

USING LEARNING ACTIVITIES TO IDENTIFY AND ACHIEVE INNOVATION IN TEACHING AND LEARNING

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ALIGNMENT

PARTICIPATORY DESIGN SPACE AND LEARNING

Participatory Design

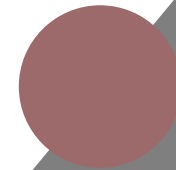
Education as key driver

User-informed design

Mitigating risk

Ensuring context-based insights

(Newton, 2008; Deed, 2014; Bojer, 2020; Deppeler & Aitkins, 2020)



slido



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ALIGNMENT

Participatory Design

Four principles (Woolner, 2018)

**Start where the people are at
(mentally & physically)**

**Understand the intertwining of
physical, organisational and
social aspects of school
environments**

**Facilitate the exploration of
ideas and possibilities**

**Appreciate the complex lengthy
process that is change**

ALIGNMENT

Space and Learning

Impact on learning (Barrett, Zhang & Barret, 2011)

Affordances of environment (Alterator & Deed, 2018; Young and Cleveland, 2021)

Alignment of practice and design (Daniels et al., 2019)

It is very difficult to isolate learning behaviour from any other form of behaviour: “rather, we undertake activities from which we have learnt” (Daniels et al, 2019 p. 62)





Foundation



Aspiration

FRAMEWORK

Education into design

Translation through activities

- Pedagogical pillar [priority, aspiration]
- Outline behaviour [learner, educators, others]
- Detail with process + resources

Teacher talk

- Design implications
- Learning spaces

Design talk



FRAMEWORK

Education into design
Translation through activities

PROCESS OVERVIEW

Meeting with academic coordinators

A meeting was held with all academic coordinators to clarify how each of the seven pedagogical pillars were being enacted within the MISK Schools. The coordinators identified current good practice for each pillar as well as strategies that required more investment.

Pedagogical pillar	Illustrative good practice	Investment required
Personalized	Digital access	Improvements to how maker spaces are designed and integrated into the school
	Spaces for multi-media and TV studio	
	ELA program	
	Personal learning plans	
	Make and create/display areas	
	Cooking program	
Experiential and project based	Kindergarten – choosing activity zones	Critical reflection processes
	Escape room project	
	Maker spaces	
Self-directed	Cross-curriculum themes	Requires considerable investment in developing student capacity
	Programs that afford student curiosity	
Global minded	Game based learning	Ongoing development of current opportunities
	Projects comparing Saudi culture with other countries	
	Daily interactions with international staff members	
	Student travel opportunities	
	Networked projects	
Holistic	VR immersive experiences	Improved playgrounds: ropes, climbing walls, tactile play equipment
	ELA program	
	Support staff	
Ready for a global future	Theatre/drama	Provision of small classroom spaces e.g. caves, nooks
Promoting leadership, service and citizenship	Behavioral program – ready to learn	Ongoing development of current opportunities
	Innovation/entrepreneurial hub	
	Design challenges	Ongoing development of current opportunities
	Problem solving	
	Creating digital content	
	Co-planning	
	Assemblies, public speaking	
	Sustainability projects	



FRAMEWORK

Education into design
Translation through activities

PEDAGOGICAL PILLARS

Pedagogical pillar: Experiential learning

Experiential learning

- Learners are active participants in their own learning
- Learners are self-directed, constructing and monitoring their own learning
- Social interaction is a necessary part of effective learning
- Constructing knowledge and meaning from experience
- Learning is a process, rather than an outcome

Experiential learning is underpinned by the idea that meaning is constructed by the learner. Key principles of constructivism (O'Donnell, 2012). A key aspect is that the social and cultural context in which knowledge construction occurs provides resources, support and direction. Students have to make sense of situations, or create meaning from experience (Loyens & Gijbels, 2008).

Experiential learning environments (Loyens & Gijbels, 2008):

- Contain resources, including peers, educators, computers, books etc
- Allow social and learning interactions with others
- Enable planning, implementation and review (reflection)
- Encourage self-directed behavior
- Resemble real life situations (they are complex).

Experiential learning, by its definitional nature, is a transaction between an individual and a context, through either activity, events, or as part of a community of learners. Learners are conceptualized as actively influencing learning environments; and learning environments also influence learners (Yardley, Teunissen, & Doman, 2012). This is a mutual and inter-dependent relationship.

Experiential learning implies active learning - making meaning of experiences, through the social and cultural use of language, symbols or artefacts. In other words, active learning is grounded in and influences socially and culturally shaped contexts (Palincsar, 1998). Active learning can be characterized as a strategic, effortful and intentional transaction between the teacher and student (Clark, 2005). Optimally, the teacher designs and assigns a task and each student autonomously interprets the teacher's intention and enacts strategies to achieve it.

This infers a mutual set of dynamic reflexive actions between a student, their peers, their teacher, and the classroom or school context.

One example of experiential learning is Problem Based Learning (PBL). PBL allows learners to engage in complex tasks. Scaffolding is needed to ensure the learners can gain traction with the learning task - this structure and guidance supports students learning about how to complete this sort of task, and why it should be done in that way (Hmelo-Silver, Duncan, & Chinn, 2007). An example of a PBL process and associated scaffolding is in Table 2.

Table 2. The PBL process and examples of scaffolding (based on T. Bell, Urhahne, Schanze, & Ploetzner, 2010).

Problem solving process	Scaffolding & resources
Orientation/question	Focus attention
	Construct a joint problem space
Hypothesis	Explore different ideas
	Facilitate casual explanation
Planning	Suggest learning pathways
	Identify support or resources needed at different planning stages
Investigation	Multiple representations
	Reflection activities
	Reduce complexity of proposed models
Analysis	Analysis tools and examples
Model	Model development
	Mapping and representation
	Concept mapping
	Visual drafting
Conclusion	Flexible presentation of learning objects
	Reflection activities
Communication	Seminars/conferences
	Presentations/displays
	Performance

FRAMEWORK

Education into design

Translation through activities

PEDAGOGICAL PILLARS

Pedagogical Concepts and the Learning Environment

Pillar	Description	Design implications	Potential learning spaces
Personalized	<p>When the learner views the learning task/experience as engaging and meaningful, and as directly addressing their learning needs, capabilities and interests.</p> <p>Personalized learning depends on effective teacher differentiation of the curriculum in response to the diversity of learner needs, and the development of independent learner capacities.</p> <p>Personalized learning includes:</p> <ul style="list-style-type: none"> Acquisition of knowledge Managed levels of student autonomy Differentiated curriculum Participation in learning processes as co-learners Participation in a learning community Learning to reason within and across subjects Learning what to value and why in these different ways of knowing Confidence in their own goals and perspectives 	<ul style="list-style-type: none"> Spaces for direct teacher instruction, demonstration and presentation Spaces for a range of learning approaches, preferences and capacity Choice of spaces to support individual learning needs (e.g. sense of quietness and enclosure) Age-stage appropriate fit out of spaces for learning and socialisation All areas support structured and informal collaboration for learning Spaces support a community of inquiry Access to teaching resources throughout space Fit out is appropriate for a range of learning processes and activities 	<ul style="list-style-type: none"> Learning studios – flexible and agile Creative centre Learning support Distributed staff spaces Gardens/outdoor spaces adjacent to classroom Screening for quiet spaces Open/transparent Consider transitioning between spaces Labs Open space that contain long term projects – for synergistic collaboration
Experiential and project based	<p>Data analysis to inform teacher differentiation</p> <ul style="list-style-type: none"> Learning by doing – learners are active participants in their own learning Learners are self-regulated, constructing and monitoring their own learning Social interaction is a necessary part of effective learning Constructing knowledge and meaning from experience Learning is a process, rather than an outcome Learning is a transaction between person and context 	<ul style="list-style-type: none"> Spaces for creative and investigative activities with a range of media, specialised equipment and materials Spaces for construction, modelling and simulation, including play-based and authentic settings Spaces for gatherings, performance Spaces for long term project work Access to virtual connectivity Interaction between indoor and outdoor spaces Spaces for display of learning resources 	<ul style="list-style-type: none"> Wood/Craft shop Maker space Science labs Photography, media, recording studio Language hub Agricultural centre Garden/greenhouse Sustainable projects Embodied (VR, immersive) Non-tech Play-based
Self-directed	<p>Self-directed students:</p> <ul style="list-style-type: none"> Seek out opportunities to learn Shape their own learning environment View learning as a systematic and controllable process Select and apply learning strategies in response to their perceptions of task requirements and contextual affordances Accept responsibility for their performance and achievements Can explain their learning choices 	<ul style="list-style-type: none"> Spaces for meetings, planning and review of individual progress Spaces for display of student work Spaces for reflective activities Spaces that afford participation, ownership and responsibility/respect for the learning community Spaces that inspire an aesthetic response among students Support an informal social community for the development of personal and social capacity 	<ul style="list-style-type: none"> Gallery, display Cooking centre Natural light Shading Spaciousness – windows Arabic motifs and screens Connection to Saudi/ MSK narrative Visibility – glass walls
Global minded	<ul style="list-style-type: none"> To hold multiple perspectives, to appreciate and respect cultural differences Adapt and navigate different cultures Study abroad opportunities Expansive learning (digital literacy, research) 	<ul style="list-style-type: none"> Collaborative web-based activities Video conferences Online workshops Seminar programs (presentation and discussion space) 	<ul style="list-style-type: none"> Global learning centre Library Sustainable features MSK assets (shared facilities)



FRAMEWORK

Education into design
Translation through activities

Activities

Thinking in activities (workshops, lets try one)
Finding common ground (practice and design)
Design Expression(s)
Communicating with educators

CASE STUDY 1

Existing Government School_ Regional Victoria, Australia

Wodonga Middle Years

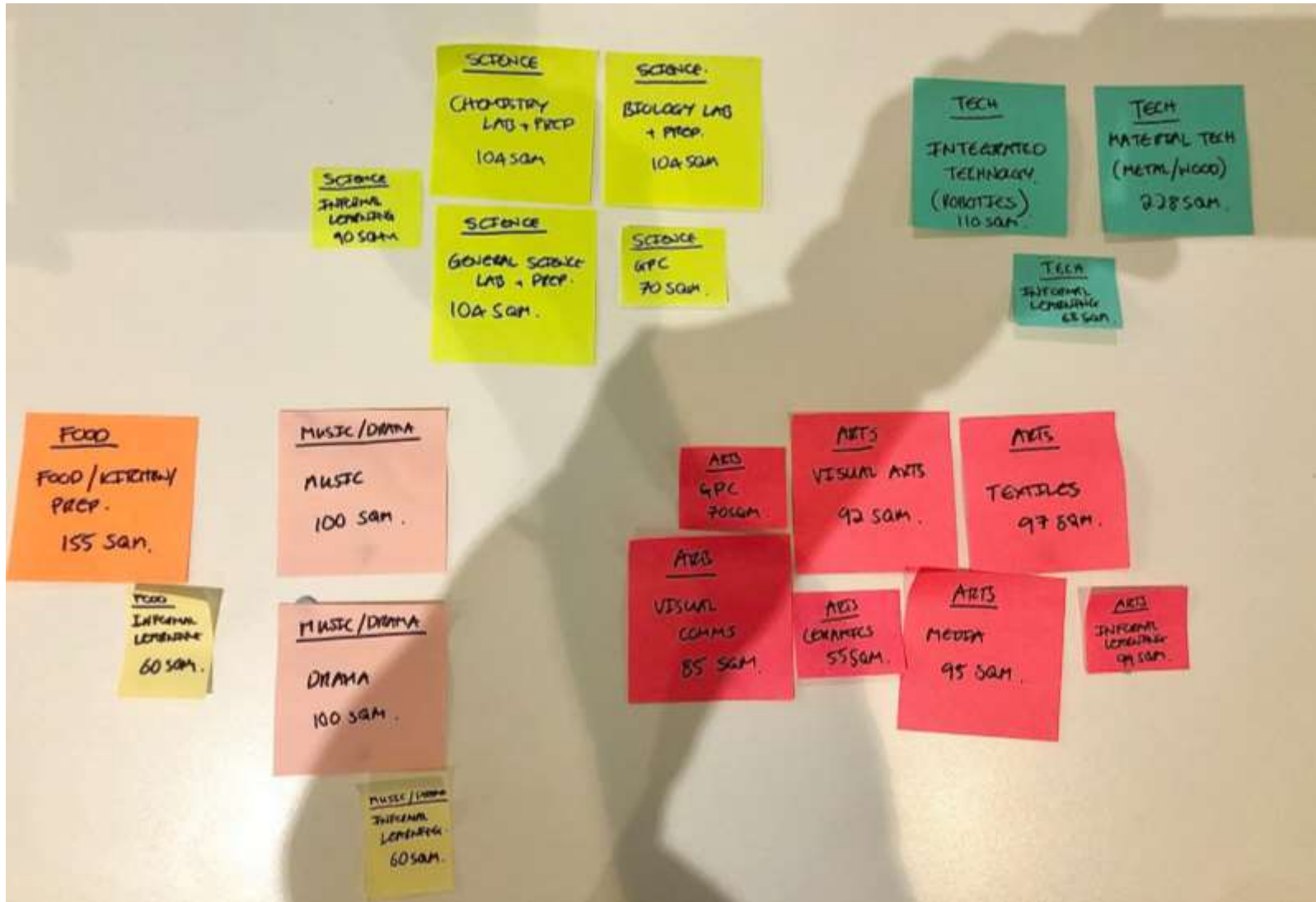
Years 7-9 (12-15 y/old)



OUTLINE BEHAVIOR - THINKING IN ACTIVITIES

BUILDING CONFIDENCE FOR CHANGE

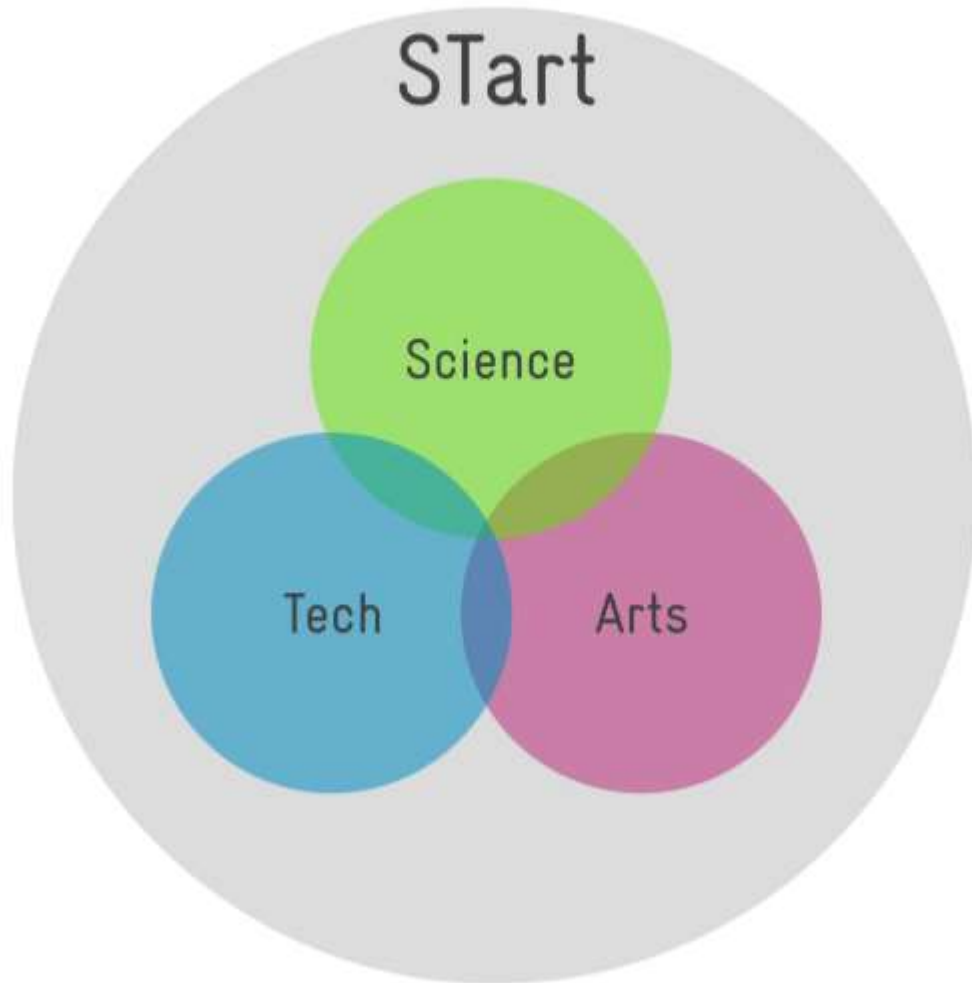
ESTABLISHING ENTITLEMENTS & CURRICULUM ECOSYSTEMS



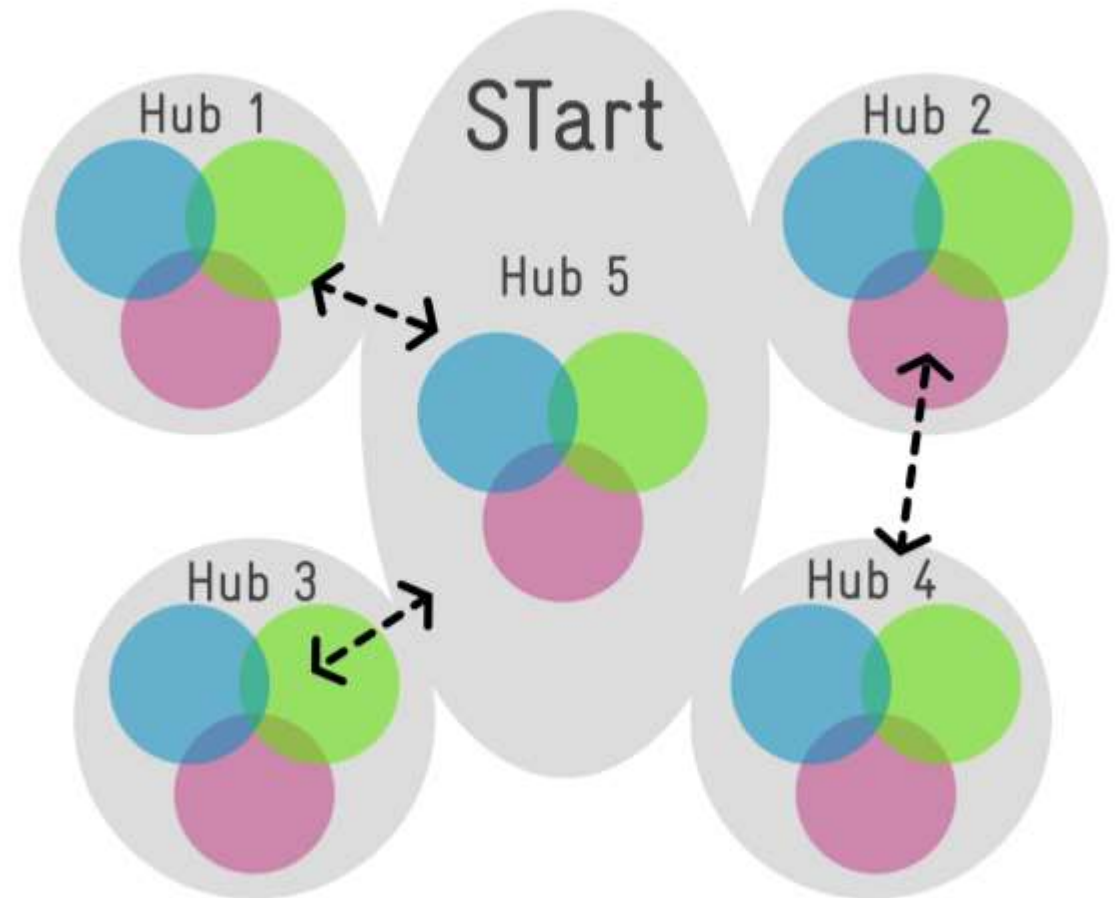
OUTLINE BEHAVIOR - THINKING IN ACTIVITIES

ACTIVITY ECO SYSTEMS

Learning Eco-Systems

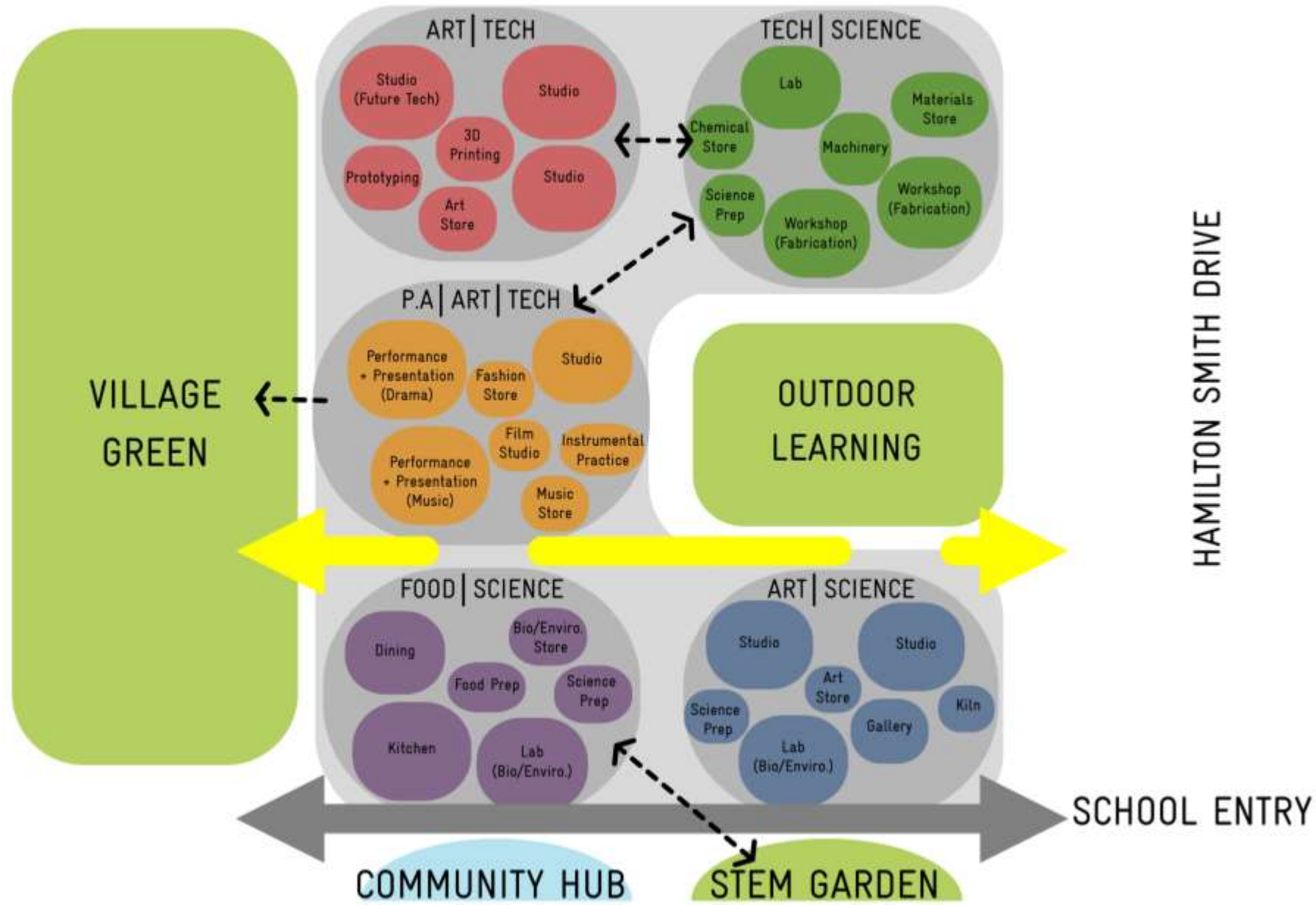


Learning Hubs

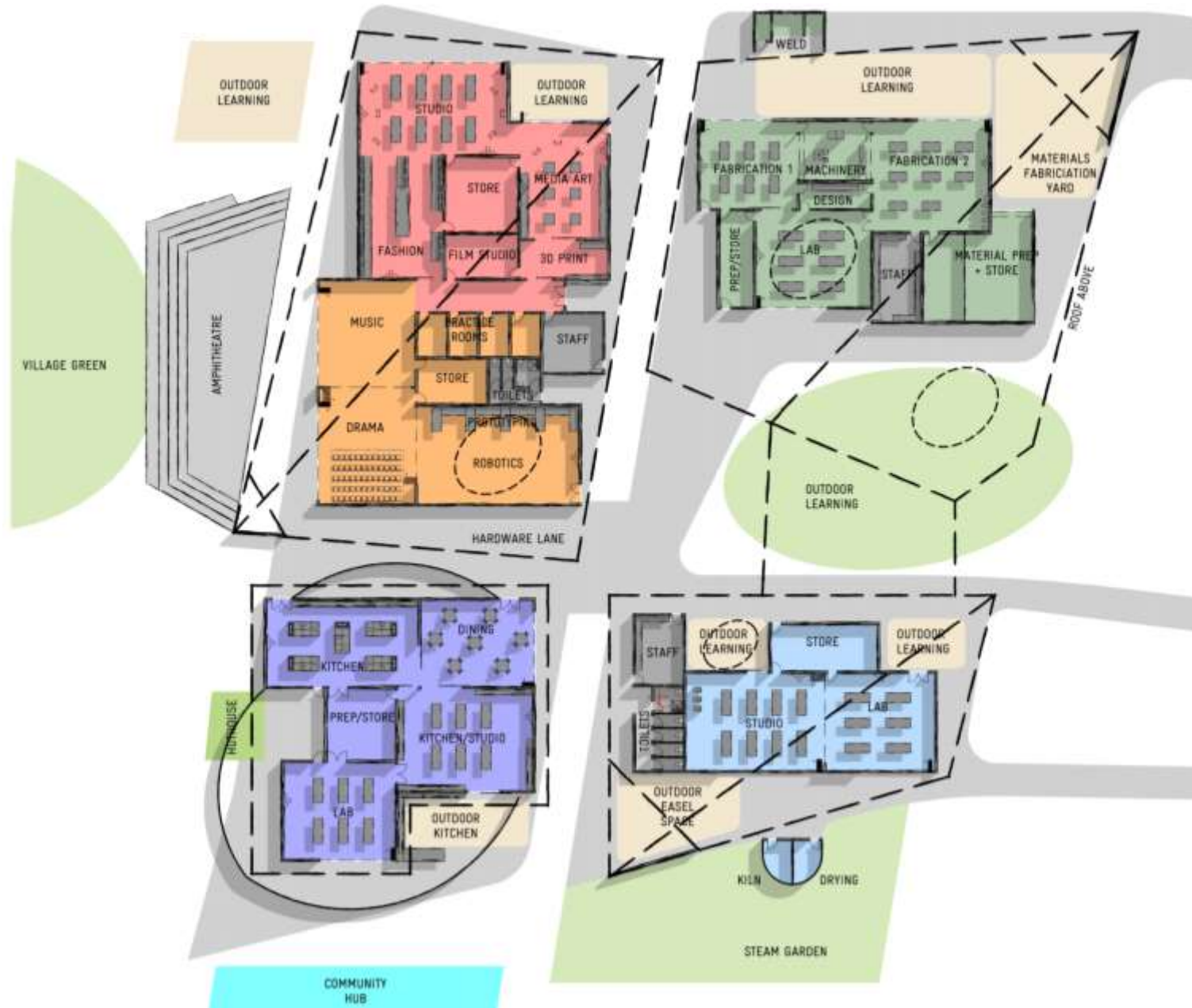


DESIGN IMPLICATIONS

LEARNING HUBS PROXIMITY + SITE ADJACENCIES

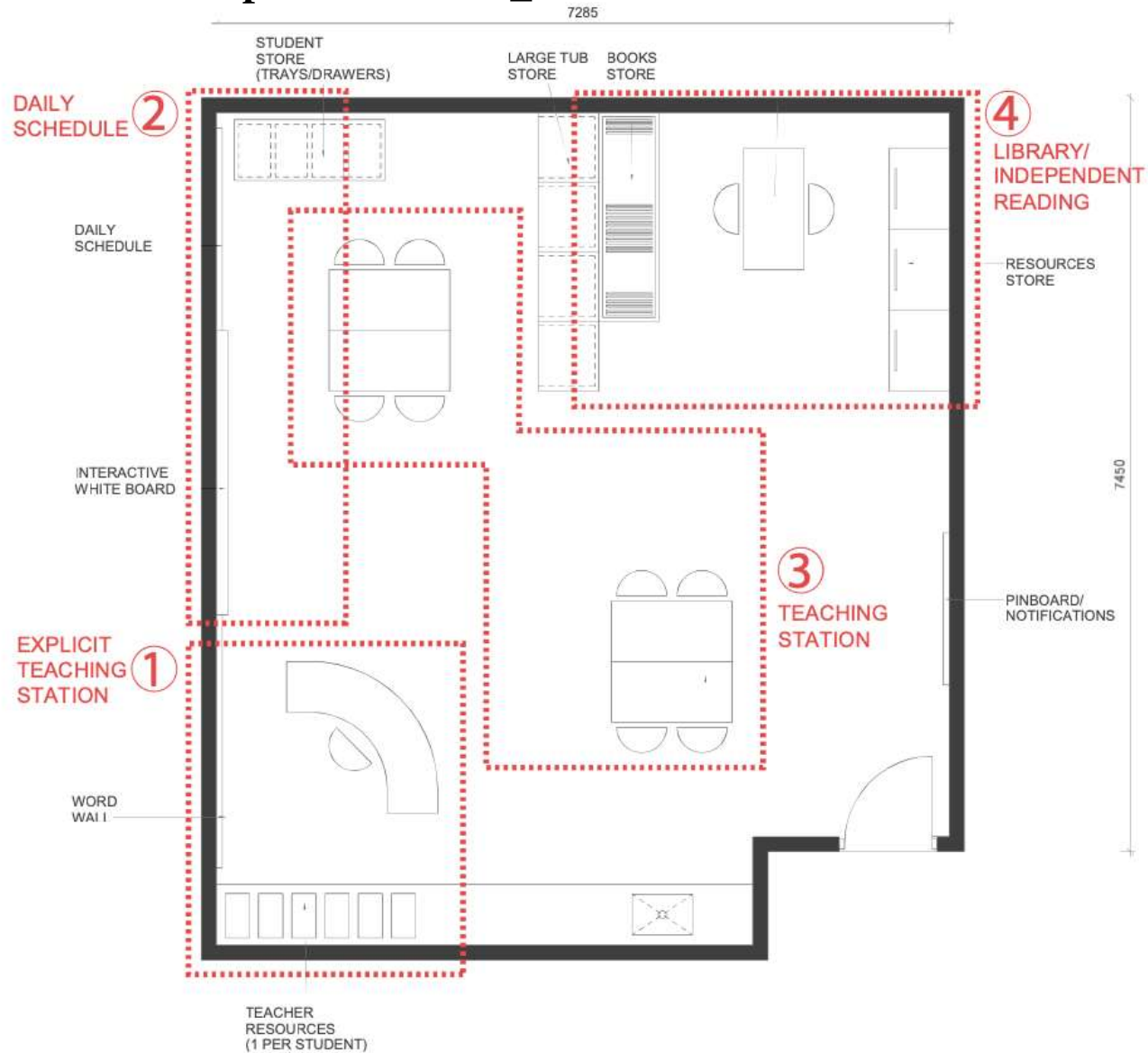


EFFECTIVE LEARNING SPACES

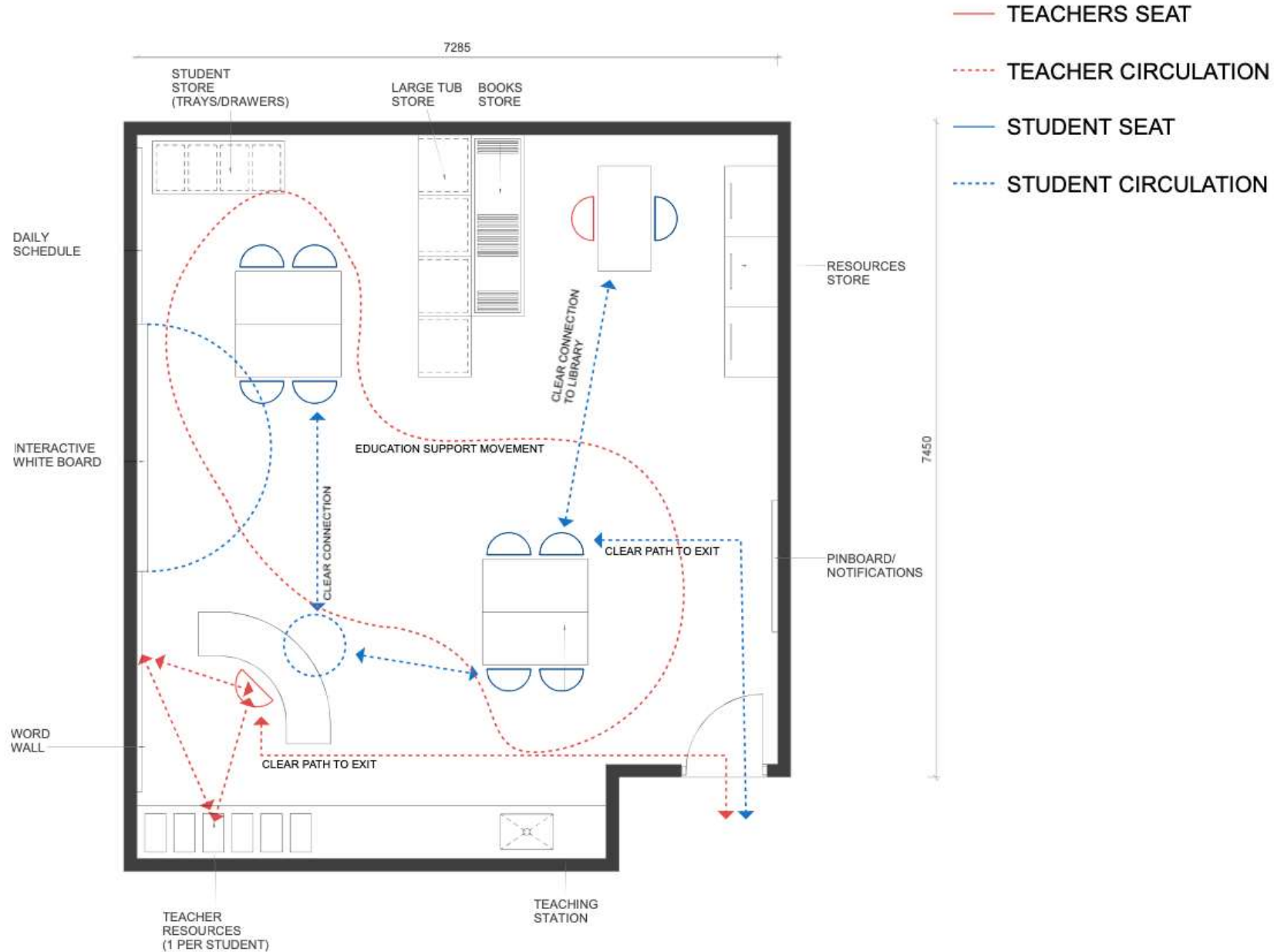


CASE STUDY 2

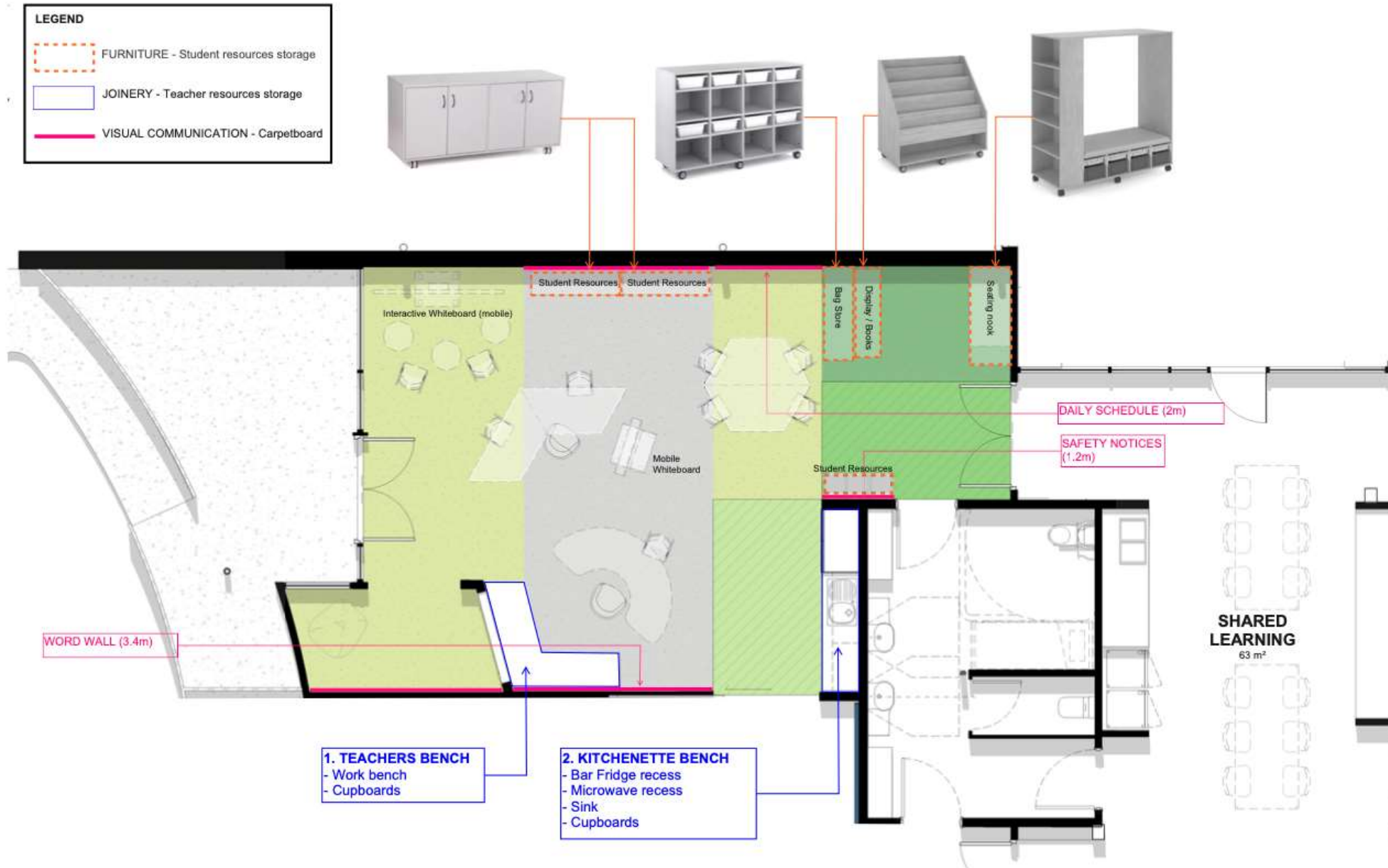
Special Development School_ Victoria, Australia



DETAIL WITH PROCESS AND RESOURCES



DETAIL WITH PROCESS AND RESOURCES



DESIGN IMPLICATIONS



LEARNING SPACES + COMMUNICATING WITH EDUCATORS



LEARNING SPACES + COMMUNICATING WITH EDUCATORS



SPATIAL TEMPORAL REALISATION

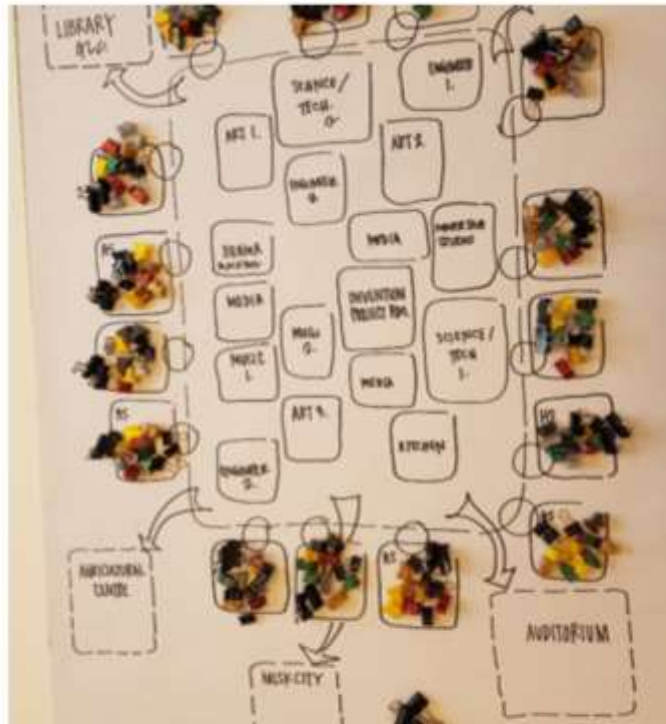
SPATIAL TEMPORAL REALISATION

The purpose is to show a typical 'day in the life' of a school's operation. This shows how different teaching and learning activities can be organised in relation to each space, including transitions, and typical student groupings and learning modalities.

The process involves the use of one ecosystem represented as multiple possible spaces.

A series of enapsots were prepared, each one reflecting a teaching and learning moment. For each moment during the day, the spatial-pedagogical realisation was created, showing the location of educators and students, how are they grouped, and interactions with the spatial resources and typologies.

The STR task challenges assumptions about the use of learning environments and helps to identify how spaces could be integrated. Importantly, this process also questions perspectives about pedagogy in relation to spatial design and use.



The Invention Oasis (Middle School) was selected as the ecosystem for the exercise. The starting point was fifteen classrooms (Home Studios), each with 12 students and 3 educators. Each Home Studio has a Majlis (reception/welcome space).

Other spaces within the ecosystem were:

- Art studios (3)
- Music rooms (1)
- Engineering labs (3)
- Science/technology labs (2)
- Media labs (3)
- Kitchen
- Drama/Blackbox
- Invention project room
- Immersive studio

Adjacent spaces were:

- Library/Global Learning Centre
- Gymnasium and sports fields
- Auditorium
- Agricultural Centre
- MISK City
- Cafe



SPATIAL TEMPORAL ACTIVITIES

SPATIAL TEMPORAL REALISATION

Example 1

9-10am English/literacy

This showed that literacy can involve a range of activities across different spaces, including use of multi-media; guest writer seminars; and reading/writing spaces in the Library.

It also raised questions about the function and use of the Home Studios.



Example 2

1.30-3pm Unit of Inquiry

This showed students working in a range of groupings, using different spaces within and adjacent to the ecosystem. Outdoor spaces were also used.



SPATIAL TEMPORAL ACTIVITIES

LEARNING ENVIRONMENT PROTOCOL STANDARDS

The standards support the design and use of effective learning environments at MSK Schools. They can be used to inform classroom configuration, or to review an existing classroom.

There are four major elements used to structure the protocols:

- Productive spaces
- Teaching practices
- Student participation
- Culture and community

Each of these elements needs to be considered when creating and using a learning environment.

Process

There were three stages in the process of standard development:

- Research
- Ongoing review with the Learning Environment School Improvement Team (LESIT)
- Prototyping exercise.



Research

The protocol standards are based on a review of the research literature relating to effective learning environments. This review draws on current research projects and models of quality learning. There are a diverse range of scales and interactions that consider the affordances and use of educational contexts.

Key research is identified in the following table.

Element	Indicators
Productive spaces	<p>Space should respond to function, and take account of the context, traditions, conventions and resources of education. While there is a move to more flexible spaces in schools, this occurs in conjunction with a change to the teaching and learning approaches used (Leiringer & Cardellino, 2011). A key question is whether the possibilities or constraints of each school space afford the pedagogy being practiced (Deed & Lesko, 2015). The design of classroom should signal an intention, and prompt, certain teaching and learning activities, shaping the practical actions and thinking of teachers and students (Gislason, 2009; Halpin, 2007).</p> <p>The materiality has an impact on teaching and learning. This includes whether the noise level limits opportunities for student engagement (Rose-Munro, 2016); whether there is effective use of natural light and colour to support teaching and learning (Higgins, Hall, Wall, Woolner, & McCaughey, 2005); and whether the thermal environment and use of natural ventilation provides an effective work environment (Rupp, Vázquez, & Lamberts, 2015).</p> <p>The furniture used is also important. Flexible furniture arrangements can be used to suit a variety of approaches to education, based on an understanding of the context, space and usage requirements (Woolner, Hall, Higgins, McCaughey, & Wall, 2007). Furniture needs to be adjustable, intuitive and accommodate technology; it may also be reconfigurable to suit different learning modalities (Cornell, 2002; Oblinger & Lippincott, 2006).</p> <p>Learning spaces themselves can be reconfigurable (agile) as students move between formal and informal, individual and collaborative, private and public spaces that support student learning preferences, approaches and modality (Abbott-Chapman & Robertson, 2009; Fies & Marshall, 2006). This may include outdoor spaces that complement classroom environments, supporting immersive and active play, learning, recreation and social activities (Kangas, 2010; Nedovic & Morrissey, 2013).</p>
Teaching practices	<p>Teaching expertise is made up of many variables, including a capacity to adapt to a range of learning contexts. Different learning environments encourage teachers to demonstrate this expertise as they change their learning practices to take account of context (Billett, 2009). The classroom context is not something in the background, but an active influence on teaching practice (Taylor & Huang, 2011).</p> <p>Teaching practices have to enable student engagement with the affordances of the physical and socio-cultural surroundings (Niemiec & Ryan, 2009). Teaching should draw on the contextual affordances that support/constrain engagement and participation in learning activities (Greeno, 2009).</p>

ing and learning practices can
to plan an ideal primary school

d technology.

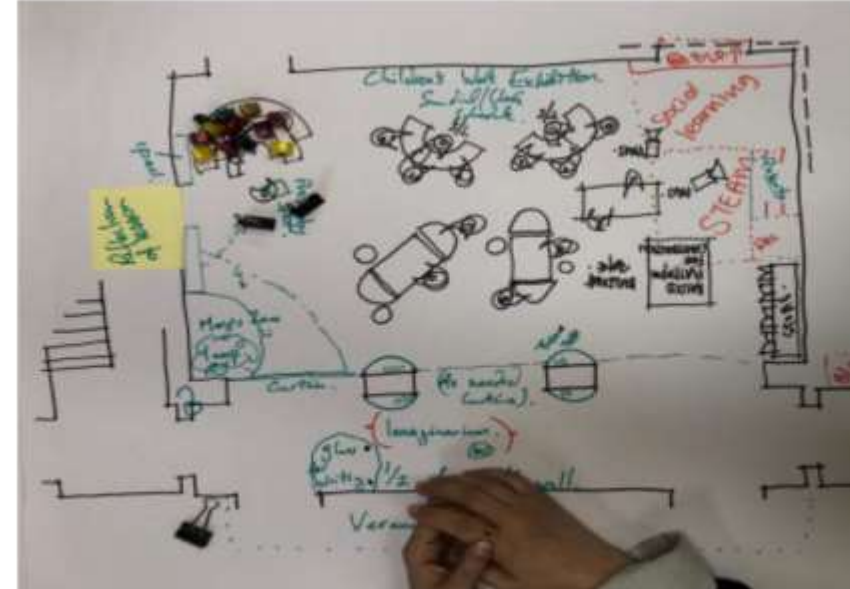
Element Student participation	Indicators <p>New learning spaces may afford active learning, individual agency and different ways of participating in learning (Johnson & Liber, 2008). In a non-traditional context students must make actively make choices and take actions in response to different affordances and constraints in the physical environment (Brannen & Nilsen, 2005).</p> <p>Learning experiences that make a difference occur within real spaces and places. Experience is a dynamic and embodied relationship with context (O'Loughlin, 2006). The learning experience is shaped by the contextual conditions, and the recognition and use of this by teachers; school spaces are an active variable in the teaching and learning process (Taylor & Huang, 2011).</p> <p>What does this look like? Space is a part of the learning experience when: students occupy the space in multiple ways; students can find a space that suits their learning orientation and task demands; students link learning processes with the use of space; students perceive that the space is conducive to social learning processes; students customise and shape their learning environment; and students personalise their learning experiences through interacting with the learning environment (Deed, Edwards, Morse, & Townsend, 2018).</p>
Culture and community	<p>It is important for the school community to perceive that the school spaces are related to the teaching and learning of the context and culture. A sense of a learning community is generated when: the building is of a human scale; teachers and students have a sense of being in control over their spaces; learning interactions are evident between different school spaces; a learning culture is evident in the spatial and pedagogical practices; there is access to resources that support the teaching and learning practices of the school; there is inherent flexibility in the space; and the ecosystem is sufficiently flexible, dynamic and spacious to enable the planned curriculum program (Fisher, 2016; Woodman, 2016).</p> <p>Important educator processes include: educators have access to an evidence base that informs their teaching practices; educators engage in a collegial practice inquiry approach to build and refine teaching practices; and educators are supported to systematically investigate their contextual teaching practices with the purpose of improving future practice (Clandinin, Pushor, & Orr, 2007). These activities are supported by classroom spaces that are visible, accessible and community oriented.</p>

The initial draft of the standards was created from the research process. This was then discussed and analysed in detail by the LESIT. The language was modified to suit the local context. In addition, ideas were generated to support Arabic Language teaching and the Saudi identity - with input from Hanada Taha Thomure, Endowed Professor of Arabic Language Education, Zayed University; and Dr Norah Bin Maigel, Deputy Principal MISK Schools.

Prototyping a typical learning environment enables a better understanding to emerge about how teaching and learning practices can be supported by the design and configuration of school spaces. During this process the LESiT worked to plan an ideal primary school classroom, based on the work in the previous stages.

The resulting plan (below) has the following features:

- Zones for social learning, STEAM, presentation/direct instruction, imagination (writing and reading), and technology.
- A range of furniture types to suit the learning modality.
- The use of moveable walls (a curtain) to create spaces for reception/welcoming, 'imaginarium', and small study 'rooms'.
- Integration of indoor and outdoor spaces.
- Potential for flexible configuration by moving technology and furniture.
- Spaciousness and flexibility in the design.
- A range of learning spaces for different learning processes and activities.
- A dedicated recording space for student multi-media representation.
- Use of media projectors to display relevant and atmospheric media to support classroom ambience.



The prototyping process confirmed the utility of the Learning Environment Protocol Standards. The final draft of the standards is included below.

SPATIAL TEMPORAL ACTIVITIES

LEARNING ENVIRONMENT PROTOCOL STANDARDS

Productive Spaces

	Description
Materiality: noise, light, thermal conditions	The space is designed to minimise noise, and thermal conditions support teaching and learning. Natural ventilation is used where possible. There is use of natural light and muted colours. The texture of furniture and floor coverings should support comfortability and useability.
Spaciousness	Educators and learners should be able to move around without disrupting each other. There should be a sense of openness that supports several different room configuration possibilities that can function without disturbing others.
Technology	Technology should be in a position where it is functional and usable. Technology, including support for multi-media representation, should be accessible for students to support learning. Spaces should be available to support use of technology such as video recording.
Furniture	Furniture should be able to be re-configured, have flexible uses, and be moveable to allow it to be used in several different ways and locations. The furniture must support learning (writable surfaces, adjustable height, comfortable and configurable).
Storage	Storage should be designed to ensure efficient volume and access. This may involve shared storage areas or bespoke cabinetry in specialist areas.
Visibility	Teaching practices should be visible to peers and students. There should be clear lines of sight, so educators can see all students. While open, there should also be some zones of relative privacy and enclosure.
Connectivity	Classrooms feel connected to other school learning spaces. There should be access to adjacent classroom spaces, including multi-purpose or common areas, that can support learning activities. This may include outdoor spaces; reception space for each classroom; library/resource centre; and specialist spaces e.g. Science; Art, Drama and Music.
Agility	The classroom space should afford flexible educational practices. Re-organisation of the space should be able to be done efficiently.

Teaching Practices

	Description
Designers of learning environments that support learning	Educators understand the possibilities and constraints of their learning environment. Educators design learning environments to support a range of individual and social learning processes and activities. Educators use learning environments across the school to support and extend the work they do in the classroom.
Collegial engagement	Educators work together to reflect on and inquire into their practices. Teaching practices are visible to peers.

Student Participation

	Description
Student agency	Students can find or create their own learning environment to suit their own approach to learning. Students can occupy the learning environment in different ways, including both individual and social learning. Students can contribute their voice and ideas to the design and use of learning environments.
Students as learners	Students, based on an understanding of their own learning preferences, use the available space effectively to meet task requirements. Students should have access to technology-free, including nature, spaces that support mindful and reflective experiences. There should be quiet, distraction free spaces for one-to-one teacher support. Students can access a range of learning spaces within their own classroom and across the school that support imagination, invention, and entrepreneurial processes.

Culture & Community

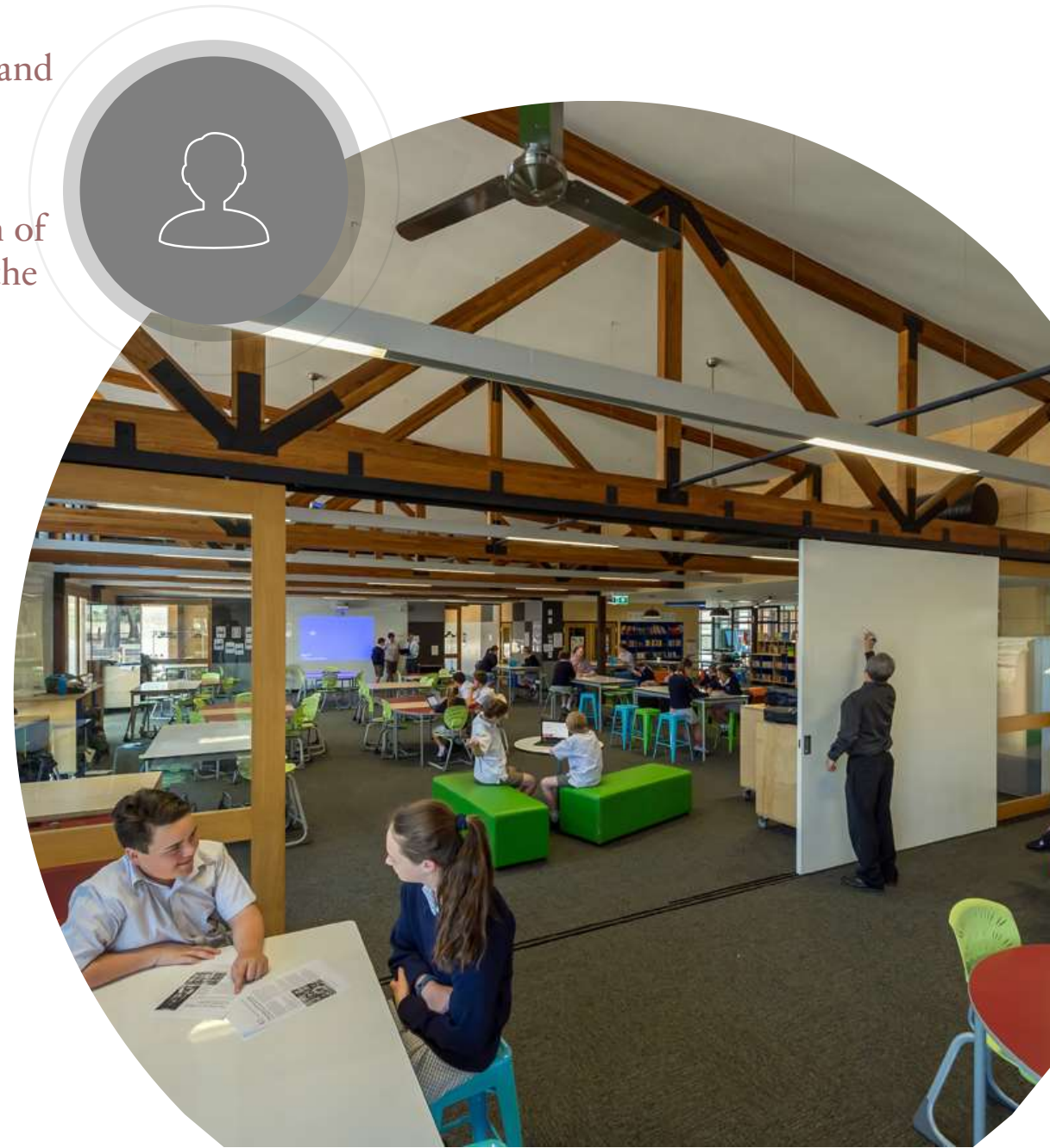
	Description
Function	The learning environment should support the pedagogy and curriculum of the school. Each environment should be integrated into the overall school ecosystem. Spaces to support interdisciplinary learning should be accessible.
Scale and ambience	The learning environment should contribute a sense of wellbeing, connectedness and safety. Educators and students should have a sense that it is 'their' space.
Community	Educators and students should feel that they are part of a learning community. The building should include Arabic and Islamic social, cultural and contextual expressions. This includes architectural features, Arabic calligraphy, artwork and other heritage artefacts. Display areas should be a part of each learning environment. These areas should include both Arabic and English text.
Language	A common language is used to describe similar learning spaces across the school e.g. Majlis (gathering area); and within each learning environment. Signage should be in Arabic and English.

PILLAR: Personalized

When the learner views the learning task/experience as engaging and meaningful, and as directly addressing their learning needs, capabilities and interests.

Personalized learning depends on effective teacher differentiation of the curriculum in response to the diversity of learner needs, and the development of independent learner capacities.

- Personalized learning includes:
- Acquisition of knowledge
- Managed levels of student autonomy
- Differentiated curriculum
- Participation in learning processes as co-learners
- Participation in a learning community
- Learning to reason within and across subjects
- Learning what to value and why in these different ways of knowing
- Confidence in their own goals and perspectives
- Data analysis to inform teacher differentiation





Personalized Learning - What are the design Implications?

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What are the potential learning spaces for Personalized Learning

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PILLAR: HOLISTIC

- Develop self-awareness and self-management skills to achieve school and life success
- A sense of belonging & safety
- Use social awareness and interpersonal skills to establish and maintain positive relationships
- Demonstrate decision-making skills and responsible behaviours in personal, school, and community contexts
- Social emotional wellbeing





Holistic Learning - Choose the the design implications.

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What are learning spaces for Holistic Learning?

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THANK YOU