Analytic framework for interdisciplinary collaboration in inclusive education

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Received 7 August 2019
Revised 18 December 2019
Accepted 15 January 2020

Abstract

Purpose – The purpose of this paper is to develop an analytic framework for studying interdisciplinary learning in collaboration between schools and child support services. The analytic framework connects the concept of boundary crossing with the social–psychological processes of trust and identity formation.

Design/methodology/approach – The paper is written from a theoretical point of view. Empirical research data from two schools are used to illustrate the use and merit of the proposed framework.

Findings – The framework proved to be useful for identifying the level of co-work in the two schools. In addition, the framework helped to shed light on how the support for trust and identity formation by the school management aids interdisciplinary learning.

Research limitations/implications – The most essential feature of the suggested framework is its use of complex theoretical concepts. Examining each concept in detail would ignore the interconnected nature of concepts in the framework, as well as the fact that it is not yet known how this interconnectedness works. Therefore, the framework is based on a generalised use of the concepts.

Practical implications – The contribution of the framework for practice lies in its potential to shed light on how processes in interdisciplinary collaboration can be shaped. The framework can be used to inform contextual interventions that seek to optimize collaborative structures.

Originality/value – The paper contributes to understanding the complex processes that constitute interdisciplinary learning in collaboration.

This work was supported by The Netherlands Organisation for Health Research and Development.

Journal of Workplace Learning
Vol. 32 No. 5, 2020
pp. 377-388
Emerald Publishing Limited
1366-5626
DOI 10.1108/JWL-08-2019-0099

Keywords Collaboration, Interdisciplinary, Boundary crossing, Expansive learning, Inclusive education

Paper type Research paper

Inclusive education policies in Western Europe and the USA require that schools accommodate equal opportunities for learning and development for all students (Norwich, 2002; Terzi, 2014), which means that mainstream secondary education has to be responsive to a variety of educational needs. Yet, secondary schools are not well prepared for this task (Hedegaard-Soerensen *et al.*, 2018; Kozleski *et al.*, 2013; Sharma *et al.*, 2012; Waitoller and Kozleski, 2013). A means to close the knowledge gap is sought in enhancing collaboration between child support services and schools (Waitoller and Kozleski, 2013). Interdisciplinary collaboration is considered to be fertile ground for professional learning (Carlile, 2004; Engeström, 2014). Both child support workers and teachers possess domain-specific knowledge. It is assumed that in crossing the boundaries of their respective disciplines, actors can share, translate and eventually integrate this knowledge (Akkerman and Bakker, 2011; Carlile, 2004; Daniels, 2011; Engeström, 2010; Hedegaard-Soerensen *et al.*, 2018). This article develops a heuristic model for analysing interdisciplinary learning in collaboration in inclusive educational settings. The contribution of the framework lies in its potential to arrive at a better understanding of the interrelated aspects in collaboration, and how collaboration processes can be shaped. Examples from a case study are used to illustrate the value of the framework.

Interdisciplinary collaboration concerns social learning processes and psychological processes (Edwards, 2009). The social learning processes in interdisciplinary collaboration are well described by cultural-historical activity theory and the boundary crossing theory. These theories help to understand how knowledge is exchanged across boundaries between domains by focussing on structural aspects of the workplace: the rules, the tools and the boundary objects, such as protocols or information systems (Akkerman and Bakker, 2011; Carlile, 2004; Engeström, 2010). The psychological perspective, concerning intrapersonal aspects, receives less attention in the social learning approach (Eteläpelto *et al.*, 2013). Yet, psychological processes at the micro level of interdisciplinary collaboration appear to be closely related to learning processes (Eteläpelto *et al.*, 2013; Roth and Lee, 2007). Especially the formation of trust and a shared identity are regarded to be the proverbial lubricant in learning across boundaries (Beech and Huxham, 2003; Bachmann, 2001; Vangen and Huxham, 2003). Explorative research findings on collaboration indicate that trust and perceived identity are, indeed, major aspects affecting collaboration. As for trust related issues, respondents mention the importance of face-to-face interaction, team building, mutual understanding, and informality; with regard to identity related issues, respondents mention the importance of shared objectives and a sense of belonging (Blackman *et al.*, 2016; Chuang and Lucio, 2011; Distelbrink *et al.*, 2014; Hamill and Boyd, 2001; Sloper, 2004).

Collaboration is a complex process that is not necessarily accessible to observers. Therefore, research that seeks to contribute to the improvement of collaborative practice in inclusive education has to take into account this complexity. To fully understand the processes that bring about effective interdisciplinary collaboration, it is crucial to understand how trust and identity formation relate to social learning. The empirical context, used to illustrate the value of the framework, concerns two mainstream schools for secondary education in The Netherlands. The schools take part in a multiple case study on collaboration between schools, child support services. The data used for this article consist of semi-structured interviews with child support workers and focus group interviews with teachers. In each school, educational staff interacts with child support workers when

students' needs exceed the capacities of the teachers. In each school, proximity of services is pursued: child support workers are part of a support team working within the school buildings. However, the observed level of boundary crossing between teachers and child support workers differs substantially between the two settings.

The first section of this article concerns the central concepts in analysing joint work, being the dimensions of co-work, boundary crossing, expansive learning and the various kinds of knowledge crossing boundaries. The second section addresses the formation of trust and identity in interdisciplinary collaboration. In the third section, levels of boundary crossing, dimensions of trust, and dimensions of transparency are related to the joint work continuum as described in the first section and ends with the depiction of the framework. In section four, two examples from the case study are used to illustrate how the framework can support a more in-depth exploration of collaboration for inclusive educational settings.

Central concepts of social learning in interdisciplinary collaboration

Collaboration continuum

Joint working arrangements come in different shapes and forms. It is therefore crucial to define how collaboration is understood in this study The various manifestations of joint work can be placed on a continuum, ranging from loose connections between organisations or professionals to integrated forms of co-work (Keast *et al.*, 2007; McNamara, 2012).

The first position on the continuum is cooperation. Cooperation means two or more organisations striving for the same objectives, while keeping their own trajectories. Connections are rather loose and predominantly formal (McNamara, 2012). Communication is for the most part restricted to incidentally informing the partner organisation of trajectories. For example, a student may receive treatment by an external child support worker, who reports back to the school. The communication is not part of a protocol. This kind of loosely coupled co-work is the traditional *modus operandi* for schools and child support services in The Netherlands.

The next position on the continuum is coordination. Organisations still follow their own distinct trajectories, but communications are formally regulated. Connections are therefore more firm and durable (McNamara, 2012). As for co-work between schools and support services, coordinated co-work can be observed in structural multidisciplinary meetings. At these meetings, professionals coming from different domains inform each other about trajectories and a certain degree of alignment can be reached. For instance, the student's child support worker shares information about a family intervention trajectory and the school keeps the partner informed about a learning support trajectory. As sharing of information is regulated, it is possible for actors to align interventions. In the example, the school-based student support trajectory may overlap the child support trajectory at some point, and the agencies negotiate task division.

The last position on the continuum is collaboration, the most integrated form of co-work (Thomson and Perry, 2006). Professionals from different domains seek to synthesize trajectories and expertise, moving beyond the boundaries of their own distinct domain. For example, the child support professional and the child's school coach may go beyond mere task division and jointly design an integrated trajectory. As partners become more interdependent, connections tend to be much stronger. Interaction in collaboration is characterized by higher degrees of informality and intensity (Keast *et al.*, 2007).

Boundary crossing

Just like physical borders between sovereign states, boundaries between domains engender a discontinuity of action or interaction. The boundaries between neighbouring practices can be defined as the border between what is familiar and what is unfamiliar (Akkerman and

Bakker, 2011). In crossing a boundary, participants aim to reduce the discontinuity arising from differences (Akkerman and Bakker, 2011). Scholars identify the boundaries as the *locus* of expansive learning opportunities (Carlile, 2004; Engeström, 2014; Nonaka and Takeuchi, 1995; Wenger, 1998). Within their own bounded units, participants develop common meanings and common knowledge (Carlile, 2004; Edwards, 2012; Wenger, 1998). The dynamics of sense making within a bounded unit are inward looking. Knowledge is, therefore, more likely to be reproduced than to be altered and expanded (Wenger, 1998). In contrast, change and innovation occur when interdependent practitioners interact across the boundaries of their distinct disciplines (Daniels, 2011; Engeström and Sannino, 2012) as actors can no longer stick to the common knowledge held in their own practice. Participants have to negotiate common ground that makes sense to all concerned. By combining different perspectives and expertise in a creative manner, collaborators are able develop novel ways to solve complex problems and present-day challenges (Engeström, 2010; Paavola *et al.*, 2004).

In the process, different levels of knowledge boundary need to be crossed. Carlile (2004) suggests three levels of knowledge sharing across boundaries that should be taken into account when actors strive for collaboration. The first level consists of knowledge transfer and is referred to as crossing the syntactic boundary. At the syntactic level, tools such as lexicons and protocols allow knowledge to travel across the boundaries of practice. The second level of boundary crossing consists of knowledge translation and is referred to as overcoming the semantic boundary. At this level interpretations and perceptions are to be aligned and meaning needs to be negotiated. The third level of boundary crossing consists of knowledge transformation and is referred to as passing the political boundary. At this level, objectives, interests and issues of power need to be understood and synthesized. At the political level, knowledge can be transformed as participants combine and hybridize objectives, interests and beliefs (Carlile, 2004; Edwards, 2012).

Identity and trust formation in interdisciplinary collaboration

Identity formation across bounded units

Interdisciplinary boundary crossing implies the existence of separate domains or bounded units. The boundaries are defined by the actual practice within the domains, the shared repertoire of actors and their shared understanding of meaning and motives (Engeström, 2000; Wenger, 1998). By participating in the community, members informally learn about practice, meaning and identity (Wenger, 1998). This is one of the reasons why for outsiders the full complexity of these understandings is inaccessible (Wenger, 1998).

In-group identity is established by signifying similar understandings between members (Ybema *et al.*, 2009). Identity assigned to members of out-groups is equally significant in collaboration (Ellis and Ybema, 2010). The identity of the out-group is constructed in the same way as in-group identity; actions of the out-group are observed, interpreted and evaluated. The identity assigned to out-groups differs in two ways from in-group identity. First, as positive self-evaluation is essential to the individual, the in-group is perceived as more valuable than out-groups (Ybema *et al.*, 2009). Second, as the out-group is observed from the outside, understandings of meaning lack the depth of in-group understandings and are prone to bias or prejudice.

It can be expected that assigned negative identities of out-group members hinder interdisciplinary collaboration. Negative out-group identity would be an obstacle when identity is conceived as being stable and unchangeable. Yet, the constructionist approach of identity theory conceives identity as more flexible and shaped by contextual factor (Koster *et al.*, 2018; Howard, 2000). Identity is affected by interactions between organisations and individuals within organisations (Koster *et al.*, 2018; Beech and Huxham, 2003). Especially at

the micro level, group identity is fluid and may change as a consequence of intensified contact (Koster *et al.*, 2018; Beech and Huxham, 2003). In interaction, members of in- and out-groups develop a sense of shared practice, resulting in a new in-group identity at the frontiers of distinct domains (Beech and Huxham, 2003; Ellis and Ybema, 2010).

Trust in collaboration

Trust is a vital factor in collaboration, as collaboration means entering territories where common knowledge from the own domain is no longer sufficient (Rousseau *et al.*, 1998). It also means allowing partners to peek behind the scenes, allowing them to enter our backstage areas where we can no longer apply our strategies for keeping up appearances (Brattström and Bachmann, 2018; Ellis and Ybema, 2010; Vangen and Huxham, 2003). Trust can be defined in varied ways. In the literature on co-work, trust is seen as an approach, a strategy that reduces unacceptable complexity by forming positive expectations about future actions of other people (Gambetta, 2000). These expectations are based on three factors: sanction or reward, social structure and previous experiences (Brattström and Bachmann, 2018; Luhmann, 1979). Mechanisms that assure sanction or reward can build trust as the trusting partner expects the trustee to avoid sanction or seek reward (Brattström and Bachmann, 2018). Artefacts, like contracts, are based on this principle. Trust in this sense relates to the expectancy of what the partner in collaboration *will* do: his or her reliability. To be reliable partners, the arrangements need to be clear-cut and free of ambiguity. This mechanism, therefore, functions best in fairly uncomplicated contexts that leave little room for divergent interpretations (Luhmann, 1979). The factor of social structures refers to culturally understood structures of hierarchy and authority. Positive expectancy is based on the social position of the partner, his level of education, his being experienced or not and the socially understood evaluation of the profession. Trust here relates to the expectancy of competence, i.e. what the partner in collaboration is *able to* do and is best defined by the term confidence. The factor of previous experiences refers to positive expectations based on interaction with the trustee. The trustor bases his trust on previous dealings with an individual or social group; the interpretation and evaluation of observed action. This kind of trust is fundamentally different from reliability and confidence as it involves interests. The trustor acts upon the belief that the trustee will not actively harm his or her interests (Bachmann, 2001; Luhmann, 1979). Trust in this case relates to the expectancy of what the trustee *will not* do and is best defined by the term trustworthiness (Gambetta, 2000).

Analytic framework for interdisciplinary collaboration

Identity, trust and boundary crossing in relation to the collaboration continuum

So far, it has been laid out that co-work can range from cooperation to collaboration (Keast *et al.*, 2007; McNamara, 2012). The level of boundary crossing can range from rather instrumental knowledge transfer at the syntactic boundary, to translation of meaning at the semantic boundary, and to the knowledge transformation at the political boundary (Carlile, 2004). Identity can range from a distinct us–them identity to a sense of belonging and group membership (Ybema *et al.*, 2009). Trust ranges from reliability, to trust based on competence, and to trustworthiness (Luhmann, 1979). In this section, dimensions of co-work are linked to dimensions of identity and trust.

In cooperation, interactions are incidental and formal. The partner in cooperation is perceived to be the out-group. Boundary crossing mainly takes place at the syntactical level. As for trust, the partner just needs to be reliable: keeping one's word and being punctual.

The second position on the collaboration continuum is coordination. In coordination, trajectories are more tightly aligned. Partners are perceived to be allies: out-group members

willing to join forces and work towards the same objective. Alignment implies that trajectories are negotiated and the methods used within a certain domain are explained. This means that boundary crossing takes place at the semantic level. Whereas in cooperation, the partner in joint work has to be punctual, at the coordinated stage the professional has to live up to the expectations attached to professional standards: perceived competence.

The last position on the collaboration continuum is collaboration itself. In collaboration, the boundaries are much more blurred, as objectives become intertwined in boundary crossing. The in- and out-group merge into a temporary new in-group. Connections are strong and interaction is informal. Boundary crossing involves the political level; by integrating objectives partners become interdependent. Partners have to be trustworthy and not inclined to threaten each other's interests.

The framework

Figure 1 depicts dimensions of joint work in relation to dimensions of knowledge sharing, dimensions of trust, the collaborative identity continuum and the formality of interaction continuum. The graphic representation of real world complexity is a model and therefore represents reality in an abstract and generalised way. For example, as dimensions of trust and dimensions of knowledge sharing cannot be placed on a continuum, the framework seems to suggest that in a cooperative stage only reliability and acts of knowledge transfer occur. Such a clear-cut connection is unlikely to be found in real world contexts. For joint work, however, to qualify as collaboration, there have to be elements of knowledge transformation, trustworthiness and higher degrees of informality and sense of shared group membership. At the same time, collaboration builds on aspects belonging to the level of coordination and cooperation. For example, trustworthiness is added, and will not replace the importance of being a reliable partner. The higher levels, therefore, incorporate the lower level elements.

Case study

The empirical context, used to illustrate the use and merit of the framework, concerns two mainstream schools for secondary education in The Netherlands. In these schools, child support workers are part of a support team that is located at the school. This support team interacts with the teaching staff when students' needs exceeds beyond the capacities of the teachers. The school management supervises day-to-day operation of the support team. The data consist of individual interviews with support team members and focus group interviews with teachers. The focus of analysis was the perceived quality of co-work between the support team and teaching staff. Furthermore, the perception of management support for collaboration was taken into account.

School A: collaboration between support team and teaching staff

At school A, the support team consists of two external child support workers, a school psychologist, a school coach, a coach for students with autistic spectrum disorder and a care coordinator. The level of actual interaction between support team and teaching staff is low.

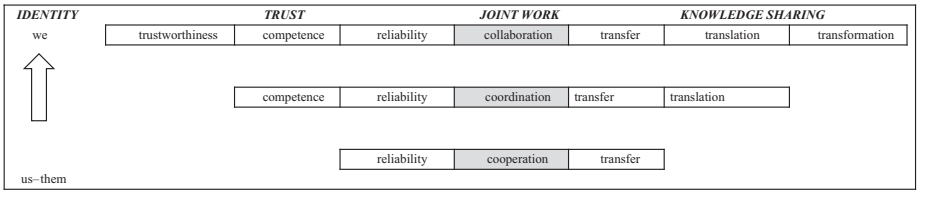

Figure 1.
Analytic framework for analysing collaboration

A coordinator acts as a go-between and handles the communication between teaching staff and support team. Most of the interaction involves formal interaction through email and pupil tracking systems. In the following excerpt, a teacher explains what happens when a student is referred to the support team.

> You hardly get any feedback. [. . .] We receive a notice, they are working on it, but after that, you hear nothing at all. We came together just once and afterwards, we did not receive any information on what's happening. What's wrong with the child?

Teacher

As the interaction is predominantly formal and processed through information systems like email and electronic tracking systems, the level of knowledge exchanged is restricted to transfer and can be labelled as cooperation. The identity expressed by teachers and support team members is an "us–them" identity. There is some sense of working for the same organisation and for the same cause, but still, the distance between the branches remains substantial. In the following excerpt, a member of the support team expresses the difficulties of teaming up with the teaching staff.

> [. . .] it continues to be an issue. How can we move closer? How do we establish a sense of [. . .] we're together in this? Instead of: we do our part, and you do yours?

School coach

In general, both teachers and support team members mention the need for stronger connections. Yet, in reality, the identity can be labelled as an us-them identity.

As for trust, both teachers and members of the support team refer to issues of trust at the competence level. Teachers indicate that, although the support team members are believed to be competent, they do not offer the help that is called for. In the following excerpt, a teacher expresses this notion.

> I am sure they know what they are doing, being trained professionals and all. And I know that they cannot fix a child. They cannot turn the kid into a perfect little angel. Only, sometimes you do feel a bit disappointed when you do not receive the help you were hoping for.

Teacher

The teacher suspects the support team members are competent in what they are doing. Only, he does not seem to have experienced it. In general, teachers indicate that they are in need for help when trying to support special need students, but that they cannot rely on the support team to back them up. Support team members, on the other hand, indicate that they perceive differences in the competence of teachers and their willingness to cooperate. The utterances indicate a lack of trust at the level of reliability and at the level of competence.

School A: perceived management style

The essence of the perceived management style at school A is strictly hierarchical and top down. The school management has total control over the procedures, barely creating space for professional autonomy. The expertise of the team is not consulted in policy design; members are only asked for feedback on a finished product. Such transfer of knowledge and information without translation belongs clearly to the level of cooperation. As for identity, an us–them identity is expressed by members of the support team. They do not feel

supported by the management and experience no connection between their daily work and school policies. In the following excerpt, a school coach describes the lack of attention.

> My team really appreciates what I am doing. But it is never acknowledged by the management. It is never rewarded.

School coach

As for trust, the support team members do not feel trusted to do their work properly. The support team members have limited professional autonomy and do not have a say when it comes to policies that concern their own work. Repeatedly, they report feeling neglected.

> [. . .] If only they came by to just have a look at what we are doing. It's not like we're having coffee all day long. We are actually accomplishing things.

Child support worker

The child support worker appears to be referring to a perceived lack of trust at the level of reliability. This can be labelled as deficit cooperation. The overall picture shows that although teaching staff, support team members and management are working for the same cause and even in the same building, an invisible wall divides the distinct professional groups.

School B: collaboration between support team and teaching staff

At school B, the support team consists of three school coaches, five child support workers, a school psychologist and a coordinator. The level of interaction between support team and teaching staff is high. In the following excerpt, a teacher explains how she develops new practices in collaboration with support team members. A support team member explains how learning works both ways.

> Occasionally, we have, we do have special students. And then, you just try things. When they have a school coach, we work on it together. Say, how are things going? Have you tried this or that? A bit like that.

Teacher

> For a teacher, it is quite helpful to build a positive relationship with the student. Because without a relationship, it's hard work. So, yes, how do you achieve that? They can learn that from me. And I can learn something from them. Like, wait a minute, you are working in a school organisation and this is what we expect from you.

External child support worker

Both utterances concern expansive learning in interdependency. This can be labelled as collaboration.

The identity expressed is ambivalent. In the following excerpt, a teacher acknowledges the existence of two distinct professional groups, working together in unity.

> We just know each other very well. We look out for each other. We, the teachers, do our best to understand what the support team means. You can feel it somehow. We are fully committed, and they are fully committed.

Teacher

This utterance reveals a double identity. An alliance between different professional groups, embedded in a definite sense of team-membership. The alliance can be labelled as coordination, while the sense of team membership can be labelled as collaboration. As for trust, trustworthiness is the main quality being mentioned. In the following excerpt, a teacher expresses his praise for the support provided.

> People look after each other, not just after the students. And the support you receive with contacting the parents or external agencies. That support is very good. Accurate. You do not have to do it on your own. So, yes, my experience has been very positive.

Teacher

The utterance shows that the teacher expects to be helped and does not shy away from receiving help. The support team members are perceived to be trustworthy partners. This can be labelled as collaboration.

School B: perceived management style

At school B, the management style is perceived to be supportive and egalitarian. Coordinators and team leaders are treated as a source for help and advice. Support team members engage in the act of translating as they explain their practice to the management team. This can be labelled as coordination. The identity expressed is, again, ambivalent.

> I really admire the way the school management and staff manage to create a safe environment. It feels good to be part of it.

Support team member

In the utterance, the support team member defines herself as a supportive outsider, an ally. This can be labelled as coordination. In the second part, she defines herself as a member of the in-group. This can be labelled as collaboration. As for trust, the management team appears to encourage and foster autonomy and collaboration at lower levels. The competence of the staff to make their own decisions is trusted. This can be labelled as coordination. The overall picture shows that the professional groups at school B were able to tear down the walls between their disciplines.

Comparing school A and school B

In conclusion, the main quality of boundary crossing in school A is transfer, and the overall quality of boundary crossing in school B is translation and transformation. As for trust and identity, staff members in school A display trust mainly at the level of reliability and competence. Members of other professional groups are defined as out group members, a distinct us–them identity. The level of co-work at school A can, therefore, be defined as a weak form of cooperation. Staff members in school B refer to trust at the level of competence and trustworthiness. Members of other professional groups are perceived to be in-group members.

The case of school B shows that trust and identity can grease the wheels of knowledge transformation. Participants trust each other and experience a sense of kinship, which provides them with a save environment for seeking advice, offering help and trying out new thing. Furthermore, the case shows that trust and identity formation can be actively fostered or hindered by organisational features. In school A, a highly regulated system hinders trust and identity formation among staff members from different domains. In school B, the

competence of staff is trusted by the management, resulting in considerable professional autonomy and sufficient room for informal contact.

Discussion

In interdisciplinary collaboration, professionals learn as they transfer, translate and transform knowledge across the borders of domains (Carlile, 2004; Engeström, 2014). The analytic framework suggested in this article served as a heuristic model for getting a firmer grip on the complex processes of interdisciplinary learning in collaboration. As demonstrated, the framework helped to identify the level of co-work and the related levels of boundary crossing and learning in the two schools. In addition, the framework helped to unearth aspects in collaboration that can be influenced by participants and management. The school B case shows that trust and identity, serving as a catalyst for higher levels of boundary crossing, can be fostered by providing room for interaction, and by creating a trusting environment that accommodates learning.

The most essential feature of the suggested framework is its use of complex theoretical concepts. Bringing together concepts like boundary crossing, trust, formality and identity in an analytic framework is bound to produce a generalised use of each concept. However, to study complex settings, one has to acknowledge and appreciate all these concepts within the context. Examining one concept in detail would ignore the interconnected nature of concepts in the framework, as well as the fact that it is not yet known how this interconnectedness works. For example, identity and trust formation in school B facilitate knowledge transformation. The analysis showed that the formation of identity and trust, in turn, is enabled by a trusting management team.

To improve our understanding of interdisciplinary collaboration, it is important to foster a close interaction between theory and practice (Alvesson and Sköldberg, 2009). Using the framework as an analytic tool helps to unearth latent relations in the data that add to an improved theoretical understanding of interdisciplinary learning in collaboration. Ignoring the contextual interconnected nature of concepts would be seriously limiting to the empirical data-theory relationship and the iterative process of theory development (Alvesson and Kärreman, 2011).

The suggested framework can be used to improve practice and to further theoretical insights. From the perspective of practice, the value of the framework lies in its potential to inform contextual interventions. The framework can be used to identify the quality of co-work and interdisciplinary learning in a context. Furthermore, as the framework enables the analysis of essential elements in the collaborative process, it can be used to develop interventions targeted at the optimization of collaborative structures and their learning potential. At the same time, the framework can be used to identify explanatory outliers in empirical research that help to arrive at a more thorough theoretical understanding of interdisciplinary collaboration. For example, the data may reveal the importance of proximity dimensions, a concept not yet addressed within the framework. These outliers, in turn, can inform the further development and the refinement of the model. In doing so, the framework serves as a tool that helps to create knowledge across the boundary between theory and practice.

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