solve the issue I was facing professionally and confidently. This led to starting a more successful collaborative journey with the mother. I believe that this assignment is essential for all new teachers dealing with parents!"

Layla's innovative idea led her to a successful collaborative journey with the mother despite the power dynamics that were present between them. Nevertheless, the participant did express that asking for consent from the department manager was not an easy task and there was not enough environmental support around her as a novice teacher.

Another successful collaborative story that took an interesting turn was that of Tara who was dealing with a difficult child. When she reached out for the mother, it was evident that the mother was very anxious and that her anxiety was affecting her child's performance inside and outside the school.

When first communicating with the mother, Tara, and the mother almost ended their relationship with conflict. Nonetheless, Tara "empathized" with the mother's case and tried to look for solutions to help them both work as a team for the benefit of her student. She decided to establish an exceptional visual communication system with the mother. After sharing her idea with whom she calls her "exceptionally supportive manager", she started to implement it with the mother.

> "This report takes 3 minutes of my day to fill out, and the photos take 5 minutes in total to be taken and sent. These 8 minutes I lose do serve pretty well to comfort the mother and to get from her all the needed day-to-day information. Our relationship evolved due to these small out of the norm means of communication."

Tara's new idea, although not within the typical structures of communication found in the school, was successful and efficiently relieved the mother from her anxiety symptoms. Moreover, the teacher felt that she was extremely lucky to have a supportive manager, which she claims were one of the very few at the organization.

4.2.2. Challenges

We identify common themes mentioned by the teachers as they shared their perceptions on how it was like to collaborate with parents in their institution and how important collaboration was for them as teachers. In general, all teachers value collaboration, and they describe the value of collaboration in their way. However, they all agree that it is a challenging process due to several factors. For example, Lena, who had been working at the institution for more than eight years, describes how collaboration between teachers and parents has become very challenging over the years. According to her experience, parents have become more doubtful and less trusting towards the teacher. She thinks collaboration is a precious asset; however, it has become very challenging in terms of its implementation, given the number of students per class and the diverse needs of students and their parents. She claims that teachers need to be 'socially skillful' enough to understand the different situations of the parents, their actions, their behaviors, their worries and to find her way through all of that in the most subtle way possible. She says,

> "In special education, the teacher should also specialize in psychology to keep up with the diverse personalities and needs of the children and the parents. To collaborate, a teacher has to have a certain level of flexibility to change herself and the way she establishes relationships with people according to the situation."

She explains that she has encountered many teachers who have lost the desire to collaborate, given how hard it is to do so with some parents and how overloaded the teacher tends to become in terms of her duties towards the organization. As a summary, all teachers describe the value of collaboration in their way, but all agree that it is a challenging process due to several factors. These include organizational factors like lack of recognition, no time, work overload, lack of support, number of students, and more; environmental factors mostly the different personalities and needs of parents and their children and personal factors which include personal willingness to collaborate, social skills, empathy, acceptance, and more.

4.3. Post-Collaborative Phase: Implications on Practice and Transfer of Information

In the interview, we asked the teachers the following probe questions: Did this collaboration lead to change/improvement in practice? If so, at what level? Purely individual? Or do you have the chance to discuss changes on an organizational level? Pondering on the questions, all teachers admitted that a change did occur in their practice. Most stated that it was a learning experience for them. However, mostly, changes and improvements tended to be on the personal level as presented by Tara:

> "To tell you the truth, I learned a lot. It made me realize the importance of being open, rational instead of emotional, proactive instead of reactive, and to think outside the box.

However, my ideas like the daily communication report and the photos were approved by the school but were not shared with others at the school."

Several teachers had improvised and worked hard to make their collaboration a successful one through innovative ideas such as creative communication systems. Despite that reality, their ideas were not selected to be shared on an organizational level. For example, Layla explains:

"I do share my story with a few colleagues, and now I am sharing it with you, but that is about it (laugh) I am allowed to use this in my practice, but it was not generalized to all the institution even though it could be of great help for novice teachers."

Also, another teacher believed that throughout her collaborative journey, she had obtained some key points and tips worth sharing with the rest of her colleagues. She believed that the fact that she was still a new teacher impeded the recognition and sharing process. Other teachers believed that more opportunities should be given to teachers to express their challenges and frustrations in issues concerning their students' families. Jen says,

"as long as I can remember, teacher training implemented in schools roam around the same topics which never allow for opportunities to develop our skillset as communicators and collaborators nor to share our experiences. All training topics mainly focus on special education and behavioral management plans."

Jen believes that teachers should be recognized more as case managers and less as passive agents. Also, more opportunities should be given for teachers to share their challenges and experiences, and they (as well as the management) should get more training on PTC. Lastly, one of the teachers trusts that the institution should offer the resources of diverse professionals who can help on so many levels, whether through their expertise or experience, but there seems to be a missing link in internal communication and teamwork that could result in better outcomes.

Hence in general, from what was heard in the narratives, improvement and changes happen mostly on the individual level and rarely transfer to the organizational level. Most discussions on parent–teacher relationships happened informally between two or more teachers, but never in meetings that include the management team as well as larger groups of teachers. Even the informal meetings were not many, as teachers are mostly overwhelmed with their daily tasks.

5. Discussion

We hereby discuss the findings from the narratives by creating a discussion between the data and the reference literature on CASs, our conceptual framework, and the main concepts used in this research. Concerning the three parts of our research question, this section will be divided into three areas of discussion which include: the processes involved in PTC at the organization, the organizational support taking place throughout the process, and the organizational learning processes resulting from PTC. First, we go about analyzing the processes involved in PTC at the organization as described by the teachers in relation to the literature on CASs involving insights from Morrison [19], Sandaker [17], and Axelrod and Cohen [12]. Afterward, we discuss the teacher's reflections on the organizational support they experience throughout the process in relation to the literature on adaptive leadership suggested by Northouse [23] in the literature. Finally, we discuss the learning processes taking place on an organizational and individual level with respect to the findings in the interviews and the literature on learning activity in complex processes, as described by Stacey [20].

5.1. Processes Involved in PTC at the Organization

In the first of the three areas, we discuss the process involved in the development of PTC at the organization. Despite their key roles in sensing changes in the environment, it seemed that organizational policies and formal structures impeded the teachers from initiating and maintaining open

communication with the parents without the permission and supervision of the section manager. These policies on communication reflect the motives of organizational management to restrict interactions and variation of behavior occurring between agents and their environment. Looking at this finding from the light of CAS literature raises questions about the school's adaptive capacity at the system's level. CAS encourages the development of managerial approaches to fit the complexity of the organization encouraging the variability in interaction and interactivity of the different elements involved on a micro and macro level.

The reasons for the existence of such policies were not tackled in this study. Beyond the formal structures, the organization had its own structures of interactions that had emergent patterns. However, the process of receiving, disseminating and acting upon the information received from the parents was not a straightforward one for the teachers and, in many cases, restrained the development of the collaborative relationship. Negative feedback loops took place between teachers and other internal agents (managers and therapists) who had more authority and chances to lead on and take action without the close involvement of the teacher. Such loops restrained variation and the exploration of new possibilities beyond individual initiatives. This reality along with other reasons, led teachers to believe that they rarely received any organizational and environmental support throughout their collaborative endeavors. In this regard, local and individual adaptations rarely led to the emergence of innovative practices in a broader perspective. It is fair to assume that this poses limits to open innovation in terms of exploration of new possibilities and communication with the surrounding environment.

5.2. Organizational Support Taking Place throughout the Process

The teachers were facing adaptive challenges, which in turn needed support as they required change on many levels, including their relationship with the parents, flexibility in teaching approaches, openness to new roles and opinions, etc. However, with respect to the teachers, the management approaches taken towards these adaptive challenges were not helpful. Most teachers experienced a lack of psychological support and encouragement. In other words, the knowledge gained by interacting with parents was not always taken into account when discussing changes in practices, and they were not always given a chance to take the lead in their collaborative relationship with parents. Such findings indicate that there were few positive feedback loops [13] facilitating the emergence of learning beyond isolated initiatives.

5.3. Organizational Learning Processes Resulting from PTC

All teachers claimed that they had learned something from their interactions, which they believe had transformed them on the personal and professional level. This learning process had emerged from the patterns of interaction that took place between the teachers and other external and internal agents [23]. Although teachers experience learning on an individual level, they claimed that not much of their knowledge was shared, discussed, or selected. Some teachers highlighted the need to develop internal communication systems whereby knowledge can be shared equally and where challenges and experiences regarding collaborative relationships could be handled and discussed. Other teachers aspired to share their success stories and ideas with other personnel. This complies with the concept of selection as a hallmark to harnessing complexity in CAS [11,12].

We contribute to research on PTC by applying the frame of reference of CASs to the study of an empirical case. However, there are limitations to this study worth mentioning. To start with, the insights and conclusions of this study are one-sided and only involve the perceptions and reflections of the teachers. Also, there were many instances throughout the analysis process, where we felt the need to obtain information from the managers, coordinators, therapists, and parents. Moreover, other than interview data, we could have also used observational data which could also have been very interesting. However, the findings here provide the opportunity to reflect upon the limitations of organizational practices from the light of central concepts of complex systems. We once again acknowledge the limitation of short-range narrative studies as such in providing room for generalizations. However,

investigating well-delimited cases provides the opportunity to discuss central concepts and explore factors that may not have been highlighted in previous studies. As observed by Tsoukas and Hatch [31] narrative analysis has a contribution in relation to other methods by uncovering contextuality which is an important characteristic of CASs.

6. Conclusions

Special education (SE) organizations in Lebanon are immersed in the complexities of the political, economic, and social situation. As a general conclusion, this study calls for a change in the managerial approach of the organization whereby management practices should allow room and make fertile grounds for collaborative relationships between parents and teachers to prosper. This is established by changing the organizational practices to fit the complexity of the organization and its environment. In a nutshell, by allowing and encouraging variation in behavior and interaction as well as selecting and sharing knowledge and ideas, the management of an organization can harness its complexity. Rather than applying policies and procedures that put constraints on interactions and variation, the organizational management of the SNI should change its formal structures to fit the complex nature of the organization. In other words, instead of exerting control on interactions, dynamic interactions taking place between teachers and parents should be embraced and encouraged, establishing open lines of communication and information exchange.

Further studies on PTC can benefit from other forms of understanding information flow and knowledge-sharing in school settings. In this regard, social network analysis [37,38] can help to uncover the webs of influence and network structural barriers for communication in school settings beyond the formal organizational chart. This study was delimited to the experience of teachers as internal agents in the CAS. However, further studies will certainly benefit by investigating the role of other agents such as parents and school managers.

Processes of receiving, disseminating, and acting upon the information received from the environment should be revised to allow for the development of the collaborative relationship and organizational response to change. This could be accomplished by creating arenas for discussion and opening channels of communication. Furthermore, for the promotion of a supportive environment that encourages collaborative practices and adaptation, several leadership practices could be implemented in the organization. Organizational leaders could help in the enhancement of parent–teacher collaborative relationships which, in many cases, require facing adaptive challenges.

Finally, with regard to the learning processes involved in PTC at the organization, more opportunities should be given for teachers and other school personnel to share their experiences and challenges with regards to the collaborative relationships with parents and their experiences of its internal and external process. The individual in a formal leadership position could play an important role in sensing and articulating emerging themes and engaging in positive feedback loops [26]. This could be facilitated and motivated by changes at the policy-level, recognizing the importance of PTC. Creating new arenas for communication not only within, but also among schools could create the conditions for open innovation deriving from PTC.

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