

## **The SchoolWeavers Tool:**

### **supporting school leaders to weave learning ecosystems**

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#### **Abstract**

Social capital has recently emerged as an effective approach to rethink schools as wider learning ecosystems where students, teachers, and families have greater access to learning resources through social interaction. In this sense, the literature has not provided research-based assessment tools that document school leaders' abilities to weave social relationships between actors within the school and across the community. This paper presents an international experts' validation of the SchoolWeavers Tool, an online resource that supports school leaders to assess the health and potential of their school ecosystem and provides meaningful feedback to weave social and professional capital and lift learning opportunities and educational goals. Theoretical validation was conducted in the first round by 15 experts from 8 countries with prior experience in network leadership in education, and in the second round, with 54 school actors from the same 8 countries. The final model provides an internationally validated tool that supports school leaders' capacities to weave learning ecosystems and improve collective effectiveness, internal and external collaboration, innovation, and equity. Furthermore, the SchoolWeavers Tool creates research opportunities to analyze and discuss commonalities and differences regarding climate and culture in school ecosystems across the world, allowing school leaders and researchers to support systemic impact and sustainable improvement.

**Keywords:** Educational leadership; weaving; social capital; school ecosystem; innovation; school–community collaboration.

## Introduction

There is widespread consensus that educational systems worldwide are not necessarily focused on fulfilling the complex needs of the present and future generations who will live in and lead our rapidly changing world (UNESCO, 2014; Clayton, 2016; Liou et al, 2019). Scholars worldwide suggest that current educational systems are often solely focused on knowledge-based and standardized one-size-fits-all curricula, where students are taught in single-subject silos (Clayton, 2016). Additionally, schools are struggling to find solutions beyond the school walls and often do not have the capacity to take advantage of social relations and community capacities to overcome local educational needs (Godfrey and Brown, 2019; Longás et. al, 2019; Daly and Liou, 2018). In this sense, the traditional school organization is based on often rigid, disconnected, and fragmented structures that favor isolated professional cultures (Liou and Daly, 2018; Díaz-Gibson et. al 2019; Daly, 2010).

Within this context, school principals worldwide share 2 big external pressures that provoke a stressed school climate and a silo-centered approach: 1) an overly focused pressure on test scores (Pino-Yankovic and Ahumada, 2020; Díaz-Gibson et. al, 2017; Daly, 2010), where schools narrow their work to a range of assessment tools for language and math, and 2) an emergent pressure regarding the necessity of innovation and change (Díaz-Gibson et. al 2019; Clayton, 2018; Civís, et al, 2019; UNESCO, 2014), where schools are challenged to provide an updated education based on competences, where soft skills become important. Moreover, external pressures on achievement, or on producing innovative practices can reduce leaders' focus of attention on the whole organizational process that leads to these final results (Godfrey and

Brown, 2019; Díaz-Gibson et al 2017; Daly, 2010; Liou et al, 2018). Thus, these 2 vectors are difficult to manage and align because both can be understood as a reinforcement of a current silo-oriented system that inhibits school–community collaboration and potentially narrows learning opportunities for students, professionals, and families.

In this sense, although many guidelines and tools support school leaders’ assessments of achievement, fewer tools support leaders to better assess school cultures. These cultural assessments may measure a school’s ability to engage with the whole community, empower trusted and collaborative relationships between actors within the school (e.g., teachers, staff, parents, and students) and across neighborhoods, and enhance learning opportunities that are responsive to local educational challenges. These cultural assessments have the potential to document movements from ego to eco-systems that make stronger connections between and among educational community members.

This paper aims to provide novel insights into why so few tools support school leaders to weave collaborative and innovative ecosystems that enhance learning opportunities for all school actors. This paper presents a validation of the SchoolWeavers Tool. This web-based resource is co-designed by scholars from the NetEduProject ([www.neteduproject.org/en](http://www.neteduproject.org/en)) and allows school leaders worldwide to assess the health and potential of their learning ecosystems by considering the voice of teachers, staff, diverse community professionals, school leaders, students, and families.

The SchoolWeavers Tool enhances leaders’ capacity-building to mobilize and weave resources embedded in the ecosystem by providing comprehensive data and favoring an informed dialogue across the community. First, 15 experts from 9 countries—Spain, Denmark, the United States, England, Turkey, Greece, Chile, Colombia, and Taiwan—reviewed the assessment model that grounds the measurement of the tool and provided significant insights into the development and

growth of school-based learning ecosystems from an educational leadership perspective. Second, 54 school actors from the same countries reviewed the significance and validity of items and provided a grounded perspective to better adapt to context realities. Finally, the paper provides the “Weaving circle model” for systemic impact in school-based learning ecosystems.

## **Understanding Schools as Learning Ecosystems**

In the 21st century, efforts are being made at the educational level across the world to shift from organizational models based on hierarchical authority and control to more distributed and network-connected organizational forms (Daly, 2010; Torfing & Diaz-Gibson, 2016). This shift suggests a series of transitions in education from centralized leadership to the distribution of leadership, from independence to interdependence, from responsibilities to co-responsibility, from specialists to multidisciplinary generalists, and from dogma to dialogue (Godfrey and Brown, 2019; Daly, 2010; Daly and Liou, 2018). Thus, to improve educational action, schools have become more aware of the need to strengthen the quantity and quality of social relationships among actors (Díaz-Gibson, 2019; Liou, 2019) and connect with their wider community (Longás et al, 2019; Díaz-Gibson et al., 2016; Díaz-Gibson et al., 2019).

Bronfenbrenner (1999) suggested that to understand schools and learning with high “ecological validity,” generating authentic knowledge that could be applied in real life and not just in ideal labs we necessary to study the various subsystems that ecologically affect youth and schools as individual, but interconnected units. In this sense, the perspective of educational change and innovation in schools varies and is acquiring a systemic and relational focus because each school is located in the context of a neighborhood, which is highly relevant as an informal education space. Hence, the focus on social relationships as a specific entity to be considered by school leaders to mobilize resources across schools relies on the idea of social capital.

Social capital is generally defined as the resources embedded in social networks, namely, resources that can be accessed or mobilized across the network through a purposive action (Lin, 2009). Theorists such as Bourdieu (1986), Coleman (1988), Putnam (1995) have shared the general understanding that social capital resides in the resources that exist in relationships rather than in the resources possessed by individuals. These authors highlight the importance of social networks in the conception of social capital. Social network theory builds on the idea that social resources such as knowledge, information, and expertise are exchanged through informal networks of relations between actors in a system. A fundamental element in this theory is concerned with the pattern of social ties between actors in a social network that create an overall social structure (Scott, 2000). In this sense, actors with more ties are more likely to quickly move resources across the network because they are well-connected to many actors (Daly, 2010, Lin, 2009). By contrast, actors with fewer or no relational ties may have limited access to the mainstream information and may not be able to efficiently move information because their communication channels are less well-connected (Liou et al, 2019). Hence, leaders must have a clear sense of the schools' social networks to better understand how the resources flow in the wider ecosystem and to promote broader opportunities to all the actors.

International research has investigated multiple correlations between social capital and different types of educational outcomes in schools. For example, researchers have demonstrated a positive relationship between social capital and academic achievement (Civís, et al, 2019; Daly et al. 2014; Díaz-Gibson, et al, 2017; Gasevic et al., 2013; Liou et al., 2016) and indicated the importance of networks where teachers interact, collaborate, and co-produce educational innovations (Liou and Daly, 2019; Daly and Finnigan, 2010; Moolenaar et al., 2010; Penuel et al., 2009). Thus, we acknowledge that social capital is correlated with school achievement and an innovative condition that may play a role in supporting teachers' relationships and

performance by providing a safe environment in which school actors are willing to take risks to improve education (Civís, et al, 2019; Díaz-Gibson et al, 2019).

Thus, schools as living ecosystems can be understood by thinking about schools as social networks and considering the diverse actors involved and their multiple interactions. The concept of a learning ecosystem is linked to the practical need to understand and conceptualize the dynamic, diverse, and interactive nature of the relationships between businesses, educational institutions, and practices enabled by digitalization (Virolainen et al, 2020). Clayton (2016) defined ecosystems in education as the intersection between a wide array of innovation actors, such as teachers, school leaders, students, parents, technologists, civic entrepreneurs, designers, researchers, philanthropists, and policy makers, and the factors that enable them to collaborate to disrupt existing practice, design new learning models, and build new learning communities beyond the traditional notion of a school.

Godfrey and Brown (2019) defined a school ecosystem frame based on 3 principles: 1) the need to connect all school change ultimately to its intended educational impact on children, and by corollary to society; 2) to ensure that elements of the system—especially at the individual-school level—are not viewed reductively or in isolation; and 3) to view system change as both interconnected and working in patterns of multidirectional cause and effect (Shaked et al, 2018).

Thus, the idea of a school as a learning ecosystem embraces a networked and systemic understanding of all school units, a collaborative action within and across the community to increase social capital and collective learning, and finally, the innovative and disruptive component as a central focus that promotes systemic impact across the whole ecosystem.

### **Weaving learning ecosystems as an emergent school leadership model**

Transforming a school into a learning ecosystem demands new forms of educational leadership. Thus, principals and educational leaders must be systems thinkers and focus on relationships between people and entities that can strengthen the school purpose, establishing common objectives, promoting trust, connecting synergies, and facilitating a shared discussion and a collective construction of knowledge (Díaz-Gibson, et al, 2016; Godfrey and Brown, 2019). In this sense, a school leadership approach from a social and relational perspective has gained increased research attention in the last 15 years. Distributed, shared, and democratic leadership demonstrate that school leadership involves multiple leaders and is premised on interactions rather than actions along with the establishment of new teams, groupings, and connections for specific purposes (Leithwood, 2019). Gumus et al. (2018) provided evidence that distributed leadership, despite being a relatively new model, is the most studied leadership model in educational research in our times and has received empirical attention.

Although a distributed leadership approach is based on relational and nonhierarchical purposes, it is not completely aligned with the efforts necessary to rethink schools as learning ecosystems. Hence, a networked leadership approach adds to the distributed model and is a deliberative attempt to build network structures for systemic action within schools and across the community. Networked leadership is considered a different type of nonhierarchical leadership, where information and expertise are substitutes for an authority structure through a self-organizing process, held together by mutual obligation that develops over time by reaching a consensus on decisions (Agranoff and McGuire, 2003; Spillane and Orlina, 2005; Díaz-Gibson et al, 2016). Networked leadership becomes a social phenomenon stretched across individuals and groups, and its specificity relies on its network approach, underlying the social nature of organizations and the need to focus on the quantity and the quality of relationships as a means to promote human and social capital. This powerful interaction of internal and external connections has also

had rich support in the social network literature, which suggests the importance of creating a network of ties through which resources may flow in support of goals (Daly, 2012; Liou et al, 2019). Moreover, the network literature has also indicated that a dense constellation of relationships surrounding an educational organization may provide additional support and better facilitate efforts to create change, given the robust nature of dense connections (Cross and Parker, 2004; Díaz-Gibson et al, 2019). In addition, these dense relationships support the development of the complexity of the entire network, potentially resulting in desirable outcomes (Liou, 2019; Daly, 2010).

Furthermore, the concept of weaving is emerging exponentially worldwide as a transdisciplinary leadership perspective that embraces a relational, distributed, networked, and systemic approach. Weaving is defined as an approach to leadership that intends to transition from ego to eco-system by relying on curating circles, hosting conversations, building trusted relationships, and shepherding people with highly diverse institutions, roles, backgrounds, and perspectives into meaningful collaborations that have positive systemic impacts (Luksha et al, 2020).

A network weaver is aware of networks around them and explicitly works to make them healthier, helping people identify interests and challenges, connecting people strategically where there is a potential for mutual benefit, and serving as a catalyst for self-organizing groups (Holley, 2012). Moreover, weaving is a networked leadership practice with a profound focus on system thinking and systemic action that also adds systemic change as a key orientation of collaborative efforts. Additionally, weaving entails the idea of securing the health and the potential of the wider ecosystem by cultivating relationships between people and encouraging the leadership to lead organizations as living cells. Thus, weaving as an educational leadership approach completely aligns with the networked, collaborative, systemic, and disruptive purposes of learning ecosystems.



## **Validation process of the SchoolWeavers Tool**

The SchoolWeavers Tool was created between 2018 and 2020 by the NetEduProject international group of scholars and practitioners ([www.neteduproject.org](http://www.neteduproject.org)) and intends to build a research-based online resource that supports school leaders to become weavers, allowing them to assess and improve their learning ecosystems, collecting real time data, and monitoring the ecosystem growth. Specifically, the SchoolWeavers Tool supports school leaders to assess their school's learning ecosystems' health and potential and then receive contextualized feedback and leadership tips to improve.

This paper focuses on the initial assessment functions and claims to validate its measurement model and builds on our previous work (Díaz-Gibson et al, 2013 and 2017; Daly and Liou, 2018; Liou et al, 2019). Considering the assessment functions, the tool collects information from all community actors: teachers, leadership teams, staff, families, students, and other professionals involved from diverse institutions. All these actors responded to an online survey on climate and culture in the school and community. Once the responses are gathered, the tool automatically displays general and segregated results in a dashboard that illustrates the ecosystem's potential.

The validation was conducted between 2018 and 2019 by a pool of 15 experts with prior experience in network leadership in education research and practice (median = 5 years), 7 of them were scholars who had previously collaborated with the NetEduProject and were familiar with the existing measures, and 8 of them were external scholars who worked and reviewed the model for the first time. These scholars had published papers on educational leadership in impact journals during the last 5 years and were working in research departments focused on network research with an international overview. Specifically, the number of scholars per country was as

follows: 1 from Chile, 1 from Colombia, 3 from Denmark 3 from the United States, 3 from the United Kingdom; 2 from Spain, 1 from Taiwan and 1 from Turkey.

### *Step 1: Initial departure*

The measurement model that served as an initial departure was initially built and tested in 2013 in communities in Spain, Denmark, and the United States (Díaz-Gibson et al, 2013), providing a comprehensive framework that linked network leadership strategies to specific indicators of social capital at the community level. The model was formed by 5 domains—Shared Commitment, Transversality, Horizontality, Collaboration, and Innovation—with a total of 43 items and was designed to collect information from the diverse professionals involved in the local learning ecosystem. Departing from this initial model, an international validation process was undertaken to theoretically review and adapt the model to a school–community based perspective, claiming to inform and support school leaders across the world to strengthen their learning ecosystems, enhancing internal and external relationships that provide greater learning opportunities for children and for the whole local community. Experts were asked to review the model and identify strengths and limitations for further discussion.

### *Step 2: Expert discussion*

Step 2 of the expert validation process was developed in a 2-day Workshop held in Barcelona (Spain) in November 2018, where 8 of the 15 experts involved in the process engaged in a face-to-face discussion on 3 main topics: 1) analyze opportunities and limitations of the initial measurement model (Díaz-Gibson et al, 2013); 2) discuss the domains that define a school-based learning ecosystem and the actors involved; and 3) discuss the balance between the global and local use of the tool. Consequently, experts' discussion ended with 3 consensual agreements on the structure of the assessment model.

The first agreement was related to the domains that define a school-based ecosystem. In this sense, to strengthen its innovative and inclusive potential, the proposal was to add 3 new domains—Equity, Trust, and Personalized Learning—to the model to deepen the trust in and purpose of relational conditions and to consider the orientation of the learning ecosystem toward a student-centered and social justice approach.

The second agreement was related to the tool respondents. The experts identified potential ecosystem actors and suggested a set of participants be added to the assessment model: a) *School Leaders*: All formal leadership positions such as principals, managerial teams, and medium-level leaders; b) *Teachers*: All teachers in the school, including teachers of core subjects and the arts; c) *Staff*: All certified and classified staff members operating in the school, such as a psychologist, speech therapist, social worker, librarian, cafeteria worker, administrative worker, and maintenance worker; d) *Community professionals*: All professionals and volunteers that work in a different organization in the community but collaborate with the school on a project, program, or activity; e) *Families*: All parents that have child(ren) in the school; and f) *Students*: All students from the school aged <10 years.

As a final agreement, experts discussed how to enhance the global and local measurement capacities of the tool. The conversation was based on the balance of having a global tool that could capture ecosystems' measures across countries and cultures that could adapt to local specificities of each context. In line with this purpose, we changed the general model structure by proposing to add scales as a medium unit of measure between the domains and items. The experts suggested that domains and scales could be 100% shared across countries and languages but that items within the scale could vary with the purpose of adapting to context issues. The variation would be related to the wording, and would remove and add context-based items if necessary. The experts concluded that this local balance would not only enhance the impact of

the tool by favoring both the model consistency and results comparison across, but also favor the significance of the measures in each of the countries.

After the Workshop, the model was reworked and adapted by the project coordinators, who added existing domains, scales, and items for social justice and equity (Enterline et al, 2008), Trust (Bryk and Schneider, 2003) and Personalized Learning in schools (Van Harlem et al, 2019), and created new scales that considered experts' comments and the literature. As a result, an initial school-based learning ecosystems model was completed in English.

### *Step 3: Expert validation*

For the expert validation process, we created a measurement model sheet where experts were asked to comment on 4 points responding to specific questions: 1) *Domain wording* – is the wording of the domains significant in your context? Any idea on alternative words that keep the meaning described by the items? 2) *Scale and Item Reliability* – to what extent does each scale define the dimension? Rate the scale consistency from 1 (low – does not contribute to defining the domain) to 5 (high – contributes greatly to defining the domain); to what extent does each item define the scale? Rate the item consistency from 1 (low – does not contribute to defining the scale) to 5 (high – contributes greatly to defining the scale). Share some comments on the scale/item as nuanced ideas, reformulation, and others; 3) *Extra Scales and Items* – do you find other scales/items that are significant in your context that describe the whole domain? and 4) *Parallel Items for Diverse Actors* – what other actors could have information on the health and potential of the school ecosystem? For each existing item for educators, add parallel items to be responded by other members in the community, such as staff, parents, and students.

In summary, if 2 or more reviewers agreed on an alternative wording for a domain, it was renamed; if 2 or more reviewers proposed an extra domain it was added; if 2 or more reviewers considered a scale or an item to be confusing, it was modified according to their comments; if 2

or more reviewers considered an item to be irrelevant, it was eliminated; and if 1 or more of the reviewers added an item, it was generally accepted. The main disagreements between the experts' perspectives were regarding the wording of the items and domains.

The majority of reviewers commented that the domains were appropriate but suggested a few significant changes. First, to modify the domain of Transversality that was transformed into empathic communication, highlighting the actor's communication was necessary in an educational community ecosystem and nurturing communication items (Beattie, 2010). Second, a suggestion was made to fuse the domain Horizontality with the domain of Shared Commitment regarding their similarities. The domain was finally renamed Shared Purpose which included the indicators of shared commitment but excluded indicators of community decision-making because they were fully represented across the model. Regarding the scales and items, most of the comments suggested modifications; as a result, 2 were combined and others were added.

In the final part of Step 3, the project coordinators completed the revision process and created a unified model, which was sent to all the experts, to obtain the final qualitative feedback on the final result. In general, the experts' final recommendations helped to refine the model by changing minor wording concerns, removing some items, and renaming some scales. Once the experts' validation was completed, the assessment model was translated from the English version to a version for each of the native languages of the NetEduProject scholars' countries: Spanish, Catalan, Danish, Turkish, and Mandarin Chinese.

#### *Step 4: Actors feedback*

All the scholars involved conducted a local validation by respondents in the 6 languages of the tool. Thus, the aim of the validation to receive feedback from each specific profile of tool respondents and adapt the item's wording to the local school context. Scholars were asked to search for participants from 2 diverse schools in an urban context: 1 down town and 1 on the

outskirts. Participants were asked to rank, from 1 (lowest) to 5 (highest), 2 qualities from each item: the clarity of the sentence and the importance of the content. In summary, 3 school leaders, 3 teachers, 3 staff members, 3 community professionals, 3 families, and 3 students carried out the revision in 6 countries, resulting in a total of 54 school participants. This final stage helped us to adapt to language and cultural differences across countries, and embrace the local realities to strengthen the significance and the impact of the measurement.

## Results

The final assessment model of the SchoolWeavers Tool is a new global model that captures emergent international perspectives on weaver practices and school-based learning ecosystems' development and growth in a reliable and comprehensive manner. The model is formed by 7 domains and 24 scales (Table 1) and contains 6 linked surveys for the 6 types of participants; all responses are recorded on a 6-point Likert scale that captures the level of agreement with the items. Specifically, 94 items were for school leaders, teachers, staff, and diverse community professionals; 59 for families; and 46 for students. Hence the SchoolWeavers Tool entails a theory of change that support school leaders to become weavers and transform their organizations into a thriving learning ecosystem.

Table 1. SchoolWeavers Tool Model

Domains	Scales	N of Items	Total Items
Shared Purpose	Shared vision among the community	3	13
	Shared responsibility	5	
	Distributed leadership	3	
	Cohesion in the school community	2	
Empathic Communication	Communication flow	3	10
	Understanding the community	3	

	Empathic dialogue	4	
Trust	Leadership team trust	3	16
	Individual trust	4	
	Collective respect	6	
	Collective trust	3	
Collaboration	Collaboration by actors	3	11
	Community collaboration	5	
	Resources for collaboration	3	
Equity	Social justice beliefs	8	12
	Social justice practices	4	
Personalized Learning	Learner agency	5	17
	Responsiveness of the structure	5	
	Dialogue	4	
	Data management	3	
Innovation	Innovation climate	5	15
	Community involvement in the innovation process	4	
	Resources for innovation	3	
	Knowledge sharing	3	
<b>Total of 7</b>	<b>24</b>	<b>94</b>	

This study defines a learning ecosystem as a social infrastructure formed by diverse actors that share a purpose, and engage in collaboration to co-design and co-implement innovative responses to existing social and educational challenges. In this sense, learning ecosystems provide a new understanding of schools from a systemic perspective of school actors and their relationships; challenge traditional organizational boundaries while providing place-based focus on local schools, neighborhoods, cities, or transnational networks; have social capital based on systemic and cross-sectorial collaboration; and pursue systemic impact. Thus, the SchoolWeavers Tool focuses on reimagining traditional schools as learning ecosystems that become porous organizations where a constellation of actors within the school and across the

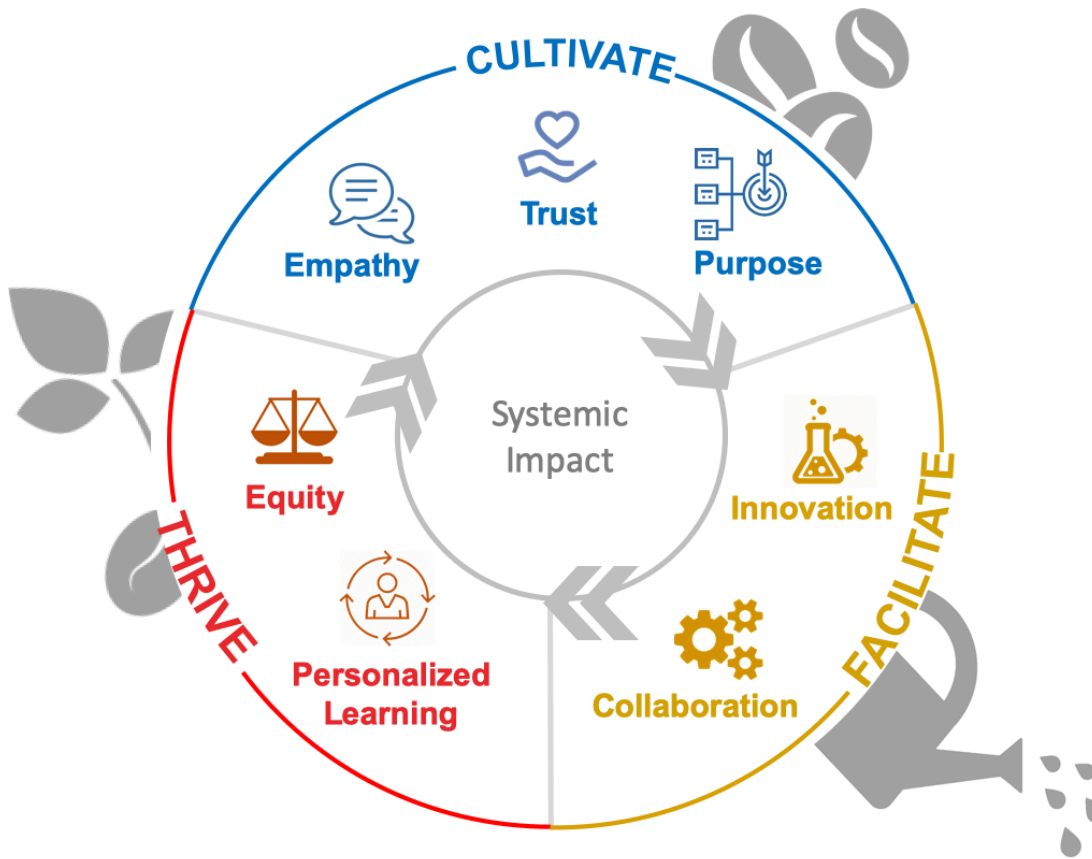
wider community collaborate to disrupt existing practices and increase learning opportunities for all.

From our collective standpoint, the school-based learning ecosystems approach challenges a traditional “silo” culture by thinking and acting ecosystemically; building trusted, purpose-driven, and empathic relations across the diverse actors within and beyond schools; and facilitating meaningful and collaborative interactions that provoke systemic impact, disrupt existing practices, and enhance learning opportunities.

The story of the SchoolWeaver tool change theory (Figure 1) describes the weaving circle of action to achieve systemic impact. The weaver role is like an “ecosystem gardener,” because—as real gardeners do—weavers also plant, cultivate, shape, harvest, and regenerate educational projects, learning communities, experiences, and trajectories within complex living educational ecosystems (Luksha et al, 2020). Thus, the weaver model enacts a circle of creative and transformative action that pursues changes across the whole ecosystem by cultivating and generating the energy flow for relationships to flourish, and facilitates the climate to thrive, continuing the ecosystemic weaving circle.

Figure 1. Weaving circle for systemic impact





The first step of the weaving circle is “cultivating relationships.” Weavers consider social relationships between the diverse actors in the educational ecosystem as a fertile ground that needs to be cultivated with special care to empower individuals, align forces, and generate the climate necessary to mobilize resources and efforts for learning and improvement. Thus, to inspire a culture of openness, mutual respect, and improved teamwork, weavers must cultivate 3 seeds that become the 3 key domains to be promoted: Empathy, Trust, and a Shared Purpose.

Initially, an empathic communication strategy claims to increase the collective feeling of being connected, and deep into relationships that lead to win–win outcomes. Empathy is based on showing another individual that he or she is listened to and that his or her inner thoughts, emotions, attitudes, and values are being understood (Rhodes et al, 2004); this is an honest way of being with others, without put-downs and without any intellectual diagnosis implying wrongness (Rosenberg, 2006). Huda et al. (2017) described that compassionate-based empathy is

a driver of harmonious relationships, defined as the empathetic awareness engaged entirely in helping with difficult situations to promote deeper connections and thus a greater sense of inner peace. Hence, Empathy is a seed that strengthens true knowledge and mutual understanding between people, cultivating honest and meaningful connections that become a foundation for activating processes of co-creation between actors in the school ecosystem.

Second, Trust is foundational for sustainability and cohesion between ecosystem actors and can be defined as a relational element that exists in a role-relationship that maintains mutual obligations and expectations between individuals and others based on the willingness to be vulnerable to certain levels of risk (Lin, 2009; Tschannen-Moran, 2004). Research has suggested that trust plays a critical role in facilitating norms for collaboration and social cohesion (Bryk & Schneider, 2002; Hoy, 2002); fostering effective communications and knowledge sharing (Levin, Cross, Abrams, & Lesser, 2004; Tschannen-Moran, 2004); and facilitating the development and sustainability of community collaborations (Little, 2003; DuFour, Eaker, & DuFour, 2005). However, higher levels of trust have also been linked to school improvement (Daly, 2009; Stoll et al, 2006). Thus, trust is an essential seed that needs to be consciously cultivated and sustained across the whole ecosystem to unlock social infrastructures, activate the resource exchange flow, and increase the quality of network climate.

Third, a Shared Purpose intends to cultivate the alignment of perspectives and expectations across the ecosystem actors. A specific effort is necessary to integrate individual perspectives to generate a shared commitment and purpose (Mandell and Keast 2009; Renée and McAlister 2011; Sorensen and Torfing 2009) and value diversity. Moreover, scholars have suggested that to cultivate a shared purpose across the ecosystem, efforts to be made to align goals and interests such that they frame a common focus based on what members share and their mutual obligations (Kamensky, Burlin, and Abramson 2004; McGuire and Silva 2009). Additionally, the purpose

alignment involves the capacity for building a dynamic role of leadership, based on the added value and resilience provided by the existence of multiple and diverse leaders throughout the ecosystem (Leithwood, 2019; Longás et al, 2019; Mandell and Keast 2009). Thus, a shared purpose is a central seed to start the collaborative process by constructively managing actors' differences and advancing them beyond the least common denominator.

The second stage of the weaving circle starts during the ongoing cultivation process , and optimal levels of empathy, trust, and a shared purpose are achieved. At this point, weavers need to water these seeds and provide the energy flow for a co-creative climate to flourish. Thus, facilitating collaborative and innovative processes becomes crucial for thriving and provoking systemic change in a school-based learning ecosystem.

An initial collaborative perspective from weavers encourages a sense of community in which trusting relationships between and among professionals is generated and supported (Dinsmore & Wenger, 2006; Liou et al., 2016). Hence, building a collaborative culture, distributing leadership, and structuring the educational organization to facilitate collaboration are crucial practices of successful school leaders (Leithwood, Harris and Hopkins, 2019). In line with this purpose, an increase in the cohesion and connectivity of social relationships among professionals may facilitate the generation, application, and diffusion of new knowledge and evidence and shape collaborative and innovative climates (Daly et al., 2018; Moolenaar and Slegers, 2010). Thus, supporting formal and informal social interaction with peers is a critical factor that facilitates learning processes (Gasevic et al., 2013). Moreover, critical to the development of creative responses and innovation is a supportive organizational climate that stimulates opportunities to engage in discussion and collaboration (Ainscow and Howes, 2007; Chapman and Fullan, 2007; Moolenaar and Slegers, 2010). Innovation within ecosystems re-orientates power and energy to communities in recognizing the capacity and capability of people and citizens as agents of

change, with innate expertise and insight into solving problems closest to their source (Clayton, 2017). Hence, weavers need to facilitate a supportive and collaborative climate among all ecosystem actors, oriented to rethink and disrupt existing practices within the system, enhancing learning opportunities for all.

The final stage of the weaving circle is oriented toward the ecosystemic support students to thrive in the world. This stage relies on the need for grounding innovative processes and practices to set students in the center of the action as active learners in a diverse society. After cultivating the seeds in the ecosystem, caring and watering are necessary to achieve a suitable climate, where we expect students to individual and socially flourish. These are represented by the domains of Personalized Learning and Equity. Personalized Learning contributes to the understanding of and creation of formal and informal learning environments and experiences co-tailored in the educational ecosystem to the unique needs and strengths of each student (Cheung & Slavin, 2012; Hughes et al., 2013; Martin, Klein, & Sullivan, 2007), allowing students to have greater control and ownership of their learning as a means to prepare them to be autonomous, self-regulated learners (Buckley, 2006). Thus, Personalized Learning is a person-based approach that enables students' voice and choice in what, how, when, and where they learn (Abel, 2016).

In this sense, the domain of equity contributes the notion of education for social justice based on the recognition of significant disparities in the distribution of educational opportunities, resources, achievement, and positive outcomes between minority or low-income students. Thus, educating for social justice involves not only the pedagogical strategies and methods for teachers and educators to use but also what they believe, how they think about their work, and their larger connections, the frameworks through which they interpret what is going on in the learning process, and how they identify and challenge inequities (Enterline et al, 2008). Hence, the

weaver circle ultimately aims to contribute to the broader purpose of education in the social and emotional growth of young people into democratic citizens (Cranston, 2013, p. 133).

## **Conclusion**

In this paper, we elicited the process of the international validation of the SchoolWeavers Tool assessment model, providing the ‘Weaving circle for systemic impact’ as a new leadership approach where school leaders become weavers of their local learning ecosystem. Thus, in this paper we advance on the understanding and the practice of weaving school-based learning ecosystems to enhance systemic impact, personalized learning and equity. Also, the study gives a robust and reliable structure to the SchoolWeavers Tool as a resource that supports school leaders in 8 diverse countries to assess and improve their own learning ecosystems<sup>1</sup>. Through engaging with the tool, school leaders can obtain a comprehensive diagnosis of the health and potential of their learning ecosystem, enhance their connections inside and outside their schools, and provide new learning opportunities for students and the community, increasing collaboration, inclusion, social capital, and the whole innovative potential. Additionally, researchers have a powerful instrument to collect significant information and create new knowledge on the growth of school-based learning ecosystems and its effectiveness at providing significant educational outcomes in diverse contexts. Moreover, the SchoolWeavers Tool is a dialogue instrument that can bring together school principals, change leaders and education researchers to collectively discuss and learn from one another, enriching local opportunities for educational change.

A big milestone in this challenge, as is mentioned in the validation process, is to balance the global and local needs to better support school principals and researchers in their own local context, but at the same time being significant in a global level, where the whole community of

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<sup>1</sup> In this site <https://www.netedutools.org/school-weavers/> you can login and access the SchoolWeavers Tool

change leaders and researchers can benefit from global and shared measurements while adapting to context issues that are diverse and require nuanced support. In this sense we will continue learning and developing both win-win strategies to find the correct ‘glocal’ balance.

Finally, the next step of the SchoolWeavers Tool is to develop further test runs in local settings of participant countries with diverse schools engaged; so as to find new interested partners as researchers and change leaders from educational organizations in other countries that want to join us, become part of the NetEduProject and work on the tool translation and local test to their home country. However, initial tool-test-runs in the participating countries will claim to improve the tool operational processes, leading to reliable and research-based resource that can support school leaders to work systematically with the educational ecosystem, and provide researchers the chance to gain reliable research knowledge of processes and results alongside.

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