Building Social Capital for Constructive Adaptive Capacity under Social Stress

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Abstract

Purpose

This study examines how a school progressively built its social capital for agile adaptation to provide inclusive and effective fully online learning provisions through intentionally enhancing its architecture for learning.

Design/methodology/approach

We conducted a case study to examine how School A was able to respond rapidly and progressively to the demand for quality online learning provisions in the face of unanticipated school closure with an uncertain end-date. Video-recordings of online school sharing sessions, interviews, and documents provided by the school constituted data sources for this study.

Findings

In creating a collective new norm for the implementation of online learning, a school needs to enhance both structural and cognitive aspects of its social capital. School A achieved this through intentional changes to its architecture for learning (i.e. organizational structure, interaction mechanisms, mediating artifacts and technology) when deliberating measures to deliver the changes under periods of serious social stress.

Originality

Adaptive capacity is a core demand on the social capital of schools and organizations under the "new normal" when the future is unpredictable. This paper uncovers the connection between a school's architecture for learning and its adaptive capacity.

Introduction

The global pandemic of COVID-19 has led to temporary school closures in most countries around the world, affecting over 60% of the world's student population (UNESCO, 2020). Schools in Hong Kong were among the first to announce in-person class suspension starting February 3rd, 2020, which was soon extended to early June 2020. All primary and secondary schools had to quickly shift their teaching and learning activities online. During these 4 months, the slogan "suspending classes without suspending learning" (EDB, 2020) became a mantra guiding local discourse for finding ways to facilitate student learning at home.

Numerous schools' strategies have been observed and not every school could rapidly make good use of e-learning technologies. Despite the efforts of the Education Bureau in developing technology infrastructure and promoting e-learning tools over the past years, the use of digital technology for learning played only a small role in Hong Kong classrooms (Reichert, et al., 2020). Effective pedagogical change has not accompanied technology adoption and teachers' technology-enhanced pedagogical content knowledge varies greatly (Reichert, et al., 2020). As a result, a wide range of practices emerged in schools in response to the pandemic. Some schools simply delivered learning materials and assignments to individual students in hard copy or online format for self-study, while some decided to carry on with their usual timetables via synchronous online teaching tools. How schools implemented online learning largely reflected their teachers' e-learning readiness as well as their existing technological and pedagogical capacities. Schools exhibited different levels of capacity in adapting to the unprecedented changes and stress. While some had to reduce their expectations of what could be achieved as teachers struggled to get students focused and learning, others made progressive adaptations to expand the number of subjects and the pedagogical repertoire adopted for online teaching and learning.

The transition to a fully online teaching and learning mode is challenging. What matters is not only the implementation of appropriate technology, such as Learning Management Systems (LMS), and synchronous and asynchronous online learning applications. New pedagogical practices, curriculum designs, organizational and staffing structures and even everyday routines such as timetabling need to be redesigned and adopted for online learning to be effective in supporting student learning. Different actors within schools also need to acquire knowledge and skills for technological and pedagogical innovations in order to align and change their practices. These many elements and their interactions constitute a sociotechnical system (Geels, 2002), which entails that changes are needed not only with respect to technology use, but also with regard to human agency, social structures and organizations. Sociotechnical systems consist of social groups that maintain and refine the sociotechnical system, and rules that guide and orient activities of social groups (Geels & Kemp, 2007). The interactions, knowledge flows, dynamics and co-evolution of social groups under a particular institutional infrastructure influence how technology use is propagated.

Social capital matters as the quantity and quality of interactions and social relationships among people affect the flow of knowledge and practices, senses of expectation and trust, and

willingness to adhere to new norms (Hargreaves & Fullan, 2012). Although the definitions of social capital are broadly similar, studies vary depending on whether their focus is primarily on the relations an actor maintains with other actors or the structure of relationships among actors collectively (Adler & Kwon, 2002). In this paper, we focus on social capital as the collective capacity (Hargreaves & Fullan, 2012) of teachers and school leaders in adapting to sociotechnical changes. We second the call for research on the 'coevolution' of social capital and social structures by examining the structural effects of social capital that contributed to schools' adaptive capacity for sociotechnical changes (Adler & Kwon, 2002; Leenders & Gabbay, 1999).

As Hargreaves and Fullan (2012, p. 92) point out, "Learning is the work, and social capital is the fuel." The degree of social capital is seen as the key variable determining success in any education innovations (Hargreaves & Fullan, 2012; Uphoff, 2000). Uphoff (2000) conceptualized the structural and cognitive aspects of social capital. The structural aspects of social capital relate to the forms of social organization, such as networks, roles, rules, procedures and precedents that facilitate mutually beneficial collective actions. Cognitive aspects of social capital refer to norms, values, attitudes and beliefs. During the pandemic, schools were pushed into a crisis management mode, in which they had to improvise and modify their existing practices to adjust to the 'new normal.' Of critical importance in meeting these challenges is building social capital that drives aligned learning and collective action across different organizational levels within the school through four basic and ubiquitous activities of organizations: decision-making, resource mobilization, communication and conflict resolution (Uphoff, 2000). In addition, creating social capital is more than introducing these roles and mechanisms; gaining and maintaining acceptance among actors in the school system decides the extent and effectiveness of their collective capacity (Uphoff, 2000). In this paper, we investigate the conditions and factors that enabled a school to develop its social capital (Uphoff, 2000) to sustain learning under social stress and adapt to the sociotechnical change.

Conceptual Framework

Moving from a primarily face-to-face to a fully online mode of teaching involves sociotechnical change. For Stein and Coburn (2008), school change and adaptation are processes of organizational learning. They offer the architecture for learning (AfL) construct, which describes what drives these processes. Law, Yuen and Lee's (2015) analysis of technology-enhanced pedagogical innovations identified four important elements in the AfL: (1) organizational structures that direct and guide interactions; (2) mechanisms for sharing, interacting and decision-making; (3) artifacts that serve as reifications of interaction outcomes to propagate decisions and promote understanding; and (4) technology infrastructure that supports communication, interaction, and knowledge management within and across communities. These four elements undergo an interactive process of change and refinement in innovation. For example, organizational structures may change to include relevant stakeholders and external experts to support innovation. Additionally, interaction mechanisms enable

alignment across different levels of the school system (Law & Liang, 2019). This paper examines the AfL that contributes to a school's adaptive capacity in formulating and addressing the sociotechnical challenge of moving to fully online learning and teaching (L&T) during the pandemic, as well as whether and how the AfL builds on and changes the school's social capital in the process.

Methods

The authors have been involved in a school-university partnership (SUP) network project that provides support to schools on designing technology-enhanced STEM innovations. Since the beginning of the pandemic, the Network has been providing support to schools on ways to implement online L&T, and connecting them with other Network schools. In particular, the Network invited different schools to share their online L&T strategies and practices in several online professional development workshops. Strategies and practices included what is done at the school leadership level, such as changes in school routines, organization and infrastructure, and what teachers do in designing, preparing and implementing online L&T to facilitate change. The video conference recordings and materials the teachers and school leaders shared during these professional development events provided a rich data source for the authors to understand how different schools in the Network (totaling 32 schools) implemented their online L&T programs.

School A demonstrated exceptional performance in its staged response to the online transition, progressively enriching the online learning curriculum and expanding the teachers' pedagogical repertoire. The School's concerted efforts were aligned with its core commitment to inclusivity by ensuring an equitable online learning experience for all. It was also mindful that adaptations made during the school suspension period would contribute to long-term sustainable impact on the school's online learning development. In this paper, we report on an in-depth case study of School A that examines its online L&T program and how it changed over time and its (changing) AfL (which together constitute the sociotechnical changes that took place) during the school suspension period. We collected, analyzed and triangulated data from a variety of sources. We (the authors) collected data on School A's transition to online learning from their sharing at one of our online professional development workshops during the pandemic and follow-up semi-structured interviews. School documents such as the school's strategic plan for online learning, timetables and presentation slides for experience sharing were reviewed, and recordings of the school's sharing sessions at two of our online professional development workshops were transcribed and analysed. The research team conducted a qualitative case analysis (Creswell, 2013; Miles, Huberman & Saldaña, 2020) to explore the development and change of School A. The researchers first analyzed the school's strategies in response to school suspension with the four main components of the AfL framework (Law, Yuen, & Lee, 2015): organizational structures, interaction mechanisms, artifacts and technology. Attention was paid to the purposes of these components and how they influence different stakeholders' practices to ensure learning continuity and student well-being.

Findings

School A's evolving online learning social capital and implementation

School A is a government-aided catholic school in the North District in Hong Kong. The school has 24 classes from Secondary 1 to 6 with around 65 teaching staff. About 30-40% of its student populations are "cross-border students" who travel from their home in Mainland China on a daily basis to attend school in Hong Kong. Most of the local students come from a neighboring low-cost public housing estate. As e-learning is part of the school's three-year development plan, most teachers and students have some prior experiences with online learning. The data shows that School A has taken a staged approach for its transition to online teaching and learning, with three phases of well-coordinated implementations, each with its own strategic focus.

Phase 1 (3 Feb – 14 Feb, 2020): Upon the government's first announcement of a two-week school suspension, School A quickly formed an Online Learning Task Force involving principal, vice principals, subject panel heads and the pre-existing e-learning committee. The task force started with building shared vision and goals among its teachers that aimed at aligning the immediate needs for online T&L with its long-term development plan in enhancing e-learning and self-directed learning. Strategies and action plans were formulated under the agreed vision and goals to engage teachers, students and their families in a coordinated manner. Ensuring all students and teachers had inclusive access to quality online learning was the strategic focus in this phase. Like many schools in the Northern District in Hong Kong, School A has a high proportion of "cross-border students", who had to stay at home in Mainland China during the school suspension period. This created a major technical challenge. To support online learning, the school had been using Google Classroom and Google-based collaborative tools, which were not accessible within mainland China. School A quickly decided to switch to Moodle, an open-source learning management system (LMS) accessible to all geographies, leveraging the technical expertise of team members in the task force and their social connections in the IT industry. The school then required its usage across all subjects and grades.

Timetables with four core subjects—English, Chinese, Math and Science—were prepared for all grades to follow, starting from February 10th. Some teachers also started synchronous online classes around this time. To ensure the quality of online teaching, teachers in School A worked together to decide on some baseline expectations to guide the design of online learning such as meeting the curriculum expectations, keeping track of student progress and incorporating assessment in the T&L practices. To promote teacher collaboration and monitor teaching quality, the school set up a dedicated Google site for teachers to share the T&L materials they created and resources they identified.

Phase 2 (17 Feb – 13 Mar, 2020): When the Government announced that the school suspension was to be extended beyond the initial two weeks to March 2nd, School A became concerned about the potentially serious impact on students' learning and well-being. During this phase,

the school focused on expanding teachers' e-learning pedagogical repertoire and enriching students' learning interactions. To avoid compromising students' learning opportunities, the school added the other subjects back into the timetables, including Mindfulness, Music, Visual Art and Sports. Learning materials/kits for STEM were delivered to students' homes to facilitate hands-on activities. As such, all of the teachers had to be involved in online learning. Subject-based teacher communities were formed to foster peer support, resource sharing and teacher agency in decisions on professional development provisions. Diverse online tools for synchronous, asynchronous, and collaborative learning and for assessment were shared among teachers to enrich their pedagogical practices.

Monitoring and evaluation mechanisms were also incorporated into T&L practices. For example, teaching assistants were assigned to each class to collect attendance and learning data from Moodle as a way to track students' participation and learning outcomes. A range of channels were adopted by the school to ensure parents' awareness about school strategies and teaching plans, and to invite them to play an active role in supporting and monitoring student learning at home. All teachers were required to record and reflect on their work on a daily basis on a google form, which ensured teacher accountability and served at the same time as a channel for the Online Learning Task Force to receive and respond to teacher feedback.

Phase 3 (16 Mar onwards): When the government announced the school closure would extend at least until April 20th, the school decided on a longer-term strategy, which is referred to here as Phase 3. The school's senior leadership shared with us on March 11th that they were pleased with the positive outcomes from the previous two phases. They were confident that they were on the right track and had decided to focus on further pedagogical refinement, including enhancing online feedback, monitoring and accountability mechanisms to better align online learning with the school's vision and goals. For example, student participation and learning data from Moodle were analyzed to provide insights for teachers to improve their teaching practices and engagement with students and their families. More feedback channels were created to understand teachers' practices and to collect their reflections, concerns and suggestions for improvement. Members of the Online Learning Task Force were then able to provide much more targeted support to teachers on challenges ranging from technical issues to pedagogical and administrative issues such as timetable arrangement, assessment, learning motivation, emotional support and family engagement. The progress reports compiled by the subject panel heads were also shared on the Google site to foster monitoring and aligned teacher learning.

Developing social capital to facilitate the transition to online

The three phases of School A's transition to online education over the initial two months of the school suspension clearly demonstrated how the school continuously built up its social capital as a collective capacity (Hargreaves & Fullan, 2012) to adapt to the sociotechnical change. Government policy and other external social changes, as well as internal technological and T&L challenges faced by teachers, students and their families, contributed to School A's decisions in shaping its structural and cognitive social capital (Uphoff, 2000). Social capital is

built up and sustained by the roles and rules established for decision-making and resource mobilization, and driven by the visions and values that serve to align communications and overcome challenges (Uphoff, 2000). Given its years of participation experience in the university-school partnership, School A was aware of the need for multilevel alignment across the school in terms of school vision and strategies in order to bring about successful and scalable innovations. Prior experience enabled the school to design an adaptive AfL during the school suspension to adapt to the changes amid social stress. We present here our analysis of how School A orchestrated changes in the four essential dimensions of its own AfL to foster the development of its social capital for online L&T.

The first dimension is the establishment of a multilevel leadership team. Upon class suspension, School A quickly established the Online Learning Task Force as a new organizational structure to lead its efforts. Each member in the task force played a unique role. For example, the principal led the task force to set the overall principles and policies for administrative duties and teaching arrangements. One vice-principal was responsible for monitoring the implementation, while the other was in-charge of student and parent outreach. Teachers with strong technological and pedagogical knowledge proposed technological solutions for decision making. Subject panel heads oversaw teaching and learning practices.

The second dimension is the design of nested interaction mechanisms. The Task Force designed extensive interaction mechanisms, including meetings (at the task force level) for deciding the strategic focus and guiding principles, and meetings at the subject level on implementing coordinated teaching and learning practices. The subject panel heads acted as a connector between the taskforce and the teachers, coordinating information flow and monitoring overall progress. The pre-existing e-learning team made sure the task force's decisions concerning technology answered the T&L needs at the teacher level. There were also interaction mechanisms designed for building teachers' technology-enhanced pedagogical content knowledge (Reichert, et al., 2020). Through the subject-based teacher communities, teachers would meet with their community members on a weekly basis to discuss teaching plans, offer feedback to one another and share learnings and resources.

The third dimension is the use of mediating artifacts (referred to as reification artifacts by Law, Yuen & Lee, 2015) for monitoring and aligning learning across different levels in the school. The school had a good practice of creating and managing reification artifacts for policy translation, monitoring and peer learning. For example, the school created videos to support students and teachers to make use of unfamiliar technology. The organization of teaching materials via the Google platform facilitated peer monitoring and learning within and across subject-based teacher communities. The school redesigned the timetable to monitor and facilitate synchronous online learning interactions between teachers and students.

The fourth dimension is the strong connection between the choice of technology, emerging needs and new practices. Technology plays an important role in structuring and enforcing the T&L practices of teachers and students. For example, to solve the accessibility challenge cross-border students faced, the task force quickly institutionalized a regulatory rule (Law & Liang, 2019), switching the LMS from Google Classroom to Moodle and enforcing its usage across all subjects and levels. New practices were formed accordingly, such as teaching assistants

collecting attendance and learning data from Moodle as a way to track students' participation and learning outcomes to ensure learning quality in Phase 2.

Discussion and conclusion

School A demonstrated its adaptive capacity to steer the sociotechnical changes (Geels & Kemp, 2007) through the many adaptations that took place in the school during the first two months of school suspension. The social capital of the school underpins such remarkable adaptive capacity. In response to the external policy and social pressures for change, the school community implemented measures that align with the EDB's mandate of "suspending classes without suspending learning," and without losing sight of the school's own vision and values. Instead of seeing online learning as a problem to be tackled, the school leaders treated it as an opportunity for accelerated achievement of its three-year development plan for scaling up e-learning and deepening self-directed learning. They further prioritized four goals to guide their adaptation, namely, ensuring learning continuity for all students, ensuring teaching continuity according to the curriculum, sustaining students' learning motivation and tracking student progress and outcomes.

By aligning vision and goals at the very beginning of school suspension and reinforcing them throughout the stages of online learning implementation, the school aligned its cognitive social capital (Uphoff, 2000) for leaders and teachers to stay focused in identifying priorities, setting strategies, designing teaching plans, and engaging students and their families in a coordinated manner. In our analysis, we further explained how intentional changes in the four dimensions of School A's AfL contributed to the evolving development of the their structural social capital (Uphoff, 2000). The organizational structures, the combination of top-down and bottom-up information flow mechanisms, and the trust and shared values among the leadership and teachers all contributed to a robust feedback loop that enhanced the connectivity across different levels. AfL has an enormous influence on a school's capacity to dynamically enhance its own social capital. As shown in the case of School A, the AfL changed and evolved as the challenges unfold and educational objectives expanded (Law & Liang, 2019) during the process of adapting to sociotechnical changes. School A's capacity to adapt to technological and pedagogical innovations to sustain learning under social stress depends very much on its ability to construct and modify its AfL that builds social capital quickly and consistently.

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