

**DIRECTORATE FOR EDUCATION AND SKILLS
EDUCATION POLICY COMMITTEE****Group of National Experts on Effective Learning Environments****Analytical Framework for Case Study Collection****Effective Learning Environments**

This analytical framework was prepared to guide the collection and curation of a set of case studies designed to explore how schools around the world are transforming from traditional teaching-led learning environments supported by conventional school building design to innovative pedagogical approaches supported by responsive spatial environments. The Annex includes a template, which will be used in the collection of these case studies in 2019 and will solicit information on how schools are changing their pedagogical approaches and consequently their spatial environment, as well as the process of change. The evidence collected will help inform decision-makers at the local, regional and national level as well as school leaders as they seek to develop effective learning environments.

This document was updated and revised following comments received from members at the 6th meeting of the OECD Group of National Experts on Effective Learning Environments (GNEELE) held on 19-20 November 2018 at the OECD. It will be the subject of a declassification procedure and made available online in Q1 2019.

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Transforming Pedagogy and Space Together

Developing case studies on effective learning environments

Introduction

This paper proposes an analytical framework for the collection and curation of a set of case studies designed to explore how schools around the world are transforming from traditional teacher-led learning environments supported by conventional school building design to innovative pedagogical approaches supported by responsive spatial environments. From this, a simple model is used to characterise the pedagogical environment and the spatial environment so that schools may be placed on a spectrum: from a teacher-centric to a learner-centric pedagogical approach; and, from a responsive to a non-responsive spatial environment. With this as a starting point, case studies will be collected to illustrate how schools are changing their pedagogical approaches and consequently their spatial environment, and provide insights into the process of change. Information from the case studies will be drawn together to identify issues and provide examples that can be used to inform policy decision makers at local, regional and national level on developing appropriate learning environments.

Context

The impact of the physical learning environment (including the outside teaching and non-teaching spaces at a school) on teaching and learning outcomes has long been debated. Whatever the actual direct impact on learning outcomes may be, to enable teaching and learning to take place the environment has to support the needs of all of the users. Not only are these needs changing, they are changing fast. Just as technology is impacting on when, where and how students can learn, retrieve information and collaborate, so too are the broader demands of society which are impacting on the role of education creating demand for change.

Three drivers are spurring the evolution of education: the need to develop ways of thinking, living together and working to meet the needs of 21st century society; the ubiquity of technology both in society, in the workplace and in education; and crucial developments in our understanding about learning and how people learn and what effective learning might be.

Students leaving formal education today need skills not necessarily fostered by traditionally conceived education systems. The focus is primarily on interpersonal non-cognitive skills rather than basic cognitive skills. To prepare students for active engagement in society, schools have to prepare students to live and work in a world where they need to be able to effectively communicate, collaborate, critically and creatively think problems through rather than rely on received wisdom (OECD 2016a). The OECD Education 2030 project on 21st century learning (OECD, 2018a) as well as a recent global survey of employers' expectations of new recruits (PWC, 2017) underscore the importance of these skills.

The use of technology in the workplace is having profound impacts on what is expected of young adults as they transition from education to the world of work. New ways of communicating and processing information anywhere and at any time means that jobs are less stable. Computers are more able to carry out many functions such as processing data

once the preserve of people. Similarly, within the education sector, technology is opening up a panoply of options for learning, from accessing information to different ways of manipulating it on line, and doing this anywhere and at any time.

Recent advances in understanding of how learning occurs suggests that “Effective learning is not purely a ‘solo’ activity but essentially a ‘distributed’ one: individual knowledge construction occurs throughout processes of interaction, negotiation and co-operation” (Dumont et al, 2010). Neuroscience shows that the human brain is primed for interaction. Therefore, however valuable self-study and personal discovery may be, interaction with others is also important for effective learning.

Dumont et al (2010) identified seven core principles underpinning effective learning: learner-centredness, collaborative and social, motivating, individualised, challenging, supported by formative feedback and connected.

As Atkin (OECD, 2011) points out, skills such as collaboration are not learned by learning about collaboration, but rather through participatory learning experience. Nevertheless, this does not negate the need for autonomous working, or personal research as ‘effective learning’ demands different approaches and pedagogies from day-to-day or week-to-week (Dumont et al, 2010).

Boekaerts (2010) argues that motivation and emotion are essential to education and the challenge for teachers is to make classroom activities more interesting, purposeful and enjoyable. She points out that stressful situations in the classroom can interfere with information processing. Conceivably, the spaces in which learning takes place may also contribute to stress, if teachers and students cannot use it the way they wish – for example as in something as simple as being able to move the furniture around easily.

If the seven principles are core to effective learning, then an effective learning environment has to support and be responsive to them. There needs to be alignment between the space created and the needs of the users.

Dumont et al (2010) point out that flexible, adaptable spaces facilitate the introduction of new approaches by learning professionals working individually or collectively, while unsuitable spaces impede their adoption except among the most highly motivated groups of teachers and learners. Formative assessment as well as co-operative and project based learning are all facilitated in flexible spaces designed to accommodate them.

As pedagogies change from teacher to learner centric models to meet these demands, so too must the physical learning environment adapt to better support, and be responsive to, different forms of interaction and approaches to teaching and learning.

Canella and Atkin (2015) suggest that the effectiveness of the physical learning environment refers to “the degree to which it is successful in: promoting a positive disposition/attitude to school – students, teachers, other staff, parents; supporting and enhancing specific learning/teaching activities for effective outcomes including the traditional outcomes of basic literacy and numeracy, as well as learning to ‘know why’, ‘know how’ and ‘know how to find out’; and promoting a learner-centred approach versus a teacher-centred approach.”

The effectiveness of the physical learning environment will depend on whether the required range of settings and resources is available; whether the settings are well designed and equipped for their intended purpose(s); and whether they are used as intended (Canella and Atkin, 2015).

Teacher and learner centric approaches

Education is moving away from the teacher-centric, instructionist model, which has dominated schooling since the emergence of national education systems toward student-centred, constructivist learning environments Echazarra, A. et al. (2016). Table 1 highlights some of the characteristics of teaching and learning centric approaches.

Table 1. Characteristics of teacher and learner centric approaches

Teacher Centric	Learner Centric
The teacher is the 'expert'	The teacher is seen as an enabler or facilitator of learning
Knowledge is certain and can be viewed in only one way	The teacher encourages students to explore and discover
The curriculum narrowly defines the areas of knowledge that a student must learn	The learner is an active participant and is given agency
Learners are passive and sit and receive the knowledge	Social
Learners are separated into those who don't know and those who do know	Collaborative
	Individualised
	Connected
	School leadership establishes a climate and culture conducive to teaching.
	Distributed leadership

Source: Atkin and Canella (2015); Schleicher (2015); Echazarra et al. (2016)

Julia Atkin (2014) characterises teacher centric learning environments as being those where the teacher is the 'expert', knowledge is certain and can be viewed in only one way, with a curriculum that narrowly defines the areas of knowledge that a student must learn, learners are passive and sit and receive knowledge, and they are assessed that separates 'those who do know' from 'those who don't know'. Spatially this can be described as enclosed classrooms with desks lined up in rows facing the teacher's desk and white board. Students are generally allocated to classes by year level in groups ranging from 25 to 40 individuals.

Conversely, a learner centric environment places the teacher much more as an enabler or facilitator of learning where knowledge is recognised to be continuously evolving. Rather than merely handing out facts, the teacher encourages students to explore and discover. The learner therefore is an active participant and is given agency.

Recently there has been growing recognition that the skills that young adults need to thrive in the 21st century cannot be adequately developed through the traditional teacher-centric model, which is a feature of the conventional classroom. Problem-based learning and collaborative projects are increasingly common, where the teacher's role is to guide rather than to instruct. The constructivist view is that teachers are not the source of all knowledge and that students are not 'empty vessels to be filled'. In reviewing learning Woodman (2016) notes that in constructivist thinking students are motivated to follow their own interests and assess progress by setting their own targets and monitoring their own progress. However, Woodman also draws attention to more recent, pragmatic, understanding of constructivist thinking in practice whereby the teacher decides what the student is going to learn and how the learning is going to be undertaken, and that students are in effect only self-directed up to a point as they still follow the path set out by their teachers, a point originally made by Hase and Kenyon (2007).

Andreas Schleicher (2015) argues that there are three key ingredients for creating responsive schools for 21st century learners. Teachers who are confident in their ability to

teach, a willingness to innovate, and strong school leaders who establish the conditions in their schools that enable the former two ingredients to flourish.

The OECD's work on Innovative Learning Environments focused on innovative ways of organising learning (OECD, 2013). It concluded that schools and education systems will be most powerful and effective when among other things they ensure that learning is social and often collaborative; and promote horizontal connectedness across activities and subjects, inside and outside of school. It noted that this very often requires re-thinking the organisational patterns in schools, such as re-grouping learners and re-grouping teachers for example so that there is collaborative learning and teaching, creating more flexible timetables inside and outside regular school hours, and widening pedagogical repertoires to include inquiry and design-based learning and problem-based learning. A learning centric environment is one where learning is social, collaborative, individualised, supported by formative feedback and connected.

To achieve this goal, teachers need to be equipped with the skills and resources so that they can act with sufficient autonomy to use their own creativity to determine how students learn best (Schleicher, 2015). The implication is that teachers could use a wider variety of teaching techniques ranging from individually focused research to group project work (OECD 2016b). Consequently, a range of different learning environments might be needed depending perhaps on group size, topic (does it require equipment such as in science experiments?), location (should it be inside or outside the school?), technology (do we need access to online information or programmes to assist with processing data?).

A major implication of this shift towards learning-centric pedagogies is that at the outset of the building design process it is simply not possible to be certain about the methods and approaches that teachers will use in the spaces they will occupy. As a result, the standard school classroom model of regular sized rooms lined up along one or two sides of a corridor with furniture which is heavy to move or even fixed in place, will no longer be adequate. Therefore, the only certainty is that the spatial environment will need to accommodate change.

A responsive physical learning environment

The OECD's longstanding programme of work on learning spaces now conducted under the Effective Learning Environments project explores how the spatial environment mediates the relationship between students, teachers and learning (OECD, 2010). It provides a setting designed to enable learning to take place but functionally it can either enable or constrain the user by the way space is organized and how easy it is for users to control the environment. While the building itself may in many senses be a static object, it is the interaction with users that is important. Much has been written about the building being an active participant in the learning process – the “third teacher” as described by Malaguzzi (Jarvis et al., 2017).

The design of each school as a learning environment overall, and a physical learning environment in particular, is driven by a range of contextual factors such as national or local policies, particular educational philosophies, pedagogical ambition in the school, community needs as well as how spaces are used day-to-day. School buildings also need to support and be responsive to the needs of 21st century education environments which include: promoting learning through active investigation, social interaction and collaboration; support a full range of learning and teaching strategies from direct explicit instruction to virtual connection and communication; support interdisciplinary learning;

spaces that integrate resource rich, special purpose spaces with flexible, adaptable multipurpose spaces; support individual and one-to-one, small group, large group learning; be age-stage appropriate; facilitate learning anywhere and at any time; activate and invigorate learning spaces; inspire participation in and responsibility for the learner's community; and, enable all aspects of the building design and outside spaces to be learning tools in themselves (Atkin, 2012). Blackmore et al. (2011) found that new built environments provided a catalyst and opportunities for teachers to work more collaboratively, in teams and across disciplines. While group work for students or teachers is not necessarily contingent upon the availability of appropriate spaces, it can be encouraged and greatly facilitated by spatial configuration. Although newly built environments provide opportunities, there remains a question as to what extent the design of new school buildings, or reconfigurations of space, are rooted in evidence that the perceived benefits will actually be realised.

The needs of users change over time, whether this is over the short term, for example from day-to-day when teachers might use different activities depending on the subjects being taught, or over the longer term say from year-to-year or longer as a result of technological developments, changes in government policy, or demographic fluctuations which might make the school age population rise or fall. The school building therefore needs to be able to accommodate change and be responsive to users' needs as they change.

With this in mind one way to address this capability is to consider how the learning environment is responsive to the users' needs over the long term, the medium term and short term. This offers a broad framework that can be used to frame the discussion on responsiveness in terms of who has greater control over flexibility. Taking these three time-horizons in turn, there are three broad ways in which a building can accommodate change:

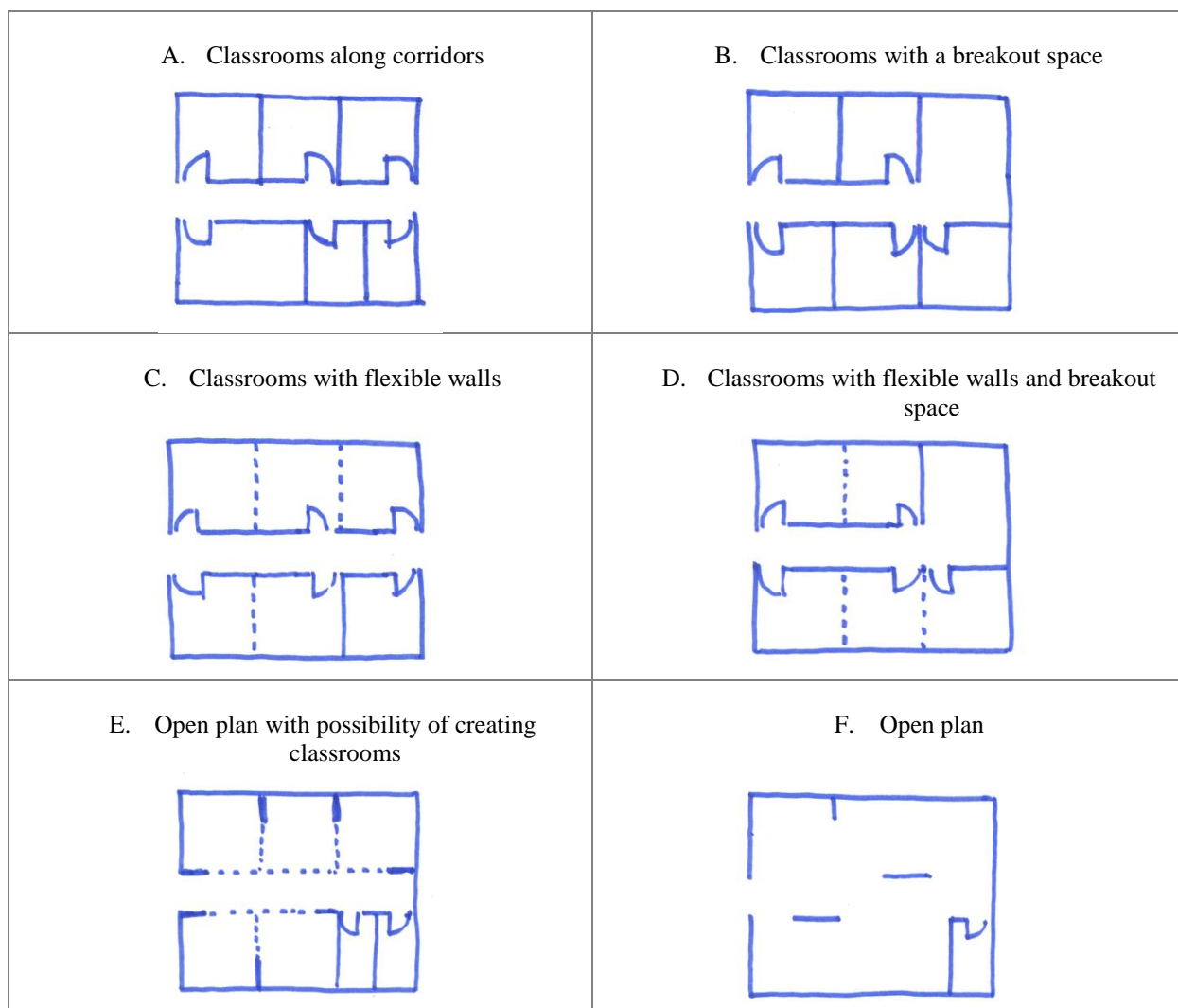
- a. Adaptability where the building is responsive to change over the long term. For example, it can be made larger to accommodate more students. This involves substantial change to the fabric and possibly the structure of the building.
- b. Adjustability where parts of the building can be changed over the short to medium term. For example, converting the space in response to changes in the education programme. Can the space be reconfigured so that it can be made larger, smaller, or a different shape? This often but not always involves some change to the fabric or technical systems but not the structure.
- c. Agility refers to short-term flexibility where the settings, the furniture and ICT can be rearranged quickly and easily. This is the kind of change that individual users might be able to make themselves. The flexibility afforded by the furniture and ICT is key to this, and so too is the general usability of the environment, for example can the students and teachers move sliding partitions and operable walls easily? Can they control heating, window shades, lighting easily?

This framework could also be applied to the non-building elements of the learning environments such as the external play spaces.

Whether a building is adaptable may depend on the design of the structure as well as say its location on a plot of land which could restrict the ability to either add more floors or make an addition on its side. The users may have little influence over this. However, the users may be able to take greater advantage of opportunities for adjustability and even more so for agility.

The spatial layout of the learning environment may suggest ease of adjustability. Dovey and Fisher (2014) identified five spatial typologies from an international review of over 50 school designs. As Imms (2017) points out, while Dovey and Fisher do not suggest that there is a hierarchy the spatial types can be organised from those with relatively little openness at one end of the spectrum to fully open at the other end. Drawing on Dovey and Fisher's typology, but including an additional variant from observation, six types of spatial arrangements are suggested in Diagrams 1A to 1F in Figure 1 below. Diagram C is the additional variant. A school invariably would be made up of a combination of these space types and would, to a greater or lesser extent, be able to adjust the size of spaces.

Figure 1. A typology of six spatial arrangements found in schools



To take advantage of agility the furniture and furniture configuration (including technology such as display screens) can support different types of teaching and learning from presentation / lecture type arrangement, group arrangements to layouts for individual work or one-to-one conversations with a teacher. To maximise agility tables and desks need to

be mobile and lightweight, and to maximise student comfort they should be an appropriate height and size for the student and the learning activity or be adjustable. Although merely being able to move the furniture may not be enough to afford different layouts, if the size of the space itself is not sufficient to allow different arrangements.

In sum, a responsive physical learning environment is one that is capable of accepting change and one where it is easier for users to make changes quickly. Conversely, a non-responsive learning environment is one that is rigid and constrains the users – it is inflexible (see Table 2). Although the school building might itself have the traits of an environment of a flexible physical learning environment and offer the opportunity to students and teachers to use it in various ways, whether they actually do so might depend on the culture and practice, school climate and whether they know how to make the best use of available spaces.

Table 2. Characteristics of a responsive and unresponsive learning environment

Unresponsive Inert; steady; passive	Responsive to users' needs Active; sensitive
Hard to reconfigure the space shapes and sizes	Flexibility – reconfigurable
High degree of fixed-function space	Adaptable
Difficult to control environmental qualities: temperature, lighting, air quality, sound	Adjustable
Furniture that is difficult to rearrange	Agile
	Range of space types
	Controllability of the environment

Source: Lippman (2012); Dovey and Fisher (2014); OECD Designing for Education (OECD 2011)

Transforming the pedagogical and physical learning environment

The design of environments to support 21st century learning should be driven by a response to the context, clarity of educative purpose and pedagogy (Schleicher, 2018). In developing plans for a new school building or remodelling the physical infrastructure of an existing school, a parallel process of exploring pedagogical practices within the school is needed. In other words, both “diagnostic” processes should go hand-in-hand.

The process for transforming learning environments therefore should be collaborative, inclusive and iterative. The role of design in the early stages is to test ideas and show what is possible and help the process of translating the organisational needs into spatial requirements, which then becomes the overall building brief. This could include prototyping both pedagogies and spaces as teachers test how they might teach differently and how the space should respond to their needs.

In contrast, a conventional building design process can be very linear, where the designer is given a schedule of spaces and asked to arrange them in a particular way with minimal input from the end-users whose views are often conveyed only indirectly through the voice of the school principal. Heitor (2012) argues that an integrated process that enables the active participation of user-clients and designers delivers better outcomes.

Whether it is for remodelling an existing building or the design of a new building, the processes are similar. Arguably the users (students, teachers and other staff) involved in the process are co-designers. More so as they use their learning environment and make daily changes to reconfigure it to meet their needs. So often, the ‘designers’ are seen merely

as outsiders who impose a design whereas it is increasingly recognised that the users are key participants in this process.

Blyth and Worthington (2010) identified briefing as a continuous process that begins before the building is conceptualised and continues throughout inhabitation as the users re-evaluate how the building has to change to support their own changing needs. To be truly supportive of the users' needs it makes sense that the design of the spatial environment is based on educational needs. Not only this, the design decisions should be based on evidence of what works (Lippman, 2012).

The OECD School User Survey (OECD, 2018b) provides an opportunity to do this in several ways. The survey could be used at the start of a project as part of the briefing process to collect data on how teachers and students view the spaces in their school; then it could be used again after the project to compare how the newly designed environment performs. In addition, information could be drawn from surveys of other schools to inform the design process.

Box 1. The OECD School User Survey: Improving Learning Spaces Together

The *OECD School User Survey* gives voice to those who use schools on a daily basis to generate insights on how students and teachers use the available learning spaces in practice. The aim is to use this information to identify how schools could make more effective use of the physical learning spaces available.

Consisting of three self-assessment questionnaires designed for students, teachers and school leaders, the survey can be used to collect and triangulate evidence on the actual use of learning spaces, as well as to solicit user perspectives.

The OECD School User Survey focuses on five areas:

- The physical environment and its use;
- The use of technology;
- Comfort and safety;
- Perception of learning environments; and
- Overall satisfaction with the school facilities

The results can be used at the school level to support continuous improvement and the intelligent use or refurbishment of educational facilities. They can also provide deeper insights into how physical learning environments shape teaching practices and affect students' learning outcomes and well-being.

To access the OECD School User Survey see:

www.oecd.org/education/OECD-School-User-Survey-2018.pdf.

Transition to the new environment

Once the building project is complete, and during initial occupancy, the users will need to understand how the new building or new spaces work, in other words how can they reconfigure the spaces, use the ICT and so on. Although the new spaces create opportunities, they also pose challenges as teachers and students need to learn how to adjust

the way that they work (Saltmarsh et al., 2014). This might be underpinned by staff development training or workshops with the architects to explore how they can make most effective use of their spaces (Woolner et al., 2012).

While new built environments provide an opportunity and can provide a catalyst for innovative pedagogies, changing teacher mind-sets and practices with regard to pedagogy is the precondition for optimal use of redesigned built environments (Blackmore et al., 2011). Woolner et al (2012) argue that it cannot be assumed that changing the spaces will lead to a predictable change in teaching and learning practices. This touches on the complexity of the relationship between space and pedagogy and the need for teachers to develop greater spatial literacy (Fisher 2004).

As part of the Innovative Learning Environments and Teacher Change (ILETC) project, Mahat et al. (2018) identified a range of spatial competencies that teachers should have including the capacity to evaluate spatial impact, competencies to continually adjust the space as well as the teaching to match the current learning level of students, knowledge of how the opportunities that the space presents to meet the range of learning needs; and spatial knowledge about the collaborative possibilities embedded in their learning environment. While this list may not be exhaustive Mahat goes on to suggest that they need guidance on practical ways that they can use the learning environments in different ways.

OECD (2017) concluded that managing transition into new built spaces was critical in terms of which organisational and pedagogical practices were adopted. Teachers were more likely to use redesigned spaces differently if they had been encouraged prior to occupancy to plan, to take risks and experiment with the use of flexible spaces, and to develop new pedagogical strategies (Schneider, 2003).

An effective transition process demands clear leadership from the client (school principals and / or education authority) (Blackmore, 2011), clear and timely decision making, and participation from users to develop an understanding of the needs but also the opportunities and challenges they face, and involves exploring how teaching and learning takes place and how it could take place in the future.

School leadership is crucial in supporting this (OECD, 2016). Leadership at all levels of the school is crucial for setting the direction, culture and climate in the school and most likely to produce changes in practice that will improve student learning, and pedagogical leadership encouraging a culture of learning and innovation is vital (Schleicher, 2015). Schleicher (2015) points out that a strong school leader establishes a climate conducive to teaching and learning and fosters community support for the efforts of the teaching staff and ensures that the school's environment is one that is safe and conducive to learning, and that teachers' efforts are focused on instruction and on improving their own practice. Blackmore (OECD, 2014) argues that leadership by principals and teachers is most likely to produce changes in practice that will improve student learning are those which focus on teaching practice.

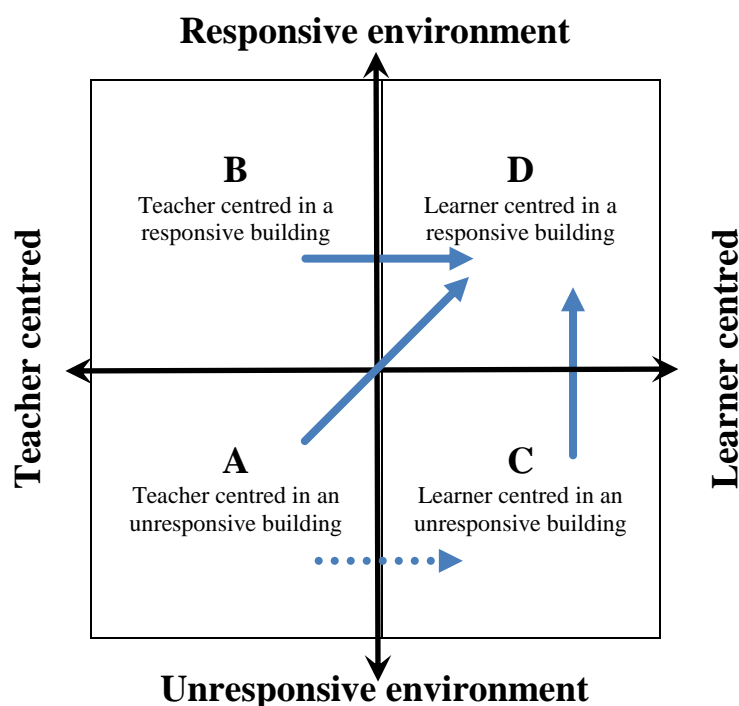
Aligning spatial environments to evolving teaching practice is a continuous process throughout the lifetime of a school building as the teaching and learning needs change (Bradbeer, 2016). This suggests that inhabitation of the learning environments should be supported by periodic evaluations to see how the needs of the users change and how the building should adapt. Crucially, such evaluations should also explore the impact on student outcomes of the teaching practices themselves. In other words, they should strive to develop an evidence base linking pedagogical practice, student outcomes (related to learning, health and wellbeing) with the learning environment.

A framework for exploring the transformational journey of pedagogy and space

The two dimensions of responsiveness and learner/teacher centeredness can be combined to map schools in simple matrix (see Figure 2). A given school might be learner centred or teacher centred in a building that is responsive or unresponsive to its needs. In truth, schools will sit at a point somewhere in between being teacher centred and learner centred, although they may have more characteristics that suggest they sit nearer one end or the other. Similarly, the buildings they use may be more or less responsive. The arrows in Figure 2 indicate possible trajectories for a given school's transformation journey depending on where they are currently situated and their own objectives for the future. For example, from Quadrant A, a teacher centred environment in an unresponsive building, to Quadrant D, a learner-centred environment in a responsive building.

It should be noted that this matrix presents simplified, 'ideal type' combinations and has been developed as an analytical tool for 'mapping' concrete case studies of schools' efforts to introduce a range of pedagogical approaches and adapt their physical learning environments accordingly.

Figure 2. A matrix for mapping case studies along two dimensions of responsiveness and learner/teacher centeredness



Quadrant A:

Pedagogical approaches are highly teacher-centred in a building in which the learning spaces are unresponsive to change. There are relatively tight connections between the physical learning environment and users i.e. the former constrains what the latter can do e.g. it is very hard to adjust the size of the space or to move furniture.

Strategy for change: *A school that finds itself in Quadrant A might find it easier to move to Quadrant C i.e. change its approach to teaching and learning before considering a move to Quadrant D. Moving to Quadrant B is of course an option, but may demand significant investment in altering the physical environment, but with limited returns on investment if without making efforts to change the teaching and learning culture.*

Quadrant B:

The pedagogical approaches used in the school are highly teacher-centred but the physical environment is responsive and presents an opportunity for change.

Strategy for change: *A school in this Quadrant could look to change its teaching and learning approaches to move to Quadrant D. Only minor modifications to the physical learning environment may be needed initially. However, a process of continuous evaluation of teaching and learning in the school may be needed to ensure alignment over time.*

Quadrant C:

The learning environment uses a range of pedagogies to support student learning. On this side of the matrix, there is student agency, but the physical learning environment represents a constraint. The risk is that efforts to develop learner-centred pedagogical approaches may be impeded by the constraints imposed by an unresponsive building.

Strategy for change: *A school in this Quadrant might consider investments in the physical learning environment to better support pedagogical practice and move towards Quadrant D.*

Quadrant D:

A range of pedagogical approaches is used by teachers and students have agency, supported by a physical learning environment that is flexible and able to accommodate change.

Strategy for change: *A school in this Quadrant might seek to continuously review its approaches to teaching and learning, how its environment responds to its needs, and what it might need to change to meet emerging and anticipated needs.*

Collecting case studies from schools

Using the analytical framework outlined above as a starting point, the OECD will launch a call for case studies from a range of country contexts in Q1 2019. Each case study will feature a school as it charts their transformational journey and how they are undertaking the journey. The aim of the case studies is to provide practical insights and examples that others can use to help them develop their own journey.

The case studies seek to explore both the educational transformational journey and the spatial transformation by using a common template to facilitate international peer-learning (see Table 3):

1. Context: the first part of each case study will set out the context and describe the pedagogy and space before transformation;
2. Developing the pedagogical and spatial briefs: the second part describes the process in terms of two main components: the pedagogical brief and the spatial brief; It will include an account of the vision that the school has for teaching and learning; how the educational brief was developed, who was involved and how the educational brief translates into the type of spaces that would be needed and how it has informed the design process;
3. Transition and evaluation: the third part focuses on how schools have managed the transition into the new or modified spaces, whether teachers received training or other support in exploring how to use the new spaces, and whether such training continues during occupancy of the spaces. It will also describe whether evaluations have been conducted of the process or the overall impact on outcomes (e.g. learning, well-being).

Table 3. Case study template

Section	Content
A. Context	<ul style="list-style-type: none"> ▪ Type and size of school; location.
B. Pedagogy and space before transformation	<ul style="list-style-type: none"> ▪ The pedagogical environment before transformation. ▪ The spatial environment before transformation.
C. Transforming learning – the educational brief	<ul style="list-style-type: none"> ▪ The vision and educational brief for the new or renewed learning environment. ▪ The process of developing the educational brief and how it was led and who by (school/client). ▪ How the users (teachers, students, other staff, community) were engaged in the process. ▪ The strategies adopted to manage pedagogical change.
D. Creating the space – the design brief	<ul style="list-style-type: none"> ▪ The building design process and how the school user was engaged in the building design process. ▪ The spatial design of the new or renovated spaces and how it meets the pedagogical needs.
E. Transition to the transformed learning environment	<ul style="list-style-type: none"> ▪ How the transition to the new environment was managed ▪ Whether training or other support was provided for teachers in how to use the new spaces and whether this training continues during occupancy of the building.
F. Evaluation	<ul style="list-style-type: none"> ▪ How the school has evaluated the impact of the transition ▪ Initiatives to undertake regular evaluation of evolving pedagogical practice as a basis for aligning the physical learning environment ▪ Whether the space and teaching is regularly evaluated ▪ What changes are prompted and how are they carried out
G. Additional comments	

Next steps

An initial draft of this analytical framework was reviewed by the members of the OECD Group of National Experts (GNEELE) at their annual meeting in November 2018, together with a draft case study based on the template outlined above (see Annex 1 for the full template).

This analytical framework will serve as the main background document for a Call for Case Studies to be launched in Q1 2019. The purpose of the OECD's case study collection will be to ensure that the information collected through case studies at the school level generate useful insights both for school leaders and for education policy makers at the regional and national levels

The results of this comparative analysis will inform discussion among education policy makers and the identification of key factors to be taken into consideration when seeking to align spatial design with evolving pedagogical practice.

The purpose of the GNEELE review.

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Annex A.

Call for Case Studies

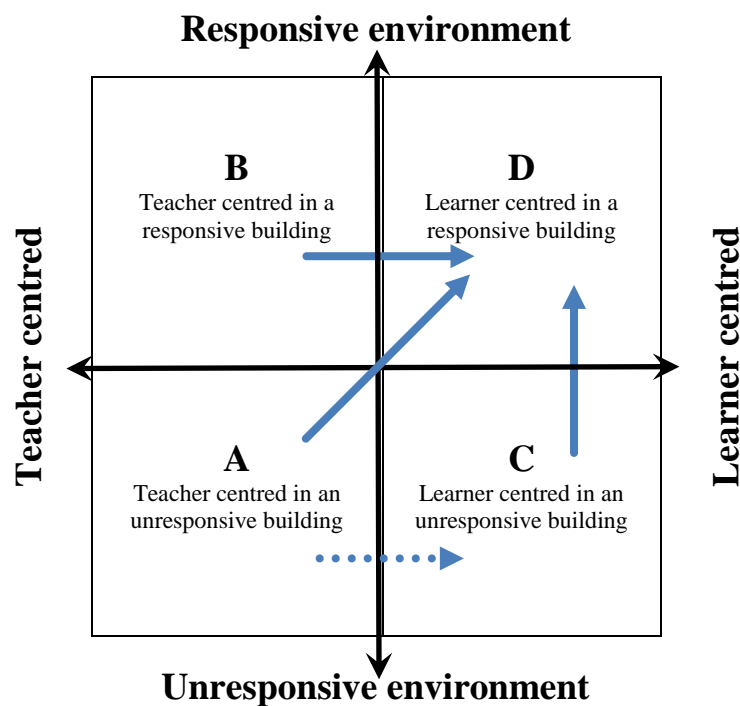
Transforming pedagogy and space together

Education is undergoing a transformation spurred by several major drivers: the need to develop in young adults the skills and ways of thinking, living together and working to thrive in the 21st century society; developments in our understanding about learning and how people learn; and, the ubiquity of technology in society, in the workplace and in education.

The OECD Effective Learning Environments is inviting the submission of case studies that explore how schools all around the world are transforming and aligning their pedagogical approaches and physical learning environments. The intention is to provide ideas and inspiration for school leaders, teachers and policy makers based on concrete practice.

Analytical framework

The OECD Effective Learning Environments project has developed an analytical framework for the collection and curation of a set of case studies. To do this it proposes a simple model that situates schools using two broad parameters characterising: a) the pedagogical environment and b) the spatial environment. This will allow case studies to be “mapped” along a spectrum: from a teacher-centric to a learner-centric pedagogical approach; and, from a responsive to a non-responsive spatial environment.



Case study template

The case study would seek to describe:

A. Context	<ul style="list-style-type: none"> ▪ Type and size of school; location. ▪ Project information.
B. Pedagogy and space before transformation	<ul style="list-style-type: none"> ▪ The pedagogical approach before transformation. ▪ The physical learning environment before transformation.
C. Transforming learning – the educational brief	<ul style="list-style-type: none"> ▪ The vision and educational brief for the new or renewed learning environment. ▪ The process of developing the educational brief and how it was led and by who (school/client). ▪ How the users (teachers, students, other staff, community) were engaged in the process. ▪ The strategies adopted to manage pedagogical change.
D. Creating the space – the design brief	<ul style="list-style-type: none"> ▪ The building design process and how the school user was engaged in the building design process. ▪ The spatial design of the new or renovated spaces and how it meets the pedagogical needs.
E. Transition to the transformed learning environment	<ul style="list-style-type: none"> ▪ How the transition to the new environment was or is being managed. ▪ Whether there was training for teachers in how to use the new spaces and whether this training continues during occupancy of the building.
F. Evaluation	<ul style="list-style-type: none"> ▪ Whether the space and teaching is regularly evaluated ▪ What changes are prompted and how are they carried out
G. Additional comments	

Template for Case Studies

General Instructions

Please use the following template to describe the learning environment of the school.

Please address all of the questions and where they do not appear to be relevant to your context please put “not applicable” (N/A). There is no word limit for the text. The final section asks for supporting material such as photographs, diagrams, floor plans, evaluation reports etc. Please attach/enclose electronic versions of the information with the template.

Please return the completed template to Ria Sandilands in the OECD Secretariat (Ria.Sandilands@oecd.org) by **31 March 2019**. You may be contacted by the OECD Consultants Alastair Blyth (A.Blyth@westminster.ac.uk) and Julie Velissaratou (jvel.mba2008@gmail.com) for further information and any clarifications needed. The OECD may edit the case study prior to publication online.

A. Context

Please provide contextual information below:

1 General Information

-
- a) Name of the school
- b) Country
- c) Which of the following best describes the community in which the facility is located? Please pick only one from:
- village, hamlet or rural area (>3 000 people)
 - small town (3 000-15 000 people)
 - town (15 000-100 000 people)
 - city (100 000-1 000 000 people)
 - large city (>1 000 000 people)
- d) Which level(s) of education does the facility serve? Please use at least one from:
- Pre-primary (*please specify day care centre, kindergarten, other*)
 - Primary
 - Lower secondary
 - Higher secondary
- e) Please provide the numbers of:
- i) full-time (FT) students currently in the school:
 - ii) part-time (PT) students currently in the school:
 - iii) full-time (FT) teachers currently in the school:
 - iv) part-time (PT) teachers currently in the school:
- f) What is the total capacity of the facility (i.e. the number of full-time students that the institution is able to enrol to receive educational instruction within the building)?
-

2 Project Information

-
- a) What is the type of project? Please pick only one from:
- New building
 - Extension (the expansion of existing buildings)
 - Renovation
 - Part extension and renovation
- b) In what year was the project (construction, extension or renovation) completed?
- c) Approximately what is the gross surface area* of the construction, extension or renovation, in m²?
- d) Approximately what is the gross surface area* of the whole school, in m²?
- e) Please provide the name of the architectural firm (if relevant):
- f) Please provide the name of the client (was the school the client or the education authority?):
-

**The gross surface area is the total area in square metres (m²) of all educational buildings designated for teaching, recreation, technology, storage, and any other purpose. It is usually measured around the exterior walls of buildings. It excludes grounds and covered walkways linking buildings, roof overhangs, eaves or porches.*

B. Pedagogy and space before transformation

1. Please describe the pedagogical approach before transformation

For example, how was teaching and learning organised in the school. How were the students grouped (e.g. by age? ability? specialism of the teachers?); what size were the groups (e.g. class sizes); approaches to teaching adopted widely or rarely; timetabling (e.g. set periods of time for classes); autonomy of the school and its teachers in deciding the pedagogical approach to use.

2. On a scale from 1 to 5, would you describe the original pedagogical approach as teacher centred or learner centred?

1	2	3	4	5
Very teacher centred				Very learner centred

3. Please provide examples of the layout of the physical learning environment before transformation

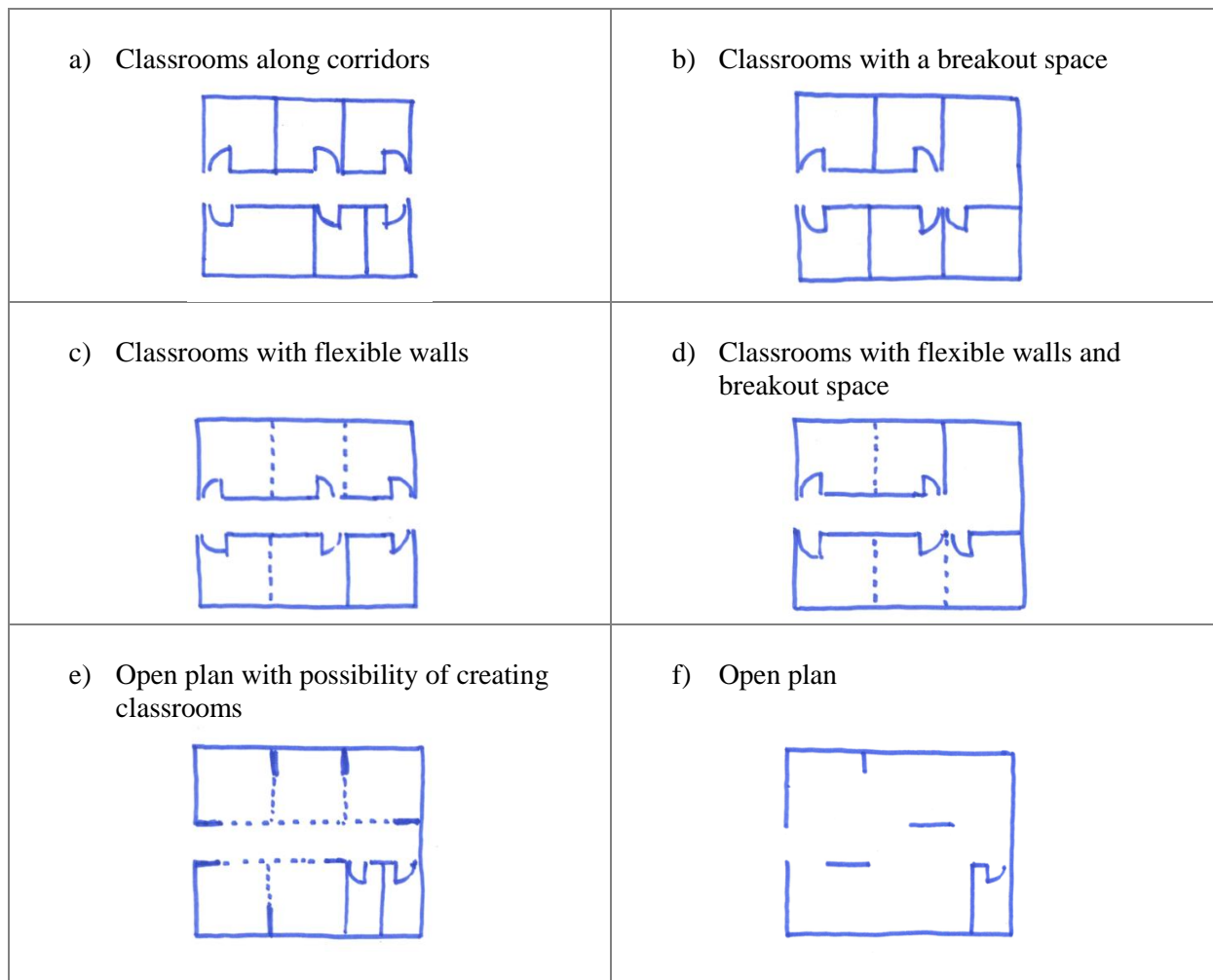
For example, the organisation of the spaces (e.g. classes entered through a corridor; multi-spaces arranged around assembly areas).

4. Before the transformation, approximately* what proportion of the space in the school was made up of space types (see diagrams a) to f) below):

- a. Classrooms along corridors: _____%
- b. Classrooms with a breakout space: _____%
- c. Classrooms with flexible walls: _____%
- d. Classrooms with flexible walls and breakout space: _____%
- e. Open plan with possibility of creating classrooms: _____%
- f. Open plan: _____%

Note: These figures are only meant to be approximate and give an indication of how extensive the different space types might be.

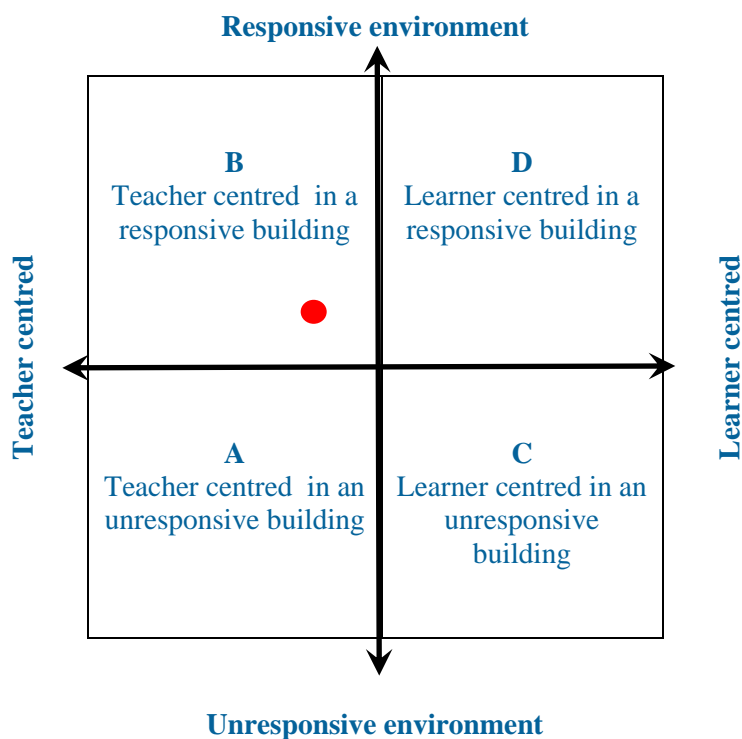
The following diagrams describe different combinations of spatial configurations from Closed Classrooms along corridors (a) to Open (f).



5. On a scale from 1 to 5, how responsive to teaching needs would you describe the building?

1	2	3	4	5
Very unresponsive				Very responsive

In the 2X2 matrix, where does the school stand before the transformation? Move the red dot below to position the school accordingly.



C. Transforming learning – the educational brief

Please describe the:

1. Vision for the new or renewed learning environment

For example, what is the approach to pedagogy in the school?

2. Would you describe the new pedagogical approach as teacher centred or learner centred?

1	2	3	4	5
Very teacher centred	Moderately teacher centred	Neutral	Moderately learner centred	Very learner centred

3. Process of developing the educational brief

For example, who was managing/leading the process (school/client)? Who was involved in the development of the educational brief (teachers, students, other staff, community)? How were the users engaged in the process and what was their input? What strategies were used to manage the pedagogical change? What resources were devoted to accompanying this transformation (e.g. time, funds, professional development for teachers etc)?

D. Creating the space – the design brief

Please describe the:

1. Development of the design brief

Briefly describe the building design process and the process of developing the design brief. Who was managing/leading the process (school/client)? Who was involved in the development of the design brief (teachers, students, other staff, community)? How were the users engaged in the process and what was their input?

2. The spatial design of the physical learning environment

How does the spatial design correspond to the pedagogical needs outlined in the educational brief? Give details about the organisation of the spaces (e.g. classes entered through a corridor; multi-spaces arranged around assembly areas). Does the school have autonomy in deciding how to best use the space?

3. On a scale from 1 to 5, how responsive to teaching needs would you describe the new building?

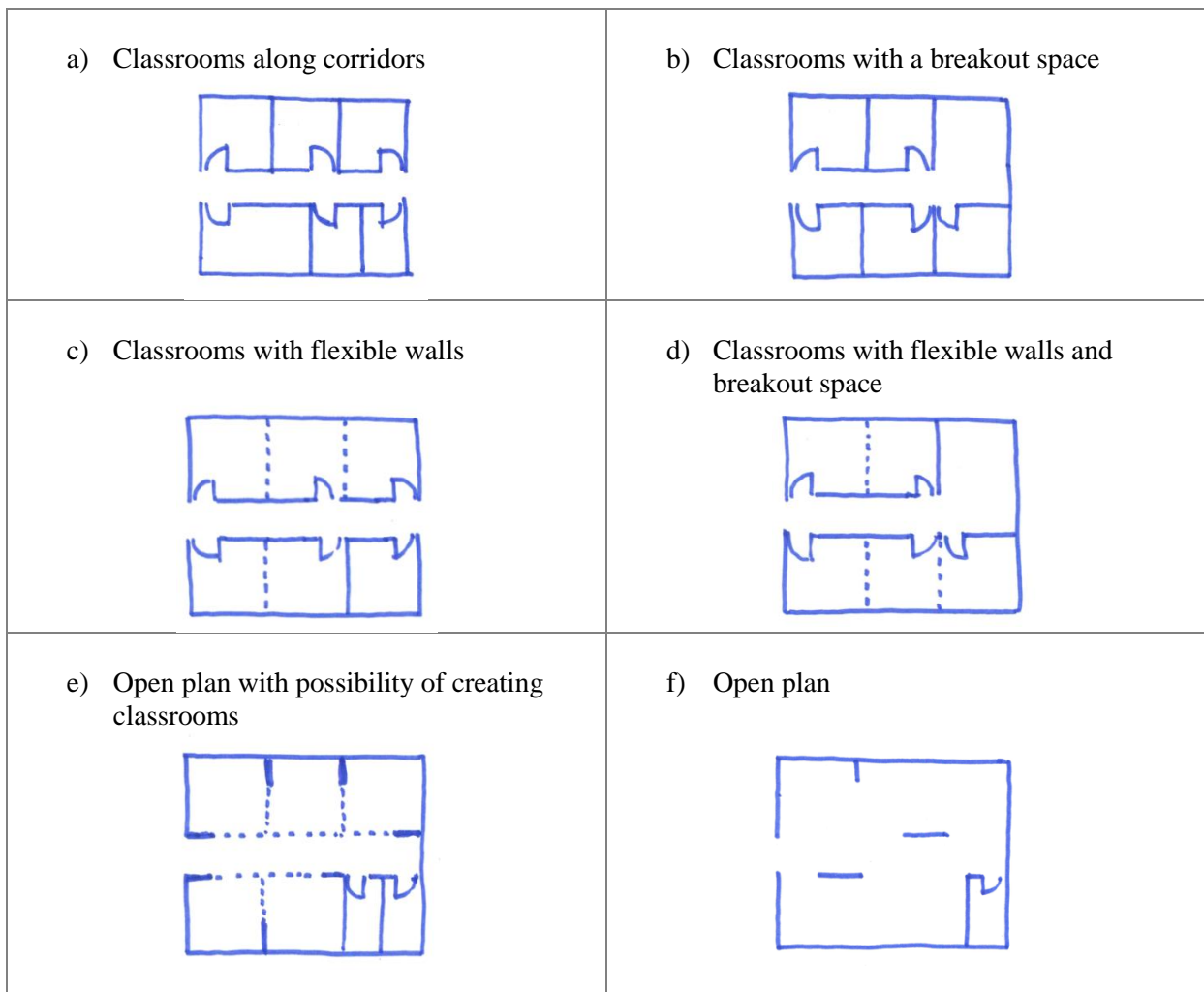
1	2	3	4	5
Very unresponsive	Moderately unresponsive	Neutral	Moderately responsive	Very responsive

4. After the transformation, approximately* what proportion of the space in the school was made up of space types (see diagrams a) to f) below):

- a. Classrooms along corridors: _____%
- b. Classrooms with a breakout space: _____%
- c. Classrooms with flexible walls: _____%
- d. Classrooms with flexible walls and breakout space: _____%
- e. Open plan with possibility of creating classrooms: _____%
- f. Open plan: _____%

Note: These figures are only meant to be approximate and give an indication of how extensive the different space types might be.

The following diagrams describe different combinations of spatial configurations from closed classrooms along corridors (a) to Open (f).



E. Transition to the transformed environment

Please describe the:

1. Management of the transition to the new spaces

Briefly describe the process of the transition to the new environment. For example, who is managing/leading the process? What is expected by the school users? Were all elements of the educational and the design brief implemented? Did teachers receive a briefing or training in how to use the new spaces? Does the training continue during occupancy of the building?

F. Evaluation

Please describe the:

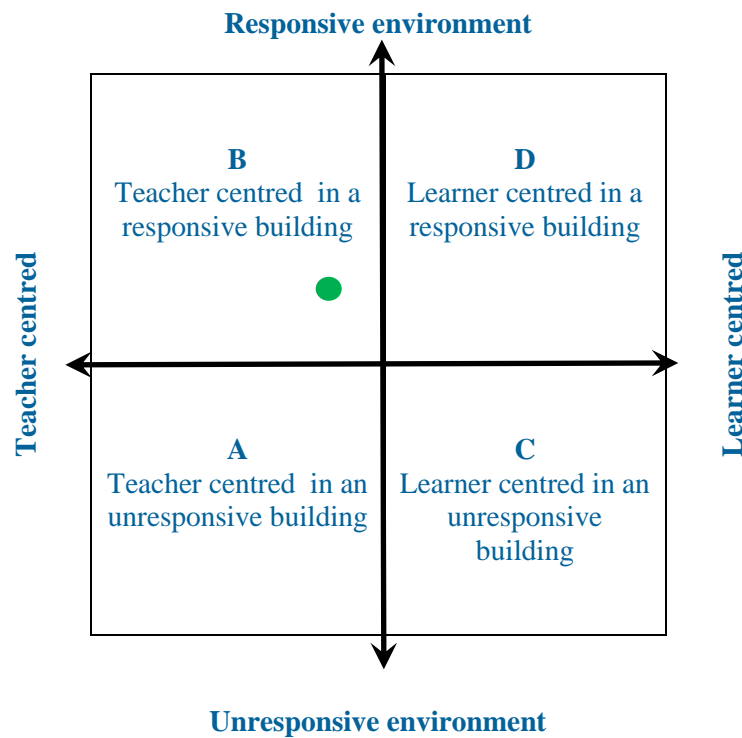
1. Evaluation of the new learning environment

Has the transformation process including the spaces themselves already been evaluated? If not, is it planned for the future? What is the format of the evaluation (e.g. parents' satisfaction review; users' perspectives; students' performance; independent audit) and who is leading the process? What were the key insights from the evaluation? What kind of changes may be initiated after the evaluation?

2. Continuous evaluation of the learning environment

Is there a plan to periodically re-evaluate the learning environment? If so, at what time intervals?

In the 2X2 matrix, where does the school stand after the transformation? Move the green dot below to position the school accordingly.



G. Additional comments

1. Any additional comments

Please use this space to share any insights or advice you would want to share with other schools who are embarking upon their own transformation of pedagogy and space, based on your own experience

Supporting material

Please supply illustrative material to support the case study (for example, photographs, drawings – such as floor plans, 3D drawings, sketches, organisational charts, evaluation reports), and any other information that would illustrate the transformational journey of the school. It would be helpful if you could provide a short caption with each image and diagram.

Also, please include a link to the school's website, as well as any other links you think are relevant to the case study.