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Viewing the transition to innovative learning environments through the lens of the burke-litwin model for organizational performance and change

Raechel French[1] · Marian Mahat[1] · Thomas Kvan[2] · Wesley Imms[1]

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Abstract
Recent history has seen many schools shift from their original purpose of standardization and facts to focus on soft skills and global preparedness. The physical design of a school follows suit, shifting from identical classrooms and autonomous teachers to more collaborative shared spaces deemed 'innovative'. While those who formulate such schools and school designs (i.e. the architects and school leaders) often have clear anticipations of the teaching and learning behaviors, these expectations oftentimes go unrealized and educators maintain traditional practice despite the innovative spaces. It is proposed that this misalignment between expectation and reality is due to a lack of holistic change in the organizational system underpinning the new spatial design leaving the enactors of the envisioned environment (i.e. the educators) without clear expectations and supports to successfully shift their practice. To answer this need, this paper advances the Burke-Litwin Model for Organizational Performance and Change as a theoretical lens for understanding the holistic system involved in the transition of schools from traditional learning spaces to more innovative learning environments.

Keywords Innovative learning environments · School organization · School change · Teacher change

Introduction

Horace Mann founded the industrialization of what is known as modern schooling in 1837. His vision of a "common school" is referred to throughout this paper as "traditional" school design and was established with the goal of producing people capable

✉ Raechel French
rfrench1@student.unimelb.edu.au

[1] Graduate School of Education, University of Melbourne, Melbourne, Australia

[2] Faculty of Architecture, Building, and Planning, University of Melbourne, Melbourne, Australia

of following instructions and replicating results to successfully serve in the rising manufacturing industry and assembly lines. Acknowledging that this traditional model does not fit the current global society, around the world there are initiatives to improve schools to meet these new educational goals. A simple internet search of "why school change" will produce thousands of articles of reform efforts, impetus for change, pleas for more funding, with thankfully, many pockets of success. This is not a new question, evident in the dates of many first-page results, one report dating to 1993, stating even when the world was in "another era of rapid economic and social transformation….this new revolution in the workplace, in turn, suggests fundamental reforms for education" (Wagner, 1993). While Wagner's assertion is still true, more contemporary discussions include how the physical learning space must also evolve and reform to support these shifts. This paper is the result of a narrative literature review and explores the inclusion of physical space in the school change process.

Physical shifts in school design are intended to support the changing goals of education towards the creation of soft skills and global preparedness. Called innovative learning environments (ILEs), these are "physical educational facilities designed and built to facilitate the widest array of flexibility in teaching, learning, and social educational activity" (Mahat et al., 2018, p. 20). The inclusion of the teaching and learning practices and the physical design are both key components of achieving an ILE.

With an ILE comes more collaborative responsibility and a shift in what teaching looks like and what it means to be a teacher. Alterator and Deed (2013) summed the problem up well: "the physical absence of what was understood to be a "school" means a sense of dislocation and anxiety may emerge as teachers attempt to enact the routine purposes of education" (p. 326). Teaching is already complex and the ILE designs today simply increase this complexity.

As schools make this transition, there are mixed results in the alignment of the new design with its intended use. Evidence from the Innovative Learning Environments and Teacher Change Study (ILETC) indicate that many ILEs studied in Australia and New Zealand are used effectively and saw correlation between the design of space with teacher mind frames and student deep learning (Imms et al., 2017). Evidence also exists that educators often revert back to traditional practice, despite any change in space (Deed & Lesko, 2015; Saltmarsh et al., 2015). It is possible that the alignments found by the ILETC were ones of serendipity with the remaining evidence indicating that such serendipity is not consistent. However, previous literature on various schools operating in ILEs indicate that successful alignment is not by chance or luck but marked by intention in both physical and organizational decisions (Kinney, 2017; Saltmarsh et al., 2015). Thus, one can surmise that some structure or support is needed to ensure that more schools are able to shift practice as intended in new school buildings.

It can be argued that the organizational context in which the ILE operates must be included in any attempt to model its successful implementation. A literature review by Mahat et al. (2018) nods to this with the acknowledgement that ILEs "are part of the incremental and iterative development of spatial design and innovative practices" with a history of "psychological, sociocultural and pedagogical influences"

(p. 11). The same review also establishes that learning environments should enable the development of skills needed to succeed in the twenty-first century and presents an important distinction between open plan and flexible learning environments, indicating that an ILE is truly the latter, having variety in both physical space and teaching approaches. That being said, "ILEs may bring about changes in teaching and learning practices but there may be a disconnect between design and practice that fails to generate behavioral change." (p. 15).

While the behaviors that drive the learning experience are an individual occurrence, they are influenced by the surrounding physical and organizational environment. Kurt Lewin's field theory sums this up nicely with his equation B = f(P, E) or, behavior is a function of a person and his/her environment (Lewin, 1951). In this, teachers bring with them their own experience, background, and current mind frames which impact their response to the learning environment, both physical and organizational (Kinney, 2017). ILEs benefit from the "mutually constitutive" relationship so described by Mulcahy et al. (2015) between the space and teacher practice (p. 6). Buildings can be viewed as "materializing processes" that provide the ability for certain behaviors and practices which then inform back to the space (Mulcahy et al., 2015, p 10). One can imagine such an iterative relationship can go incredibly well when nurtured but could also create a dysfunctional situation in which educators retreat to their familiar practice, grow frustrated with a space ill-equipped for this activity, and increase the void between potential and reality. For space and practice to truly interrelate as proposed, teachers must understand the behavioral opportunities afforded by a space's design.

Reflection on opportunities for action within certain spaces are not the norm. When transitioning into a traditional space, expectations are clear and occupants understand how the space and organization will operate (Gislason, 2018). Thus, it is not surprising that in a recent study specifically designed as a direct response to an upcoming move to a new ILE, teachers' discussion failed to highlight the use of space when discussing the change (Woolner et al., 2014). Attention is also a scarce resource and the default (i.e. traditional practice) is the most salient and easiest option to choose (Damgaard & Nielsen, 2018). The space and its organizational context have potential to reduce the complexity of the environment, by making certain behaviors easier (i.e. altering the default) and decreasing visible potential of alternatives. School leadership and school designers play a large role in formulating the physical and organizational environment and thus need to view each design and organizational decision in context of a full system of change. A holistic environmental perspective is needed to ensure ILEs achieve their learning experience goals.

Theoretical framework

This paper is the result of a narrative literature review responding to the question "What evidence exists regarding the use of and transition to innovative learning environments?" The literature search was completed utilizing JSTOR, EBSCOhost databases and thorough review of relevant paper bibliographies. Search terms included 'teacher change', 'school design', 'innovative learning environment',

'teacher transition', 'school change', 'school organizational change' among other related phrases. Resulting research from this review are discussed in this paper through the theoretical framework provided by the Burke-Litwin Model of Organizational Performance and Change (Burke & Litwin, 1992).

Holistic models of school change

In order to model and support the school transition process to innovative spaces, it is important to consider the specific elements of the organizational system and physical design within a holistic framework. In case studies of teachers' adaption to so-called "irregular" learning spaces, Alterator and Deed (2016) confirmed need for more comprehensive approaches to change, citing that "the disrupting forces of the irregular environment and subsequently synchronized and aligned systems has afforded the possibility of different iterations of…implementation" (p. 61). Individual and systems level adaptation were evident and interrelated within the school's transition process. Further, when systems were tightly aligned with the school's design and expectations, teachers perceived high levels of flexibility, agency, and ownership. Evident was a pairing of top-down structure with focus on individual supports. Woolner et al. (2018) seconded this pairing, positing that "intangible developments" such as "change within practices and understanding" are "bolstered by embedded changes to curriculum, staff training and the school environment" (Woolner et al., 2018, p. 231).

There are some existing models that are helpful in the discussion of organizational and design changes in schools. However, none provide the requisite holistic view of change with both the incorporation of space and specific factors that can align with actionable strategies. For example, Owens and Valesky (2011) include design, organization, culture, and milieu as discrete variables but do not provide detail within each regarding applicability of the model to a change process. Priestley (2011) applies Archer's social theory in the analysis of curriculum change and provides a systems view of organizational change but with little consideration of the spatial design and a lack of specificity that could easily align with applicable strategies. The ongoing work from ILETC (2018) identifies fourteen key themes of the school transition that do incorporate both space and organizational factors, but the themes remain discrete and are not consolidated into an applicable interrelated system. A systems model of educational change considering spatial shifts is still needed. The following section proposes the applicability of an organizational change model, not specifically designed for education, for use in the school design and change process.

The Burke-Litwin Model of Organizational Performance and Change

A commonality in many frameworks for organizational change is an emphasis on a variety of variables that interrelate as a system. While there is not a plethora of systematic change models in the specific realm of school design, one can turn to models successful in other building and organizational types. Kinney (2017) explored three of these in relation to change in education, exploring the relevance of Kotter's Change Model, Pasmore's Model for Leading Complex, Continuous Change, and Becker & Steele's framework for change in Workplace by Design. However, the Burke-Litwin Model of Organizational Performance and Change (Burke-Litwin Model) was determined to have the most potential application regarding the description and change of schools (Kinney, 2017). With its iterative systems perspective and level of specificity among twelve factors, the Burke-Litwin Model can accommodate a variety of organizations and change and transition scenarios, including education. This section describes the existing model with some proposed adjustments to better align vocabulary to an educational setting (for example, shifting from 'Management Practices' to 'Instructional Practices') and proposes how the physical design can be integrated into its existing factors to provide the requisite detail required for the transition to innovative spaces.

The Burke-Litwin Model was first published in 1992 (Burke & Litwin, 1992). Its "input-throughput-output…feedback loop" (p. 524) stems from well-established systems theory whereas the specific components were initially developed from practice. In the decades since its development it has been tested and validated (Stone, 2015). There is also some precedence for its proposed application to educational organizations (Kinney, 2017; Oterkiil & Sigrun, 2012).

The model is divided into transformational and transactional factors and is intended to be both descriptive and causal, applicable for both organizational diagnosis and organizational change. The distinction between transformational and transactional is helpful in application as different stakeholders have different decision-making capabilities and influence when considering an organizational change. Transformational factors tend to be guided by those in leadership positions and influenced by the external environment while transactional factors represent opportunities in which organizational members begin to display more agency and direct impact. However, as the following section discusses, each factor sees influence from multiple stakeholders and should always be viewed as part of the whole. While space is not explicit in the model, the level of detail is much more than other change models in place, allowing specific opportunities to acknowledge the role of space as identified later in this section. The modified factors of the Burke-Litwin Model and their relationships are presented in Fig. 1.

The transformational factors (leadership, mission and strategy, school culture, and instructional practices) are most applicable in the face of substantial change when new behaviors are required by members of the organization. This is definitely the case when shifting to an ILE as teachers are required to alter their pedagogies and collaborate more with colleagues (Bertram, 2016; Davies et al., 2013;

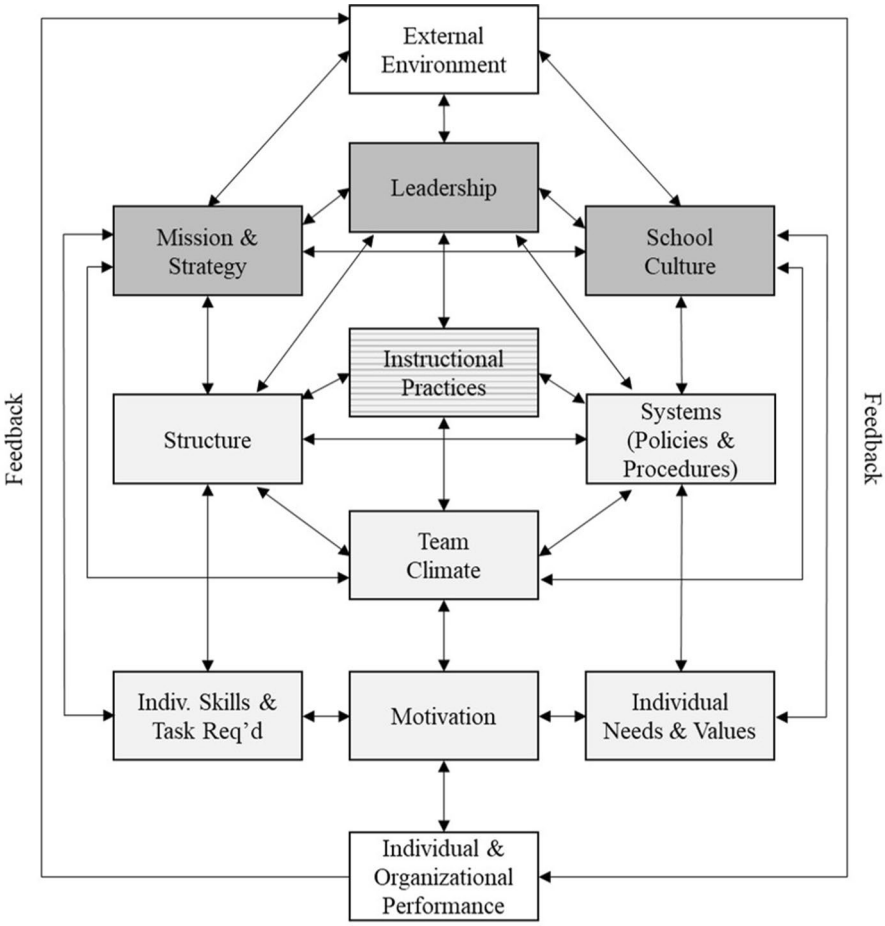

Fig. 1 A model to view the transition to innovative learning environments, adapted from the Burke-Litwin Model of Organizational Performance and Change (Burke & Litwin, 1992)

Greenfield & Klemm, 2001; Sigurðardóttir & Hjartarson, 2016; Woolner et al., 2014). Instructional practices was originally included as a transactional factor in the Burke-Litwin Model, defined as the management practices exhibited within the organization. However, instructional practices are often envisioned early on by a school system and/or leadership and drive decision making in school environments. They are better placed as a bridge between the transformational and transactional factors in the school context, encompassing both the big picture learning models selected by the school and the individual pedagogies enacted by the educators. For the purposes of this paper, they will be discussed alongside transformational factors as the broader learning model is a large factor in envisioning an ILE. The transactional factors (structure, systems, team climate,

individual skills and task requirements, motivation, and individual needs and values) represent the school users' influence and role in the change process. The teacher is the highest impact factor for student outcomes (Hattie, 2012). therefore, these transactional factors are crucial for the individual shifts teachers must make. Schools are also in a peculiar situation in which they must respond to external accountability metrics, regardless of their level of alignment with campus-level goals. Thus, these transactional factors can serve to scaffold changes and provide intentional methods to accommodate these more traditional metrics in schooling as well as the student-centered focus central to an ILE.

Oterkiil and Sigrun (2012) detail various educational attributes that align with the twelve factors of the Burke-Litwin Model. Building on this work and drawing on the narrative literature review, the following section discusses each factor of the Burke-Litwin Model with specific reference to the role of space and any proposed adjustments to the language of the original model.

External environment

The external environment consists of the societal conditions impacting the operation of a school system, school district, or school campus. This can include community expectations and engagement, policies, mandated curriculum, national accountability, among others. Oterkiil and Sigrun (2012) anticipated a strong link between this and the motivation for school change, especially considering such strong status quos seen in the history of school design (Imms et al., 2017). Often in ILEs, the most frequent external factors relate to shifts in which skills students need to be successful; learning activities need to shift to achieve the desired outcomes (Mahat et al., 2018). Narrative of the physical design of ILEs often acknowledges their mirroring the design of contemporary workplaces or higher education institutions, signaling the future for which schools are preparing learners.

Mission and strategy

Educational institutions often have written statements regarding their mission and strategy for how they plan to achieve their perceived central purpose. This includes what is articulated by leaders and perceived by the teachers and students. Similarly, designers create mission statements specifically for the goals of the built environment, often overlapping with the school's educational vision. Mahat et al.'s (2018) work on ILEs indicates that affordances of the built environment "must reflect the educational vision that drives the initial design" (pp. 16). Thus, space can be seen as strategy when certain design characteristics are anticipated to enable certain teaching and learning outcomes.

Leadership

School systems often have varying levels of leadership both within the broader system and at the campus level. Each work to establish and model systems and cultures supporting the mission and strategy. Multiple people in a school act as transformational (leader) and transactional (manager) forces (Oterkiil & Sigrun, 2012). Strong leadership is necessary to support teachers transitioning into new space types with different behavioral expectations (Clarke, 2016; French et al., 2020; Woolner, 2014). Woolner (2014) further stated that even though leadership may understand the logic and the "why" behind the change and feel a process is in place, these individuals "failed to appreciate the scale of the change they were hoping to enact" (p. 160). While there are gaps of knowledge regarding the specific leadership styles required for the transition to an ILE (Blackmore et al., 2011), distributed leadership can assist with teacher accountability regarding their inhabitation of space (French et al., 2020; Campbell et al., 2013) and congenial leadership relates to positive school climate (Uline, Tschannen-Moran, & Wolsey, 2009).

School culture

School Culture (or 'Organizational Culture' in the original Burke-Litwin Model) consists of the overt and covert rules and drivers of the school operation and teacher and student behavior. Space and culture interact to impact teacher engagement (Scott-Webber et al., 2018). Specific elements of culture seen as most critical to the success of an ILE are reflection and risk-taking (French et al., 2020; Campbell et al., 2013; Clarke, 2016) as both provide autonomy and trust at the educator level to adapt their practices within the new spaces.

Instructional practices

A slight adaptation from the original 'Management Practices' in the Burke-Litwin Model, instructional practices consist of the learning model and pedagogy ascribed to by the school and their subsequent enactment by leadership, teachers, and students. An ILE can be considered the "pedagogical core" (Mahat et al., 2018, p. 13) and there is much alignment here with the structure of a school. For example, Gislason (2010) found that spatial structure and design encouraged shifts to co-teaching. French et al. (2020) discussed space as an "enabling constraint" (p. 9) which can encourage the desired teaching behaviors while making reversion to traditional practice more difficult. The removal of a teacher's desk, for example, can potentially be an enabling factor for educators to more frequently utilize shared planning spaces and while teaching, feel encouraged to move about the space rather than stick to one "front" of the room (Provenzano, 2015). The concept of providing visibility between spaces and the ongoing ability to observe the practice of other educators can promote teacher learning. Proximity of different space types is often discussed as a key driver of an ILE supporting the desired transition between teaching modalities.

Structure

The structural components of school work together to ensure success in meeting the mission and strategy. Lack of structure can result in a reversion to traditional practices (Saltmarsh et al., 2015). Structure can include the timetables, how educators are teamed, departmental structures, etc. Structure within physical space becomes important in how educators are assigned in a facility both regarding the types of spaces accessible and the other educators in proximity. The space design itself may arguably best fit within the category of structure as space is often viewed as an action context (Tondeur et al., 2017) and comes to being with learning symbiotically (Mulcahy et al., 2015). Teachers will respond to what is most salient (Damgaard & Nielsen, 2018) and when considering a move to an ILE, this most obvious change will be the physical environment. Woolner et al. (2018) saw in their case studies evidence of space serving as an important impetus and mechanism for teacher reflection and the development of collaboration. Various physical factors also strengthened the cultural shifts desired by the school in focus. They stated that "the physical space…is the key to moving beyond mere structural change because the physical learning environment is uniquely visible and tangible—a manifestation of a school's values and teachers' pedagogic approaches, providing possibilities for further individual action" (Woolner et al., 2018, p. 238).

Timetables, or bell schedules, are also cited as one of the biggest drivers in how an ILE will be utilized as the teaching and learning activities most suitable to an ILE, such as collaboration, often require longer lengths of time than traditionally allotted per subject (French et al., 2020; Bertram, 2016; Davies et al., 2013; Greenfield & Klemm, 2001; Schneider, 2013; Sigurðardóttir & Hjartarson, 2016; Woolner et al., 2014). Budget and resources also need addressing as new teaching activities require different tools (Bertram, 2016; Davies et al., 2013; Greenfield & Klemm, 2001).

Systems (policies and procedures)

Each school establishes their own systems, routines, tools, and resources that facilitate the day to day operations. There is a gap in knowledge of the specific systems required for the transition to ILEs (Blackmore et al., 2011) but clarity in the importance of proper resources such as technology, supplies, furniture, etc. (Bertram, 2016; Davies et al., 2013; Greenfield & Klemm, 2001). When studying four campuses having transitioned into ILEs, French et al. (2020;) noted all participants cited a need to redefine their day and associated procedures. This included "space-use guidelines, routines, evaluation metrics, and other 'non-negotiables' that aligned with the vision" of the schools (p. 10). Systems may include policies dictating how furniture is laid out within a space, the establishment of a common language of any new space types, or a new procedure of how students are expected to enter and exit learning spaces throughout the day, among others (French et al., 2020).

Team climate

A slight adaptation from the original 'Work Unit Climate' in the Burke-Litwin Model, team climate stems from the relationships and mutual expectations among all school leaders, teachers, and students and will directly impact the changes required in the shift to ILEs. Sigurðardottir & Hjartarson (2016) saw increased levels of teacher collaboration in more flexible, open schools than their traditional counterparts. This increase in collective, team-based practices was also seen by Alterator and Deed (2013) and Campbell et al. (2013). To achieve this collaborative atmosphere, positive teacher relationships (Davies et al., 2013) and "a wider appreciation and empathy for others practicing in the space" (Campbell et al., 2013, p. 220) are both required.

Individual skills and task requirements

Training, knowledge, and backgrounds of teachers enable them to perform the tasks and teaching activities that align with the school's mission and strategy. Despite a growing number of ILEs in many countries, traditional schools are still dominant (Imms et al., 2017). The activities required in an ILE vastly differ from those required in these traditional schools. Further, the space typologies themselves are unfamiliar (Alterator & Deed, 2013) and with no training, teachers can revert to traditional practice. One of the most difficult shifts for educators is arguably from individual control to shared cooperative teaching with other educators. However, this is oftentimes prerequisite in these new innovative learning spaces without classroom ownership. In Gislason's (2010) study of a high school in the US Midwest, teachers were organized into various houses and had to work as a team to manage both the spaces and their time. The physical design and organizational context of the school were such that teachers had to shift to co-teaching. New skills can be taught and supported but time and training are needed, not just regarding instructional practices but in individually manipulating one's space. For example, a study by Beery et al. (2013), found that in the face of a lack of training on active pedagogies, instructors taught according to their most familiar teaching style, despite the spatial change; the study saw no significant shift in teaching practice when occupying a collaborative classroom.

Motivation

Both extrinsic and intrinsic drivers help teachers move toward and persist in achieving the school's mission and strategy. Educators are often driven by achieving learner success and schools with low change readiness show more motivation when confronted with lower academic results (Oterkiil & Sigrun, 2012). There is little research regarding the motivation of space use but if the goal of ILEs is to instill in learners the skills needed for a successful future in our global world then providing clarity and emphasis around how the physical space may enable those skills may prove fruitful in increasing motivation.

Individual needs and values

The mindframes and desires of teachers impact their individual thoughts, decisions, and actions within an ILE. Teacher beliefs is a commonly cited term in education literature regarding practice in ILEs (Mahat et al., 2018) and teacher mind frames are a well-established concept in education literature (Hattie & Zierer, 2018). Recent studies indicate a correlation between these mind frames, an ILE space design, and achieving deep learning (Imms et al., 2017; Mahat & Imms, 2020). However, teachers often avoid tasks perceived as too difficult and follow their confidence (Oterkiil & Sigrun, 2012). This is often why educators revert to traditional and familiar practice, despite any changes in their spatial environment or expected educational goals. There are noted emotional impacts of space (Cantero et al., 2016) but teachers are also unaware of the power of space itself (Woolner et al., 2014) and the power of spatial literacy development (Lackney, 2008; Woolner et al., 2012). This is unfortunate as the development of spatial literacy can be leveraged to reduce complexity by increasing understanding of the new affordances (Woolner et al., 2012). While the embodiment of spatial literacy is individual, it exists in tandem with social and organizational factors (Lackney, 2008). The end goal should be reflected as schools establish their mission & strategy and leadership should provide continual support.

Clarke (2016) indicated that professional development must account for reflection on practice to bring about needed shifts in mindset and teacher identity. This can be paired with relationships as often individual reflection and relationships with peers can work together to bring about a more substantial shift (Davies et al., 2013). Reflection can also better enable risk-taking and experimentation. This should be paired with the explicit focus on failure as a learning opportunity to enable the cycle of risk, reflect, then grow (Campbell et al., 2013).

Individual and organizational performance

The goal of a school is to matriculate students who achieve intended academic and social outcomes. These intended academic and social outcomes often align with the concept of student deep learning. An ILE should aid in students gaining skills that "enhance their mobility, independence, and social and global participation" (Mahat et al., 2018, p. 14). The space should thus enable movement, student choice and empowerment, and the ability for learners to collaborate and socialize throughout the school day. Recent literature indicates that innovative learning environments better support these activities than traditional spaces (Byers et al., 2018).

Relationship between factors

Oftentimes the aforementioned factors are not discussed in isolation but instead, operate as a system and process. A study of a school in Iceland identified three elements necessary for success: (1) awareness of the intended new practice throughout the organization; (2) support of the new practice at the administrative and educator

level; and, (3) time and training to implement the intended change (Sigurðardóttir & Hjartarson, 2016). Greenfield and Klemm (2001) identified five traits of school restructuring: (1) individual buy-in; (2) focus on significant, not cosmetic change; (3) time, resources, and support for teachers; (4) teachers need to see that the end goal is better than the starting point; and, (5) committed leadership. In their exploration of teacher impression of affordances, Frelin & Grannas (2020) established a tiered model incorporating the material, organizational, educational, general activity, and content specific properties of space. All contribute and interrelate to form an educator's perception of action possibilities. The activity-centered analysis and design (ACAD) framework presented by Carvalho and Yeoman (2018) views learning as an emergent, co-created, and unpredictable event, influenced by place; time, tasks, and structures; and social arrangements. French et al. (2020) in the study of four new ILEs found that a culture of reflection and risk raking, designed 'enabling constraints', new procedures and systems, and the establishment of norms and accountability measures all must work together to achieve lasting impact. There is consensus that learning environments operate as a system.

Attention to all elements of school change is needed as teachers often revert back to traditional practice unless explicit measures are taken to sustain desired initiatives. "Unfamiliar practices might be quickly abandoned if they are inadequately supported by teachers and administrators or if the district does not allocate the time, training and financial resources required when instituting an unconventional program" (Gislason, 2010, p. 129). Further, when teachers perceive a lack of order or structure, they may impose their own inflexible spatial practices and don't make best use of either the space or materials (Saltmarsh et al., 2015). The Burke-Litwin Model has the capacity to address all elements of school change and assist school leaders and designers in ensuring alignment between the intended use and reality in ILEs.

Implications and use

School systems are complex, and space must always be viewed in context of the various organizational factors outlined in this paper. In case studies of schools operating in ILEs, Alterator and Deed (2016) found that "unexpectedly, the combination of irregular environment and tightly aligned program has given rise to a perception of flexibility and freedom as well as affording increased moments of agency through spontaneity and ownership" (p. 64). The key here is emphasis on the phrase "tightly aligned program." the point of view of this paper is that not only must the program align to bring about desired shifts but alignment with resources, time, school structure, and other tangible and cultural elements is crucial.

For example, a high school in Arizona, USA was designed to group educators into shared 'forts' of a variety of space types in which responsibility and management of the spaces is shared (*Structure*). School leaders aligned their Core Beliefs with district goals (*External Environment; Mission & Strategy*), created specific protocols of how educators would rotate through spaces (*Systems*) ensuring comfort in using all different space types available (*Individual Skills & Task Requirements;*

Individual Needs & Values), and intentionally outlined cultural expectations (*School Culture*), among other initiatives. The school principal, in response to these efforts, stated "…being able to organize our thoughts around building those foundations from academic expectations and practices allowed us to really have a plan moving forward that we can do with fidelity" (Kinney, 2018). As demonstrated, the Burke-Litwin Model enables school leaders and designers to understand what additional changes must be made to ensure the outcomes of the new space design and subsequent use is achieved.

When navigating the application of the Burke-Litwin Model, the delineation between transformational and transaction factors further breaks down which stakeholders are impacted and/or need to lead various parts of the change process to an ILE. While still operating within a holistic system, different levels of influence are possible by what can be called formulators (i.e. school designers and policy makers) and enactors (i.e. school leaders and teachers) of innovative learning environments. Transformational change should guide the formulation of ILEs; school leaders and designers must ensure alignment at these broad levels before any change at the transactional level is feasible. Further the two categories of factors benefit from consistent evaluation throughout the life of the building as inevitable shifts will occur, intentional or not, and realignments required.

Formulators have the largest impact on the environment itself. When looking at the various factors in the Burke-Litwin Model, formulators make decisions considering the current *External Environment* and instill *Leadership* models, *Structures*, and *Instructional Practices* intended to support the specific *Mission & Strategy*. School designers should understand how the spaces they create fit in to that strategy and what behaviors are intended to flourish or be discouraged. School leaders need an empathetic lens on the *Motivation*, *Skills*, and *Beliefs* of educators as they work to enact innovative learning environments and establish policies and trainings that align with teacher needs and what is known about the utilization of space. Environmental competence especially can be influenced by the decision making and systems established by school leaders (Lackney, 2008). Teachers themselves are the most vulnerable players in the transition to ILEs and the true enactors of the space's intent, making the *Team Climate* they create with colleagues potentially volatile. However, educator success can be directly impacted by *Leadership*, as the leadership style of school principals directly relates to *Team Climate* (Uline et al., 2009). Further, while the educators' goal of matriculating successful students remains the same as in a traditional model, the definition of success itself often changes with an ILE, requiring new behaviors and teaching methods and ways of working with one another. Teachers in this position need clear expectations and supportive *Structures* and *School Culture* to allow them to flourish. In sum, the burden of a success is not placed on formulators or enactors alone, but on their relationships and the holistic system in which each operates.

Conclusion

Schools around the globe are changing to respond to our new global society; the traditional model does not meet current needs. A shift towards an innovative learning space often coincides if not precedes transformative change in many school systems. However, while more collaboration and other shifts in teaching practices are intended to occur in ILEs, educators often revert to traditional practice. This paper proposes that this is due in part to lack of focus on the organizational context in which the ILE and the educators operate. Educators are better at adapting their practice if supported by an aligned organizational system. Elements of such systems have been presented in this paper, both from the literature and in the presentation of the Burke-Litwin Model.

Teacher behavior and the physical space come to being together and educators, leaders, and all school stakeholders must understand the relationship of space and organization to foster the iterative relationship. This relationship is complex and this paper presents the Burke-Litwin Model as a way to reduce the complexity of the organizational and physical context to an actionable set of factors school leaders, designers, and educators can turn to in their change efforts.

The Burke-Litwin Model takes an iterative, systems perspective and while comprehensive in its twelve factors, allows flexibility within each to translate to a variety of organizational scenarios. The division into transformational and transactional factors simplifies its applicability for certain audiences, whether school designers, school leaders, or educators, while still allowing each stakeholder group to see where decisions relate in the complete system. Further, this paper presents each factor in the context of literature discussing the transition to ILEs, demonstrating its applicability as a tool for navigating spatial and organizational change.

While literature was presented supporting its applicability to this systems change and the integration of spatial design decisions, future work is required to (1) understand the nature and extent of the relationship between space and organizational factors; (2) prioritize the factors in regards to the successful use of an ILE; and, (3) provide best practices within each factor regarding their implications in ILEs.

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