SPACES RESEARCH PROJECT

EVALUATION REPORT

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Primary Schools

Camdenville Public School

Merrylands East Public School

Mount Ousley Public School

Quakers Hill Public School

High Schools

Arthur Phillip High School

Campbelltown Performing Arts High School

Gymea Technology High School

Macquarie Fields High School

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EXECUTIVE SUMMARY

In recognition of the evolving learning needs of 21st century school students, and changes to teaching practice, resources and the required associated changes to the built classroom environment, the *NSW Department of Education* has committed to transforming 1,600 public school classrooms into flexible learning spaces over the next 10 years.

To inform the statewide implementation of this initiative the *Early Start Research Institute* at the *University of Wollongong*, conducted a qualitative evaluation of schools already utilising flexible learning delivery, providing an understanding of the processes involved in adapting classroom layouts and furniture, and its impact on pedagogy, learning and other student outcomes.

A qualitative evaluation was conducted in four primary and four high schools across Sydney and the Illawarra region of NSW, Australia. Participating schools were located in a broad range of socio economic backgrounds from areas with an index of relative socio-economic advantage and disadvantage (IRSAD) ranging from 518 to 2094. The student sample represented a diverse mix of cultures drawn from 15 different ethnic backgrounds. In total 12 school executives, 35 teachers and 85 students participated in thirty two focus group interviews. A further three independent consultants who offered schools support to develop and fit-out flexible learning spaces and incorporate innovative digital resources, were interviewed to add depth to the evaluation.

Objectives

1. The key factors contributing to the successful implementation of flexible learning spaces.
2. The process of connecting a school's needs with appropriate classroom designs and flexible resources and furniture.
3. Perceptions of the potential impacts of flexible learning spaces on teaching, learning and wellbeing.

Interviews were audio recorded, transcribed and coded using deductive and inductive coding styles. Thematic analysis was used to draw out key themes from the data.

Objective 1: Key factors for successful implementation

- Schools implemented flexible learning spaces to facilitate the use of 21st century pedagogies that enable student centred learning, self-regulation, collaboration and group work. This was driven largely by the changing needs of today's students and in an attempt to re-engage students in the learning process. Flexible learning spaces were seen to better prepare students for tertiary education and the workforce.

- Consultation with teachers and students was seen as vital to the success of flexible learning spaces. Involvement in the design and choice of furniture increased ownership of the initiative. It also gave teachers who were initially skeptical the opportunity to learn from their colleagues experiences. It was seen that this peer to peer support was more effective in getting widespread acceptance of the initiative, than if it had been implemented as a top-down approach.

- Schools chose to take a phased approach to implementation by initially only transforming a few classrooms to trial flexible learning, before opening up the opportunity more broadly across the school.

- Schools either implemented flexible learning spaces independently or with the guidance and support of furniture suppliers, learning space designers or digital technology consultants. Those that did utilise external expertise, really valued the input and reported that this had enriched their experience and contributed to the success of the spaces.

- All schools used a phased approach to implement the two aspects of flexible learning spaces - the change to pedagogy and the the change to the physical environment. In practice this meant that initially only a room or two were modified and used as a testing ground to trial new ways of teaching and different pieces of furniture. This provided the opportunity for other staff to see the spaces in action and work through any resistance they may have been harbouring.

- In primary schools every year level classroom was eventually transformed or had plans to be transformed into a flexible learning space and the initiative was seen as a whole-of school approach, whereas in high schools it was more common to only find some spaces transformed and others still functioning as traditional classrooms.

- Professional development (PD) for teachers was provided both formally and informally through training courses, conferences or observations of peers teaching in flexible spaces. Teachers saw this PD as essential, as staff and students both agreed that the success of the flexible spaces was largely dependant on the teacher skills to effectively work in the space with their students. It was deemed vital that teachers embraced the changes in pedagogical approaches and were willing, competent and confident to utilise these in parallel with modifying the physical environment of classrooms.

- It was acknowledged by both teachers and students that students also required time and support to transition into flexible learning spaces. Because of the shift in pedagogy, expectations on students had changed. There was an increased need for students to collaborate and engage in greater self-directed learning, and these were skills students needed to learn to master.

Objective 2: Process of connecting school needs with appropriate classroom designs and resources

- The main physical changes made to classrooms was to increase area of open space by reducing the amount of furniture and replacing it with a range of flexible tables and seating options that facilitated the range of pedagogies and learning styles commonly seen in flexible learning spaces. A further focus was to bring more light and air into the classrooms and using bright wall, floor and furniture colours to brighten up spaces.

    - In primary schools this involved knocking down walls and incorporating adjoining spaces such as corridors and bag rooms, as part of the learning environment. It meant moving from the traditional arrangement of having a desk and chair for each student to having a few tables of various sizes and heights and an assortment of soft seating, couches, cushions, bean bags and ottomans.

    - In high schools the most common change was the replacement of smaller individual desks with larger round tables to facilitate more group work and collaboration. Each student typically still had access to individual desk space, and this was generally deemed necessary given the demands of the syllabus.

- Local context was seen as crucial in determining the appearance of the transformed space and how this process should happen. Across all participating schools it was believed that a one-size-fits-all approach would not produce the intended outcome.

Taking into consideration the unique needs of schools, as dictated by their student cohort, was seen as vital to making the right decisions regarding resources and furniture.

- Budgets varied significantly between schools and because the initiative was largely self-funded schools were particularly careful to be thrifty and initially opted for cheaper furniture at the cost of quality and durability, which facilitate trialing suitable options.

- Important factors influencing the types of furniture sourced included, flexibility, quality and materials. Furniture needed to be flexible, to ensure it could be easily moved around the room even by younger students, and configured in different ways to allow various approaches to teaching and learning. Ultimately furniture items had to be robust, durable and able to withstand high intensity use. Materials were considered based on ease of maintenance, aesthetic appearance, and the level of comfort afforded the user.

- Schools fell into two distinct groups, either sourcing their furniture from generic commercial furniture suppliers or purchasing from suppliers of educational furniture such as Sebel. Both cost and the variety of furniture available impacted on these decisions as well as the need to keep cost to a minimum during the initial trial phase. It was generally agreed that purchasing from educational furniture suppliers was the better option in the long run largely due to the quality of the purpose built furniture. It was also quite common for schools to upcycle old furniture.

- The two most frequently mentioned items affecting teachers were the teacher's desk and classroom storage. In flexible learning spaces the teacher's desk had reportedly become redundant due to the change in pedagogy and layout of the room. This was largely viewed as a positive change. Both fixed and moveable storage options were valued by most teaching staff.

- Furniture used by students fell into two main categories. Tables and seating options.
    - Tables were seen as valuable if they were height-adjustable, had writable surfaces, were shaped to allow direct teaching or could be pushed together in various configurations to facilitate collaboration. It was generally viewed that "less was best" and, in primary schools in particular, it was common to not have a desk/chair for each individual student.

    - In terms of seating options, soft seating was preferred by students over traditional hard plastic classroom chairs. Students valued floor seats, cushions, beanbags, couches, modular furniture and padded seats and tiered seating. Patterned flooring was also considered as an element of flexible spaces, particularly in primary schools.

- Technology was generally considered to play an integral role in 21st century classrooms and ranged from interactive whiteboards, touch screen televisions, iPads, and surfaces to 'bring your own device' (BYOD).

- Support resources such as lap tables, little personal white boards and storage options were seen as very useful, particularly in primary school classrooms.

- Breakout spaces were a common feature of flexible learning spaces. This included incorporating spaces such as bag rooms and corridors, to allow students to move away from the business of the main classroom. Further, furniture items such as booths, hanging pods, tents and quiet corners with mats and cushions were utilised to provide students with a space to retreat to.

- In terms of layout and design considerations, space, layout, colour, lighting and noise were all mentioned. Creating open space was seen as valuable and teachers cautioned not to simply fill the available space with new furniture. Layout was generally seen as a being fluid, with the potential to change lesson by lesson, as dictated by the pedagogy being used and the learning needs of the students in the class at that time. Much research had gone into determining the colour of painted walls and furniture, recognising its impact on teacher and student wellbeing. While natural light was valued by classroom users; schools accepted that they were limited by the physical structures of their buildings. It was mentioned that flexible learning spaces can be quite loud environments and that particularly larger classrooms may need to consider room dividers to break up the space or give students access to break out spaces.

- It was seen as very important to consider students with special learning needs when creating and fitting out flexible spaces, making them accessible and welcoming. This was true for students with a range of needs, whether due to learning difficulties or disabilities, behavioural challenges, cultural background or language barriers.

Objective 3: Perceptions of impacts on teaching, learning, and well-being.

- There was found to be a reciprocal relationship between flexible learning spaces and the pedagogical approaches used in classrooms. In high schools where students were taught in both traditional and flexible spaces, students were generally aware that teachers taught differently across spaces.

    - It was reported that *collaboration* and group work were most significantly impacted by the changes in layout and furniture as students could work more easily together in ways that were not possible in traditional classrooms.

    - While *teacher-led-instruction* was used significantly less, particularly in the whole-group setting, it was reported that there remained a need for direct instruction and that this was facilitated by key furniture items, with smaller groups, on a needs basis.

    - Teachers were more inclined to use *student-centred-learning* methods, working with students to set goals for their own learning and providing them the freedom and responsibility to pursue tasks with greater independence.

    - Many schools reported using *project-based-learning (PBL)* in the flexible spaces stating that this pedagogical approach was particularly suited to these spaces. PBL ranged in duration from a single lesson to a whole school day, or even over several days, depending on the nature of the subject.

- Because of the open space that had been created in flexible classrooms, and with the shift away from didactic teaching, it was reported that teachers were able to *move* more freely around the classroom. This was seen to have a very positive impact on teacher-student interaction as teachers typically moved between groups of students throughout the course of the lesson and supported their learning as needed.

- It was also acknowledged that flexible learning spaces had an impact on student learning. Students were able to articulate the different modes of learning they engaged in when being taught in flexible learning spaces.

    - High school students in particular reported that *group work and collaboration* was facilitated by the layout and type of furniture in flexible learning spaces.

They stated that the level of collaboration was one of the most significant differences between traditional and flexible classrooms.

- Students valued how they were often given the freedom to work with their friends in the flexible learning spaces and how this greater interaction with their peers allowed for *peer teaching* to occur. Students reported teaching their friends and learning from them.

- Both students and teachers valued how students learnt to *self-regulate* in flexible learning spaces. It was perceived to be an important skill, which would be beneficial for students in other aspects of their life.

- The use of flexible learning spaces encompasses the values of personalised, student centred learning. As such it was common that students spent time working on *personal research projects* each week.

- The layout and furniture in flexible learning spaces facilitated *hands on learning* activities. Both students and teachers valued this pedagogical approach as students were seen to retain more information using this method.

- Coupled with the shift towards group work, *performance-based activities* also reportedly increased in flexible learning spaces. It was common for students to work on a task in small groups and then come together to present the findings back to the whole class.

- A frequently mentioned feature was how the use of various computer software allowed students to submit and share their work with teachers and the class, and how digital technology had been embraced in the classroom. The use of technology also greatly contributed to facilitating research based projects, through access to the internet.

- Overall it was perceived by all participant groups that flexible learning spaces had a positive impact on student wellbeing. Students spoke of the positive feelings they experienced when in the spaces, commenting on how the spaces were inviting, calming, relaxing and comfortable; resulting in students feeling happy to be in the spaces.

- Students spoke of the sense of autonomy and freedom they felt when working in the flexible spaces and really valued the level of *choice* they were awarded, which ensured that they could engage with the lesson.

- The implementation of flexible learning spaces often occurred in an attempt to increase *student engagement*. It was reported that students were more engaged in and motivated to complete their school work. This was perceived to be due to students playing an active role in their learning.

- A larger classroom size, decreased amount of furniture and improved classroom layout, coupled with more collaborative pedagogies provided students with more opportunities for *movement*. Although movement was often incidental, students commented that it improved their well-being.

- Teacher *movement* reportedly increased in flexible spaces because of the reduced amount of furniture, freeing up more space for the teacher to walk around. The changes in pedagogical approaches further facilitated this increase in teacher

movement as students increasingly worked independently, with teachers spending less time engaged in 'chalk and talk'.

- Flexible learning spaces received high praise from principal's, school executives, students and external consultants and each stakeholder could identify numerous benefits of flexible learning spaces.

    - Flexible learning spaces tended to be configured with a range of comfortable furniture items. Soft seating and desks of various heights were the main furniture items that *increased student comfort*. Student comfort was also increased by allowing students to have a choice about where they worked.

    - It was repeatedly mentioned that the layout and furniture in flexible learning spaces contributed significantly to creating an environment that was inclusive of the diversity of students present in any given class. This was particularly true of students with special learning needs who according to teachers found it much easier to blend into flexible classrooms compared to traditional spaces. Further, because flexible spaces enable students to work according to their individual learning needs, awareness of diversity among students was heightened and seen to contribute to greater acceptance among students of each other's differences.

    - Teachers collectively agreed that *classroom management* was easier in flexible learning spaces when boundaries were established with each class in the early stages of implementation. Teachers believed they spent less time disciplining and more time engaging with students

    - *Parental engagement* was perceived to increase after the implementation of flexible learning spaces. This was seen to be beneficial for the school community.

- Whilst flexible learning spaces were overwhelmingly seen as positive for teachers and students, some weaknesses were identified.

    - *Classroom management* was identified as being both a strength and a weakness. This relied heavily on the experience of the teacher. Less experienced teachers and casual teachers found classroom management in flexible learning spaces difficult.

    - Students frequently mentioned that they could become easily *distracted* in the flexible spaces as they had more freedom to sit and work with their friends. This often resulted in students finding themselves off task. Certain furniture items such as booths allowed students to remain off task out of the sight of the teacher. This was also a concern for students spread across multiple breakaway spaces at once.

    - The level of *noise* in a flexible classroom was raised as a potential negative consequence of these spaces, acknowledging different teaching and learning needs. Some viewed a noisy classroom as a productive one, and others found the noise levels to be disruptive, and so this was a consideration that needed managing by the classroom teacher.

    - Students reported that some of the furniture was not comfortable to work on, raising questions about the possible ergonomic implications on *posture*. This was particularly true of modular furniture which provided no back support. These concerns were reiterated by furniture suppliers, though it was also stated that

allowing students the freedom to move into different postures as required would counterbalance this. Posture was also raised as a concern in relation to mobile devices, that could result in students remaining in positions of poor posture for extended periods of time if they were absorbed in their screen-based activity.

- Because schools typically purchased less costly furniture during the trial phases, some comments were made about the poor quality of some furniture items and the need to focus on quality over quantity.

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1. BACKGROUND

Governments and educators now agree that teaching and learning, and therefore the organisation of schooling, needs to be redesigned in order to address the needs of learners for the 21st century (Blackmore et al. 2011). The design of most New South Wales Department of Education's (NSW DoE) existing school's are based on the 18th century factory model which embodies concepts of conformity, is teacher centred and uses explicit teaching (Future Proofing Schools 2012). However, as the paradigm in education shifts from teacher-directed to interactive, collaborative and student centred learning, classroom spaces require a redesign to accommodate this shift in pedagogy, as the fixed arrangement of desks and furniture in a traditional classroom constrains teaching, learning and movement to a one-way linear flow (Neill & Etheridge 2008). In contrast, flexible learning spaces can facilitate creativity and collaboration, be easily reconfigured to engage different kinds of learners and employ a variety of teaching practices and be able to accommodate individual, small group and large group activities (Future Proofing Schools 2012).

As part of this educational reform, the NSW Government is investing $1 billion (from the rebuilding NSW Schools Fund) to transform 1,600 primary and high school classrooms over the next 10 years to reflect a flexible learning design (New South Wales Department of Education, 2015). Features of the prototyped learning spaces include:

- Mobile, touch sensitive screens, allowing students to engage with learning materials.
- Wi-Fi and software allowing all devices in a room, including tablets and laptops to interact.
- Writable walls and surfaces encouraging students to investigate and collaborate.
- Lightweight, flexible furniture that can be easily moved around by teachers and students, creating functional spaces for individual and team-work.

Flexible learning spaces are designed to be multidisciplinary and communal spaces, which can be configured in a number of ways for specific learning experiences (Victorian Department of Education and Early Childhood Development 2011).

Interventions which implement flexible learning spaces replace sedentary settings with a more open environment that may encourage active behaviour (Department of Education and Early Childhood Development 2011). By replacing fixed classroom furniture with mobile and

height adjustable furniture and creating open space, children are encouraged to stand and move around the classroom whilst completing work. Flexible learning spaces facilitate:

- A pedagogical shift from teacher-to-student, directed instruction to collaboration activities that encourage group learning in community contexts;
- a physical space shift from fixed seating to flexible furniture where space can be redesigned for each learning activity and allow students and teachers to move freely around the room (Neill & Etheridge 2015).

Flexible learning spaces will provide children with different learning options. This choice is important as it contributes to enhanced motivation, self-regulation and engagement in schooling. When students have choice and opportunities to engage in activities that are of interest to them it also enhances their wellbeing (NSW Department of Education and Communities 2015).

Flexible learning spaces provide a unique opportunity to intervene and provide spaces that can potentially improve both academic engagement and performance and health outcomes (Donnelly & Lambourne 2011).

This report describes findings from Phase I of the SPACES research project, which was a qualitative inquiry among NSW Department of Education Primary and High Schools where flexible learning spaces were being implemented. The purpose of Phase I was to investigate Principal, school executive, teacher and student perceptions of the key factors that might contribute to the successful implementation of flexible learning spaces, along with perceptions of the potential impacts of such modifications.

2. METHODS

2.1 Design

Phase I of the SPACES research project used qualitative case studies obtained via interviews and focus groups with Principals, school executive, teachers and students from 4 Primary Schools and 4 High Schools administered by the NSW Department of Education .

2.2 Evaluation Objectives

Phase I of the SPACES research project aimed to provide an understanding of the following, to inform the implementation of flexible learning spaces in NSW Government Primary and High Schools:

1. The key factors contributing to the successful implementation of flexible learning spaces.
2. The process of connecting a school's needs and desires, with appropriate classroom designs, configurations and flexible resources and furniture to meet these needs.
3. Perceptions of the potential impacts of flexible learning spaces on teaching, learning and wellbeing.

2.3 Interview and Focus Group Questions

Questions were developed to address evaluation objectives based on an understanding of the education, health and built environment literature and in consultation with the NSW Department of Education's Futures Learning Unit and Property and Facilities Management. Executive interviews aimed to provide insight into the reasoning and processes used to develop and implement the flexible learning spaces and to provide insight into the pedagogical use of spaces.

Focus group interviews investigated:

i) the teachers' and students' perceptions of the strengths, weaknesses and suggestions for modifications to the flexible learning space.

ii) their perceptions of the influence of the learning space on pedagogy, learning activities, student engagement, utilisation of the classroom, student movement and student learning outcomes.

iii) the process of designing and implementing the space.

Questions were designed to ensure that answers could be triangulated between the three participant groups. - See Appendix A for all evaluation questions.

2.4 Ethics

Ethics approval was sought and granted by the University of Wollongong Human Research Ethics Committee and the State Education Research Applications Process (SERAP). All personnel working on the evaluation provided a NSW Working With Children Check.

2.5 Recruitment

Schools recruited to the research study were required to have modified some of their classrooms into flexible learning spaces. Schools were initially selected by the NSW Department of Education, and additional schools were also identified by the study team. The research team contacted schools via email, then by a follow-up phone call. If Principals agreed to participate they were sent a participation package which included information sheets and consent forms. An information sheet and consent form was sent home with all potential participating students, who were identified by the Principal, to seek parental permission to participate in the study.

In addition to school staff, some schools had involved external consultants who contributed to the flexible learning space design or development of new pedagogies. School executive identified these key consultants who were contacted by the research team, provided with study information and invited to participate in an interview. Consent and ethics approval was obtained for these additional interviews.

2.6 Participants

A total of four high schools and four primary schools were recruited from the Illawarra and Sydney region. School Executives (Principal, Assistant Principal, Deputy Principal and/or Head Teacher) from each school were invited to participate. Teachers who taught more frequently in the flexible learning spaces were invited to participate. Participating students were from years 4-6 in primary schools and years 7-12 in high schools.

Additional interviews were conducted with three independent consultants who design layouts and supply furniture for flexible learning spaces and advise schools on incorporating digital learning and innovative classroom practices.

2.7 Data Collection

Interviews were conducted with school Principals and/or executives and took approximately 60 minutes each. Teachers and students took part in separate focus groups. Teacher focus groups involved up to 5 teachers and took approximately 45 minutes, student focus groups involved 5-6 students and took approximately 35 minutes. Interviews with the independent consultants took place over telephone and took approximately 40 minutes.

Descriptive demographic data was reported by children's parents on their consent forms. The data included children's: gender, date of birth (to calculate decimal age), and home postcode, suburb to calculate a suburb-level indicator of socio-economic status (SEIFA) and cultural background. Parents returned this information to classroom teachers in sealed envelopes.

2.8 Data Analysis

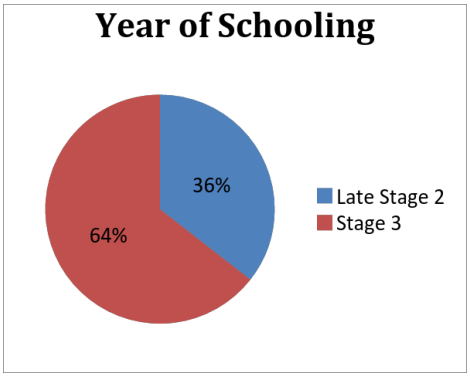
All interviews and focus groups were audio recorded and transcribed in intelligent verbatim format. Transcripts were then coded using NVivo 10.0 software using both deductive and inductive coding styles. Thematic analysis was used to draw out key themes from the data. The themes were then used to inform the three evaluation objectives.

3. PARTICIPANTS

3.1 Primary Schools

A total of five executive staff members participated in interviews. This included Principals and Deputy Principals and Assistant Principals. A total of eighteen primary school teachers from a range of stages participated in the focus groups.

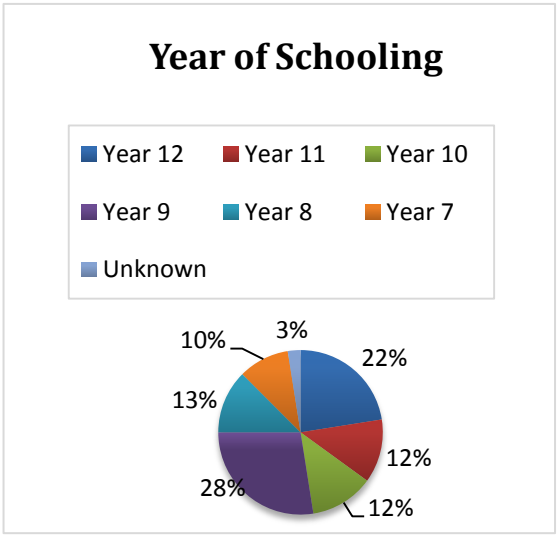
The student sample consisted of 45 students (Female = 58%, Male = 42%), from late Stage 2 - Year 4 (36%) and Stage 3 - Year 5 and 6 (64%) (see Figure 1.).



Students identified as belonging to over 16 cultural backgrounds with the largest identified group being unreported.

3.2 High Schools

A total of seven executives, including Principals, Deputy Principals and Head Teachers participated in the interviews. Seventeen high school teachers from a range of faculties including English, Maths, HSIE, TAS, Performing Arts, PDHPE, Learning and Development Support participated in the focus groups.



The student sample consisted of 40 students. Of these 53% were female and 47% were male. The student sample came from all high school year levels as shown in the figure to the right.

Students identified as belonging to over 20 cultural backgrounds with the largest identified group being Australian.

4. FINDINGS

The findings are presented under key themes that emerged from the analysis of the qualitative data. These themes have then been used to address the three objectives of the evaluation. Much of the findings are presented as quotes to capture the first-hand voice direct from the source.

5. OBJECTIVE 1

Key factors contributing to the successful implementation of flexible learning spaces

5.1 Reasons for Implementing Flexible Learning Spaces

Schools reported a range of reasons as to why they embarked on the process of transforming their traditional classrooms into flexible learning spaces. In all eight cases schools had self-initiated this significant change, out of recognition that the status quo was no longer meeting teaching and learning needs.

5.1.1 21st Century Pedagogies

Ultimately the driving force behind the changes made in each school was the recognition of the need to adapt pedagogical approaches to better meet the needs of 21st century learners. Executive and teachers spoke of moving away from didactic teaching and embracing student-centred learning, collaboration, peer teaching and self-regulation; to improve students' engagement, motivation and learning outcomes. When asked about the reasons for implementing flexible learning spaces, all schools reported having either conducted their own research, having participated in site visits to schools that were seen as innovative in terms of their pedagogical approaches and learning spaces, or networking with schools who were moving in a similar direction, or a combination of these approaches.

> *"we had done some research around what learning could, should and would look like if we were doing it well, and we know that there was research coming out around a shift in practice, so we wanted to shift that paradigm away from stand-and-deliver, one-size-fits-all, content focussed, regurgitated in an exam" – High School Principal*

> *"So really it was looking at, how can we remain relevant and how can we teach those 21st Century learning skills to our children. How can we engage kids and prepare them for a jobs world that is constantly changing. So creating those relevant, creative, collaborative, problem solving citizens. So it was really just about always moving forward with our kids" – Primary School Executive*

"Children would need to collaborate, problem solve, use ICT for their own learning and articulate... children couldn't do that in a traditional classroom where desks were set up in either an L-shape, a U-shape, rows or in pods of four, six, eight"- Primary School Executive

5.1.2 Improving Student Engagement

In addition, schools were finding that current practices were falling short of keeping some students engaged in learning. This motivated them to look at their pedagogy and classroom spaces to better meet student needs.

"... for learning to be deeply engaging, students need the opportunity to co-create their learning with each other, their teachers and other adults; it needs to be personalised and passion led; it needs to be connected to the world beyond school, both through technology, but also about bringing experts from beyond the school gates in... and then it needs to be integrated across subjects and possibly groups. Traditional learning spaces don't allow for most of those things to happen" – High School Principal

"A group of students who were pretty disengaged in learning, who found it really difficult to concentrate on anything, who were not happy about coming to school and were not producing work that I believed met their ability level" – Primary School Principal

Changes to classroom layouts and furniture were seen as an inevitable consequence of moving towards future-focused learning. For some schools it seemed like an 'after-thought' born out of necessity to enable the pedagogical shift. Staff commented that the layout of, and furniture within spaces, facilitated these new pedagogies and that a flexible space may leave teachers with no choice but to adapt their teaching practices.

"The space helps us change the learning, and then the learning feeds into how we need to change the space. So, it kind of becomes an iterative approach – High School Principal

"The space has also helped encourage a bit of change as well... when you know that you're going to be up there (flexible space) you have to think differently. You can't just go, "I'm just going to go in and, you know, write some stuff on the board, get them to answer questions, keep them quiet, get them out," because you actually literally don't have 30 desks for them to sit at and stare at the board... so you kind of

are not only encouraged but in some instances you're sort of forced to change it (pedagogy) and push it to the students to kind of be really driving the lessons" – High School Teacher

"You can't teach a teacher centred lesson in those spaces. It's not possible" – High School Teacher

It was anticipated from the outset that with the changes in pedagogical approach from largely teacher-led instruction to handing the responsibility increasingly to students to take charge of their learning, would come greater student engagement.

5.1.3 Workforce preparation

Teachers particularly felt a responsibility to prepare students for tertiary education settings and ultimately the workplaces of a complex and rapidly changing world. It was felt that schools no longer only bore the responsibility to deliver content knowledge, but to assists students to develop a range of soft skills such as critical thinking, problem solving, communication and teamwork. Skills taught at school that would be transferable to a range of situations students would find themselves in, in future. In addition to the anticipated skills needs of students, there was also consideration of the physical environments students would encounter in future. It was envisaged that students wouldn't necessarily be going into tertiary education settings or workplaces where they would sit at individual desk working alone.

"...looking at the corporate sector how people hot desk; looking at Microsoft or Apple, to the local coffee shop down the road... Now it's more of a collaborative, friendly, inviting environment and those organisations have made those changes. And that's the world the kids are going to move into, working in that type of environment. So why aren't we starting from a school level, from even primary school, and setting up schools which replicate the workplace?"- Primary School Principal

"I'm here to start thinking about kids and their future and how they're going to interact in the workplace and give them the skills, starting very early in young lives, to go work in a workplace"- Primary School Principal

"I think our educational model now and I guess everything else even in society and in employment all lends itself to group work and group tasks and collaborative work" – High School Teacher

The findings make it evident that changes to teaching styles preceded the redesign of learning spaces and that a commitment to meeting the learning needs of students underpinned these initiatives in all schools.

> *"I think it's important to say that it started because we changed the way we were teaching… we implemented project based learning and as we were implementing that we noticed that we couldn't do project based learning in a classroom with the regular furniture"- Primary School Executive*

> *"It just tied in with everything else that we were trying to do which was about giving kids choice in their learning"- Primary School Principal*

> *"We changed the pedagogy to try and suit the needs of our kids because our kids aren't from that traditional setting and the traditional learning, which is why we changed, not just oh that looks fancy, let's do it"- Primary School Teacher*

5.2 Implementation process

5.2.1 Stakeholder Consultation, Involvement and Ownership

Involving stakeholders such as staff, students and the community in the implementation of flexible learning spaces, was considered the most vital aspect to creating a sense of ownership of the initiative and ensured the ultimate success of these spaces. School Principals believed it was important to involve all stakeholders in the implementation phases. They emphasised the point that staff were never forced to implement flexible learning spaces, rather teachers were given the choice. School executives saw the value in allowing staff and students to take control of the implementation when ready.

> *"This was never mandated… We always have our own choice to run our classrooms as we like"- Primary School Teacher*

> *"As people were buying into it, it was very important that my role was to provide the resources and not tell people how to reconstruct their spaces"- Primary School Principal*

The importance of consultation and the involvement of teaching staff was emphasised, particularly in schools where significant pedagogical changes were being made.

> *"It's those issues you sort of have to work through as a team and sort of come to a solution together" – High School Teacher*

"I have a real firm belief that the more teachers take ownership and create, then you get a better design"- Primary School Principal

In the majority of schools, teachers were centrally involved from the beginning of the process and were often seen as champions of the initiative in their respective schools. Executives valued the role played by 'key' teachers who were instrumental in championing the changes for other teaching staff; rather than the changes being imposed on them from an executive level.

"Yeah they are solid agents and most of them are not part of an executive team and I think that's a very important to drive change" – High School Principal

"We've got a lot of change agents who aren't necessarily executive staff, who really believe and support in what we're doing. Because you can't really create this kind of change if you just have three people at the top who don't have a class of their own saying let's do this"- Primary School Executive

Consequently, teaching staff believed involving champions and change agents allowed them to be involved in leadership positions, thus having a greater capacity to support each other through the process.

"In terms of people in leadership positions here, traditional leadership positions are not the ones – we are not the ones delivering the professional learning, it might be very occasionally that I might do it but the staff are doing, everyone's leading something. Teachers are the leaders of their own classroom, that's the most important thing they are doing. They are leading and learning. They are leading their own learning but they are also leading the kids learning. So everyone's a leader, everyone's got responsibilities"- Primary School Executive

When it came to making decisions about the physical changes to classrooms, participants across the different focus groups reported the significance of involving those that would be living with the changes.

"it was really about getting everyone involved – teachers, students and making sure we had triangulation of all parts and the support of the senior executive I suppose was really important in terms of wanting that change" – High School Principal

As the initiative gained momentum, executives developed plans for how to expand. In most cases funds were made available for stages or faculties to access and staff were invited to submit an expression of interest or a proposal. To ensure a fair process, many principals implemented an application procedure, often requiring interested teachers to put forward a case for the potential changes. They were required to provide rationales, answering questions such as: Why do you want a flexible learning space? What pedagogies will you use? What sort of furniture will facilitate this? How much will this cost? What will the room layout look like?

> *"They've [staff] actually had to put in a proposal. Like a rationale as to, this is why I want this sort of furniture. They have to source it, get the quotes, they attach it. They have to do a mud map of where the furniture would go, why it would make a difference based on research"- Primary School Executive*

> *"Faculties submitted their proposals for the expression of interest part of that proposition around how would the space be implemented in the faculty and what kinds of professional learning and support would be used in the faculty to enable teachers to use the space more effectively… It wasn't just a matter of "Here's some money go and put some furniture in". We had to think about how and why they were going to be used"- High School Teacher*

Head teachers across high school faculties consulted with their teams to put these proposals forward. This was highly valued by executives who reported that having the initiative led by teachers greatly increased ownership among staff.

> *"they have been leading that change within their faculty so we are kind of working with them in guiding because we know they are respected by their peers, we know that they can make the change happen back in the faculty" - High School Teacher*

Additional stakeholder consultation occurred in teacher staff meetings. Students and community members were consulted through the use of surveys and student and parent meetings allowing them to contribute to the development of a case.

> *" It was an online survey. So there were QR codes and stuff around the school with the iPads, and probably every teacher left out half an hour for us to fill in a survey with the iPads"- Primary School Student*

Student involvement varied across schools, with some voicing that in the initial design and implementation there was less student input than in the later refining stages. Many schools emphasized the need to involve students from the beginning of the process and suggested including them in creating a rationale for the flexible learning space. This allowed students to think about their own personal learning and experiences, informing subsequent decisions about changes to spaces.

Opportunities offered to students to take part in the process were welcomed, with students across the schools reporting they felt their school valued 'student voice'.

> "*We held a design to learn meeting… we asked the student body to come along, we wanted to get them involved in it… we thought we'd get 12-13 students, we got 100" – High School Deputy Principal*

> *"I think it was good because it's sort of like our space to work in so we should have a say in what we like in it and what we don't"- Primary School Student*

> *"If the kids are selecting the furniture, they're the ones who are comfortable, they're the ones who are going to value it and they're the ones that are going to use it" - Primary School Teacher*

In many schools making changes to the learning space was incorporated into learning activities by involving students in decision making regarding furniture options. In some instances students were required to consider potential furniture by looking through catalogues and then establish where and how the furniture could be incorporated into the classroom using measurement and design skills.

> *"And so there were tape marks everywhere, up and down and across the floor and it was good, so they had a really good solid understanding of what they were going to do, what would fit, what would work and then the conversation was around too with them, importantly what would we use that for? Wouldn't it be better if we had desks and chairs? And pretty soon the conversation came around to no way, you know, we want this, this is going to be way more comfortable" - Primary School Principal*

> *"Building the learning hub and creating it was actually stage one's PBL and they did surveys on what you'd like to see in the learning hub, and where you would like to work best"- Primary School Student*

"So we got a heap of feedback from students with different designs. They even went into things like Google Sketch Up and started importing features from different areas and putting them into their designs. We came together as an 'action learning' group then and started to define some of the commonalities between student, teacher and the needs of the school and started to put those together… and eventually we came up with a design that we thought we'd implement and put into practice and see if we could get some feedback on how it worked" – High School Principal

It seemed particularly critical to teachers that students were given the opportunity to be fully involved in the consultation process, which led to a sense of ownership integral to the success of these spaces.

"What we're seeing now is increasing amounts of those spaces being created and driven by faculties rather than it being an executive decision" – High School Teacher

"I have a real firm belief that the more teachers take ownership and create (the space) then you get a better design"- Primary School Principal

School Principal's valued involving the school Parent and Citizens Association in aspects of the implementation. While in many cases the P&C were not involved in the design of the space, they frequently helped fund the implementation.

"They can see how engaged and how much of a difference it's made to their children. That's what every parent wants. They want the teachers to be doing the best for their kids. So they can see that and are very willing to support… they've paid for a lot of what we've been doing"- Primary School Executive

"And then we also started involving the community, so the P&C were on board and I think just because of our open door policy, parents are always in our classrooms so it spoke for itself and especially in terms of student engagement and kids were excited to come to school and they were naturally talking about it that the parents could see the impact straight away"- Primary School Executive

Most schools maintained open communication about the implementation of the flexible learning spaces and how they worked in the school's context.

"We own this place - we tell people what we're doing but I don't ask permission for a great deal because I don't feel that I should because we are the experts in education.

I'm more than happy to tell that story to the community over and over and over and we do and that's why we get people on board"- Primary School Principal

Open communication between the school, parents and the community often resulted in parent and community members offering their professional skills to help in the transformation.

"That actually naturally started filtering out into our community. Students went home and started talking about it. They were excited, they started sharing it on the playground. But then we also formed a working party across the school"- Primary School Principal

5.2.2 A Phased Approach

Schools that embarked on this initiative of their own accord largely without additional funding, generally adopted a cautious and staged approach initially. This could be expected given the significant changes required, both of the pedagogy as well the physical changes made to learning environments.

In most schools the initiative was led by the principals who then brought in a small group of interested teachers to further develop the approach the school would take. In most instances principals initiated the idea of implementing flexible learning spaces and then engaged groups of interested teachers to champion the delivery. In most schools the initiative appeared to have grown organically and, over time, taken on a life of its own. School Principals talked about "pacing it slowly" and "building it up" as a way to gain support from teachers, students and parents.

Across all schools only a few spaces changed initially. These spaces were often used as trials to establish what did and didn't work, for teaching and learning needs.

"There was a lot of freedom to trial different things. That was really useful because we got used to many things that we had not done before"- Primary School Teacher

"We converted the common room… we had a team of teachers and students basically gut that room, and for the cost of only a few hundred dollars, developed a prototype space to test over a term. They ripped whiteboards off walls and our construction students put them on broken table-tops and they converted them to writable surfaces. We got some cheap cushions; we pulled a lot of furniture out so

we had lots of empty space to work with. We ensured that there was access to technology; we put some whiteboard paint on one of the walls. And then we set up a booking system" – High School Principal

In some instances schools adopted an approach of making changes to subject areas, where it was envisaged that it would be difficult to implement a flexible learning style. This approach assumed that if implementation was successful in these instances the it should be easy to implement more broadly.

"We thought that if this would work in mathematics it would work in any of our faculty areas" – High School Executive

While all schools agreed a phased approached allowed staff to adapt their pedagogical approaches at their own pace, one school commented that it was important for staff to have continual access to the resources they would be using.

"The other thing we did, we had to spend a lot of money on devices and I guess what we like to call, flood the market. So if you don't remember how to do something, if you only have a chance to use it once a week, if you have that device all the time or at least most of the time, you can practice on it and you remember. It's like when you play a game once and you come back 6 weeks later and you want to play that game again and you can't remember, because you can't remember the rules because you haven't practiced it or it's like learning a language"- Primary School Executive

In every school there were key staff that embraced the challenge, who were excited by the opportunities they were afforded and who embarked on the journey with an open mind and a willingness to learn.

"We've got a full range of people. So we've got people willing to embrace change, to take on the challenge and willing to accept the sort of change that is going to be necessary" – High School Principal

"I think staff were probably excited that we were looking at investing in trying to innovate in our space and actually thinking a little bit outside the box and trying to energise our spaces" – High School Executive

"...exciting at the same time but a bit frightening, it can be both"- Primary School Teacher

However, each school spoke of staff that were initially reserved about the need to change pedagogy and/or spaces, which harboured scepticism about any potential benefits to teaching and learning.

> *"So there was a lot of scepticism surrounding it and it was just a very small group of teachers who had their rooms done and just a small group of us who were looking at all what we could find across the world, basically, just to see what was actually happening in education… we did share that with staff and they were a bit sceptical and then when we did our first rooms they were all coming in to have a look – okay what's with the new colours and what is the new furniture and how's this going to work" – High School Executive*

> *"We've got some people, what we call them end-of-career teachers, and they're saying "Well, I'm going to be retired by then so I'm not terribly concerned" and then we got some people that can be very challenged by the difference there" – High School Principal*

> *"We all find things daunting in our lives. It doesn't mean that we're against the ideas, it just means that we're not altogether convinced or we're a little fearful and we just need a little more encouragement, a little more support, a little more evidence from those around us that hey, this really is okay. And all of that occurred"- Primary School Executive*

Specific concerns raised about implementing flexible learning spaces were in regards to posture, handwriting and classroom management.

> *"Posture… there's a lot of research that says actually students generally don't sit in their chairs properly anyway so we have a lot of research to back it up"- Primary School Executive*

> *"There are the normal concerns. Handwriting was a big one. How will you teach them handwriting? How will they write things neatly?"- Primary School Executive*

> *"That other anxiety is about, we have space and a lot of openness, what happens with classroom management? Does that mean the kids will roll on the floor and jump around and oh man, they've got an ottoman, let's jump on that and see what happens. Or you know, we've only got one table or two tables. Are the kids going to fight over who's going to sit at the table? That's the type of anxiety. Do I lose my classroom*

management as a result of it and in fact it's actually the opposite way around. It's completely the opposite way around."- Primary School Executive

Many schools relied heavily on internal support networks to build confidence among teaching staff during periods of 'trial and error' as a result of the changes. This was reportedly achieved by teachers frequently dropping in on each other's classes to observe lessons in progress, as well as informal exchange about lessons learned, what worked well, success stories of progress with individual students, as well as areas for improvement.

"We've done lots of lesson observation and like, facilitated observations of specific spaces and how the space is being used to, specifically differentiate or, you know, engage a group of kids, so they were really beneficial. So we would meet before the observation. We'd go and see the space. We'd chat to the teacher and then we'd debrief afterwards about what was seen" – High School Support Teacher

Further this approach of peer support was also utilised to bring teaching staff who may not initially have been convinced of the initiative, on board.

"Then we invested in developing a learning hub, which was really a breeding ground for teachers - a training ground - to build their capacity to use flexible spaces; as some people felt very nervous about it" – High School Executive

"providing the opportunity to the 'coalition of the willing' who we've got involved at the moment… for them to mentor others with this professional learning for others that come" – High School Executive

With time, as teachers and students started to work in the newly transformed spaces, applying different pedagogical approaches, and word started to spread about the positive impacts that were being experienced, teachers who previously unconvinced, started to show greater receptivity.

"the people who were passing the sceptical comments weren't necessarily the people involved in the project. They were outsiders and they were your typical people in any group that stood back and went – now, let's see how this goes. Whereas then within 18 months – why weren't we involved? – High School Executive

"you know what, I'd [teacher] really like to be part of that because I can – it's not just about having a nice room. Because you're actually seeing different things happening in classrooms with kids, with teachers" – High School Executive

"It didn't take very long for them to see the fun, the excitement in the kids in the neighbouring classrooms and to see the benefits that were occurring and guess what? They wanted it for their kids because they care" – Primary School Principal

5.2.3 External Partners and Support

To ensure the success of flexible learning spaces, schools adopted several strategies. Schools visited multiple sites where flexible delivery was being utilised, including: university libraries, integrated technology showrooms and museums to gain further insight.

"we were lucky enough to go on a couple of visits to different schools and just picked up ideas that we saw that were already operating in other schools too"- Primary School Teacher

Principals and teachers really valued this experience and readily shared their learnings with staff.

To ensure decisions were well-informed and to receive ongoing support through the implementation of flexible learning spaces, many schools formed partnerships with external businesses ranging from architects and furniture suppliers to integrated technology consultants. These partnerships allowed schools to receive advice and assistance that was specific to their school culture and context.

"The first question we ask them is what they want, or what they want to achieve, and then how they expect to achieve that and what they think their outcomes will be as a result of it. Then once we have a true understanding of what they want, then we can start to marry our ideas and thoughts into that" - External Consultant

It was reported that redesigning a traditional classroom into a flexible learning space required time and research, as a wide range of factors needed to be considered. Engaging external consultants to assist with this process was seen to reduce the amount of independent research and work that needed to be undertaken, with schools placing their trust in the expertise of the consultants. This was an important consideration as it was often raised that teachers spent significant personal time on this initiative, coming in after hours and during the holidays to prepare their spaces.

External consultants spoke of talking each school through the advantages and disadvantages of each furniture item they were considering.

> *"We give them an opportunity to see the pros and cons of each product, of each type of item that they're going to put into that space"- External Consultant*

> *"We will go through why people want to put specific items in so we can eliminate that gimmicky effect that can drift into these fit-outs"- External Consultant*

> *"You need to be really careful as to how they set up spaces, because there's a lot of gimmicking sort of furniture that looks good and is a lot of fun, but doesn't help education"- External Consultant*

Schools who did not partner with external design and furniture companies, did so because they had concerns that their school's individual needs may not be met. They believed that external consultants designed classroom spaces based on architectural and design principles, without taking pedagogy and school context into consideration.

However the consultants who participated in this evaluation stated that they recognised the need for a combined approach considering both pedagogy and the school's physical environment to ensure the success of the space. Consultants took a collaborative approach to working with schools and aimed to address each individual schools need.

> *"...we conduct workshops with clients to look how they create their own learning environment based on their own pedagogy, their own culture and their own objectives. In that regard we're a little bit different to many of the other suppliers, who would basically design a learning environment for the school. We co-create that environment with them"- External Consultant*

> *"we approach any of our clients on a consultative basis. So rather than going in there and trying to address the client's needs with our products, we try and actually address their needs. So, if we see something that they need to do, and we can't do it, we'll provide them with recommendations as to how they can go about doing it. So, every principal and every teacher has a slightly different view as to how they can set up their teaching space and we will advise based on experience really and that experience is by making mistakes ourselves"- External Consultant*

"the workshop assists the teachers in grappling with how they connect a physical learning space with the pedagogy that they're trying to pursue" - External Consultant

This was reiterated by one school that opted to participate in Sebel's 'Classroom Design Workshop' during which Sebel provided input into a school's' individual design process and assisted them to make decisions about the type of furniture that would meet their teaching and learning needs. They then used Sebel to supply the furniture.

"we contacted Sebel and their consultants came out and they started measuring up our rooms and showing us what was possible with a group of teachers and then they invited us to come to their factory and actually see the ergonomics of everything and to take the students through the ergonomics – how things are designed, how things are built, what's the latest thing and what would they like? And so the students were able to pick a few items while they were up there"- High School Head Teacher

School Principals and teachers valued these relationships and encouraged other schools to create partnerships.

"they were offering to come down to the school and they sent out consultants with brochures and cardboard cut-outs of things. Here's a piece of cardboard the size of the tables, let's put them all on the ground and actually see what's going to fit, as that's a critical decision when you've got a small space" - High School Head Teacher

5.2.4 Professional Development

At an executive level, networking between principals of schools on a similar path was reported. The social media platform, twitter, was cited as a medium for exchange between like-minded executives and teachers, who used this as a means to discuss ideas and share information.

"The reason why all schools have started going down this path is because on social media, and what they're talking about, and sharing photos and stuff like that, on what we've been doing" – Primary School Principal

"Social media has played a big part in our connections… started the Twitter chat and we were able to connect with a lot of people, not just locally, and have those discussions about the pedagogy and even learning spaces because I think there's a

lot of ideas. People would post photos and things of what they do and it was very useful…" – Primary School Teacher

"Collectively the staff get a lot of support through Twitter. You develop your professional learning there" – Primary School Principal

There was an overall recognition that the pedagogical changes being made in the schools warranted professional development support for teachers. This took various forms with some schools providing teachers with research literature, others sending staff to externally organised conferences, some bringing in consultants with specific expertise, or by participating in professional development organised through school networks.

"The training was around the project-based learning rather than the flexible spaces themselves so in a lot of the flexible spaces we used instructional rounds which meant that teachers were going into rooms and they had specific questions in terms of how were students learning and what are the students doing" – Primary School Executive

"We did go to a Stephen Heppel conference a couple of years ago which was really interesting. Just to hear his ideas on 21st century future focused learning practices and some simple things that you can integrate into your classroom even before you get any new furniture, but just to modify the way that you're teaching. I found that really helpful" – Primary School Teacher

"They sent us to a two day professional learning course that was inspire and innovate just to get some ideas about different pedagogy and the way you can present things and putting tasks together that are collaborative in their nature and incorporate 21st century learning skills. So that we weren't just walking in blind. That we had a starting point and something to go with. They then had us come back and present that information to the rest of the staff so that everybody else was feeling it too"- High School Teacher

"She walked through that process with the learning and support teacher who co-developed the lesson with her, team taught with her, and at the end of that lesson, she ran into her staff room and shouted "Oh my gosh, that's the best lesson I've ever had! I'm going back. Can I book in for a second time?!" – she was buzzing. And when that happens, it generates enthusiasm from other people, because she had been kind of resistant"- High School Executive

Whilst the pedagogies that schools were moving towards, such as a greater focus on student-centred learning and collaboration, are not new within the field of education, there is little evidence available that addresses how the built classroom environment supports or hinders these pedagogies. Consequently, as previously mentioned, schools had to rely heavily on peer-to-peer support within their own schools to create evidence around how these pedagogical approaches in the modified environments were impacting teaching and learning.

One high school developed a model of *Action Learning Teams* that actively pursued this initiative and were able to capture some of the benefits and lessons learned, and passed these on to other teaching staff.

> "*When other teachers are saying "You know this kid in Year 8, they were doing really good work in that project and it's partly the space, partly the pedagogy, partly the way the space supported the pedagogy"; then teachers start to listen to that" – High School Principal*

Larger primary schools also formed teams in each stage to help share ideas and resources between staff. Smaller primary schools embodied a similar response at the whole school level. Additionally, an open door policy was a common form of professional development across primary and high schools, which resulted in teachers feeling welcome and comfortable to observe their colleagues and learn from them.

> *"So we have a coaching program in place so coaches will go into teachers' rooms on a weekly or fortnightly basis so you're already getting that mentoring happening as well" – Primary School Executive*

> *"I've always had my doors open and anyone who wants to pop in, and I do get regular visitors even though they drop in for 10 minutes just to have a look and see how the classroom runs. That's worked. Almost all the staff have come through at various times to do that. It's especially important for our early career teachers, they need that mentoring, they need to be able to see it in action and just working" – Primary School Teacher*

> *"So I spent a lot of time observing in classes just seeing how she was running things and talking to her about how we can actually present Maths material in a different way and what she thought was a good way of doing things. So I think just talking to each other was a major influence for me"- High School Teacher*

Likewise in regards to embracing technology and digital learning which forms an integral component of 21st century pedagogy, the value of teachers supporting each other was recognised.

> *"The most significant and successful professional development involves teachers being able to watch, discuss and be mentored by colleagues that they hold in high regard. They need to see what new and valuable opportunities digital learning can bring to their classrooms, to recognise ways that it supports and extends student learning. PD that supports teachers to work collaboratively and enables them to have early success - that lets them build up their confidence and to recognise and value the potential... It is also important for them to see that not everything changes - that many of their skills and repertoire of traditional learning tasks still have a valued place" - External Consultant*

Participating schools commented they appreciated being involved in the professional development of other schools embarking on the implementation of flexible learning spaces and saw the benefits of passing on what they had experienced and learned.

> *"We get quite a few visits from across our school network, and they seem to be the most beneficial in creating that change in other schools, them actually coming into a classroom and seeing it" – Primary School Executive*

> *"So a lot of people have come here. I think I've been part of their professional learning experience I suppose" – Primary School Principal*

It was evident that teachers connected the need for professional development to enhance effective teaching in flexible learning spaces with the fact that their pedagogical approaches had changed so significantly.

5.2.5 Student Transitioning

Several teachers recognised that students too needed time and support to transition into the flexible spaces as the new ways in which students were now learning, were behaviours that in themselves had to be learnt as they don't come naturally to many students. This was particularly true of self-directed learning and collaboration.

> *"Well, the students have to learn how to learn in these spaces just as much as we have to learn how to teach them" – High School Teacher*

"It's also training the kids to make sure they are using the space correctly… Yeah there's just like processes that you have to teach them. It's literally just teaching the kids how to learn in that space. It's a new thing, teaching them how to navigate their way around" – Primary School Teacher

Students generally commented that once rules and boundaries had been set up at the start of the year they knew what the expectations were and how to work responsibly. Teachers believed implementing flexible learning spaces in primary schools allowed for smoother transition between preschool and kindergarten.

"So the transition to kindergarten is probably less… daunting because they don't come into an unfamiliar setting where its tables and chairs and this is where you sit and this your name card… And I think that's the best thing because they just come and they don't second guess anything. They just continue on, really. It's just like the next stage" – Primary School Teacher

"There's not as much crying…. removes anxieties." – Primary School Teacher

However, many primary school students and teachers raised concerns over their transition from a flexible primary school to a traditional high school.

"I think the other thing that I'm conscious of teaching Stage 3 is preparing them for high school because I know the high school environment is traditional and they know the high school environment is traditional, so I'm getting a lot of push back from them saying well we want to be working at desks because we know we need to do that at high school" – Primary School Teacher

"High school is a completely different story; it's more traditional classrooms once again. We're going from flexible learning spaces to a traditional classroom. We've learnt all of these responsibilities from having a flexible learning space, where as in a traditional classroom we're sitting at desks and just going back to what we've almost forgotten; what we used to do" – Primary School Student

6. OBJECTIVE 2

The process of connecting a school's needs with appropriate classroom designs and flexible resources and furniture.

6.1 Physical Changes Made To Classrooms

There was considerable variation between schools as to the kinds of physical changes made to teaching spaces. Schools generally reported that they had reduced the amount of furniture pieces, thereby opening up the physical space within the classroom, and replacing standard school furniture of a desk and chair for each student, with a variety of flexible furniture items to facilitate a range of teaching and learning activities, and allowing for greater movement.

6.1.1 Primary Schools

The most dramatic structural changes in primary schools involved knocking down walls to create larger classrooms. Unused storage rooms, meeting rooms and other underutilised areas were often incorporated in this process. Corridors, bag rooms and store rooms served a second purpose as breakout spaces to allow for individuals or small groups to work independently. Classroom walls were painted with whiteboard paint, bright colors or covered with display boards to enhance the aesthetics of the room. Below are two typical primary school classrooms demonstrating the variety of furniture being used in flexible learning spaces.

The number of traditional chairs in classrooms was significantly reduced and replaced with a variety of soft seating options including bean bags, ottomans, floor cushions and padded chairs. Similarly, the majority of traditional tables were replaced with a range of tables varying in height, shape and colour, to be used for different pedagogical purposes. Integrating technology into classrooms was also consistent across the majority of schools.

6.1.2 High Schools

High schools too appreciated increasing the open space in classrooms, ideally achieved through breaking down walls, however while desired, this was not done frequently as schools generally reported that they were struggling to accommodate their student numbers and therefore could not afford to lose teaching rooms by combining them.

> *"it's spot on that you've called your study SPACES as that's what it's all about - creating that open space in the room, where less furniture is actually more" High School Executive*

One of the most significant and consistent changes in high schools was either replacing individual student desks with round tables that could accommodate 6-8 students, or using smaller desks of various shapes that could be moved together when needed; to facilitate group work and collaboration.

In terms of seating, the standard hard plastic school chairs were replaced by softer seating including padded chairs, lounge chairs, couches, ottomans and bean bags. Other changes included the introduction of colour into classrooms, either through wall paint or brightly coloured furniture and a focus on bringing more air and light into classrooms achieved by replacing internal walls to corridors with glass, which resulted in the corridor serving as an extension of the classroom. Below are two typical flexible delivery high school classrooms.

6.2 Furniture and Resource Decisions

It was found that several key factors influenced the choices schools made in regards to which items of furniture and classroom resources to utilise.

6.2.1 Local Context and Choice

The importance of the local context was raised in most discussions. Context was seen as significant at the broader school level and the community it serves, from within the school driven by the needs of the different faculties, down to individual year groups driven by teachers and student preferences. It was frequently stated that each school is unique and a 'one-size-fits-all' approach would not work when implementing flexible learning space across the state.

At the broader school level, the demographics and specific needs of different student cohorts was noted.

> *"I think it's important for schools to have that flexibility. Every school is unique and the needs are different" – High School Principal*

> *"We have a high refugee population and they often feel stigmatised, we want to make sure that those kids are supported but not labelled" – High School Teacher*

Spaces were often created after taking the local demographics and culture into consideration. For example flexible spaces were created specifically for Aboriginal and Torres Strait Islander students, to better meet their unique learning needs.

> *"We went through a process of working with our Aboriginal students to convert a space in the top of the library that was specifically for our Aboriginal students… when we changed the Aboriginal learning space, we had students as active participants in the process, so they were really actively involved in everything from concept to design to implementation"- High School Principal*

Another school created a small break out space with darker colours and comfortable furniture that would allow students with unique learning needs or those experiencing anxiety to withdraw to for quiet time. Senior students would also use these spaces to catch up on tasks during free study periods.

> *"The bubble is a multi space that is shared - we have a Support Unit in the school for students with Asperger's and Autism, so you'll notice it's a little bit darker, so they can*

go in there if they're having an episode or they just want to get away… teachers might direct them there if they are having a bit of a battle with something and they chill out. Alternatively, when we are doing HSC exams it might be full of our students cramming in there, and then when they're not we might have teachers having a discussion about their latest problem"- High School Executive

Teaching staff were generally required to consider the context of the syllabus, the associated pedagogies and then link this to the flexible environment, justifying how certain types of furniture would facilitate the particular teaching methods. For example the quote below from a primary school highlights this process as it demonstrates how the use of a contemporary literacy pedagogy (L3 - Literacy, Language and Learning) helped teachers to decide on particular item of furniture for their classroom.

"Most of us have that rounded scalloped out table. There is a particular pedagogical reason why we do that and it's because of L3 - a teacher sits there and can deal quite quickly with three, four, five students. That piece of furniture really suits that need. It's something we spend a couple of hours a day doing" - Primary School Teacher

Additionally the age of students played a role in selecting furniture and resources. Considering both height and size, was found to be important when selecting furniture, as well as the preferred style of learning for that age group.

"I think a lot of it also is the age influences, what they choose as well. So obviously in a kinder class, a lot of the furniture is quite small and low and would look different to what it would look like in a Stage 3. And so the kids' choices might vary depending on the age as well"- Primary School Teacher

In high schools chairs of various heights appreciated by students, and particularly tall students raised the need to cater for their body types.

6.2.2 Budget

When implementing flexible learning spaces the majority of participating schools were given a budget. Cost certainly played a role in determining the type of furniture and resources that were purchased and also influenced the type of suppliers chosen for purchases. Budgets were usually distributed to classrooms in primary schools or faculty in high schools. The financial outlay for classroom transformations ranged anywhere from $300- $10,000 per space. Teachers had conflicting views of the impact cost ultimately had on purchases.

"I think the key is you can do it… on a budget"- Primary School Teacher

"I think the biggest rival is budget"- Primary School Teacher

Teachers noted the importance of planning their budget, investing money where needed and being as thrifty as possible. Schools were particularly conscious of their spending because they had not received specific funding for this initiative, often shuffling funds from other areas to support the purchases.

6.2.3 Flexibility

A key factor influencing furniture choice was the flexibility afforded by individual pieces of furniture. Tables, whiteboards and smartboards with wheels were particularly popular as these could be easily moved arounds as needed, either before the commencement of a lesson or throughout.

> *"your room can be moved around and things moved from different spots and that's what makes them really flexible because the teachers are adjusting the physical environment to the pedagogy that they're using within the classroom and the students as well" – High School Executive*

> *"it is supposed to be flexible so you have the chance to continuously change your classroom to suit your needs and the needs of your kids" – High School Teacher*

> *"We found that the best approach for us is furniture that you can pull together as a whole cohort, or they can put it together as small groups, or they can use it independently" – High School Principal*

> *" it's easier because if you want to work as a group you can put them together, but if you want to work separately you can move it. I think that the ottomans that we have a very light weight and you can easily move them around. I'm not sure if they have wheels on them, but they have this sort of motion at the bottom of them, that makes it easier to move" - Primary School Student*

It was noted in primary schools in particular, that the students needed to be able to move the furniture pieces, thus they needed to be on wheels or light weight. Students valued being able to move furniture items to where they needed.

"A lot of furniture is really heavy so it's not movable and for us one of the big things is about the students picking them up and moving them around the classroom and some furniture is not designed for that" - Primary School Executive

"we have wheelie chairs in that classroom so it's easier to move around, to get at different tables"- Primary School Student

"beanbags, we have them in our classroom and they're all so easy because you can place them in different places"- Primary School Student

6.2.4 Quality

Teachers spoke of the importance of having high quality furniture that is durable, robust and can withstand the high impact required of it. Many teachers viewed quality and durability of furniture items as a key consideration during the purchasing phase.

"When we prototyped, we learned pretty quickly that it's good to test something cheap but it's not going to last. We bought cheap furniture... like cubes that could be used as seats and as tables and for a whole range of other purposes. They're a couple of years old now and the teenagers are moving stuff around frequently, not just throughout the day, but within lessons, and that stuff hasn't lasted" – High School Principal

"Students are not necessarily gentle and we know that for the space to work it's got to function the whole time. We can't sort of have it looking good for a week, a month or whatever. It's got to be there for the long haul" – High School Principal

"Certainly one of the things we think about is durability"- Primary School Principal

It was noted by executive members and teachers, that domestic grade furniture was not designed for constant use by students, as such they recommended schools buy furniture from educational suppliers.

External consultants viewed the implementation of flexible learning spaces as an investment, thus perceived furniture quality to be highly importance.

"Well, from my point of view, there's no point putting anything in there unless it's going to live there for ten years. Because, schools don't get the opportunity to change much, even in ten years. So quality is number one, at the top of the list, and then we work down from there"- External Consultant

In line with this view, external consultants provided further quality to their clients with lengthy warranty plans. They felt this was a key indicator of their superior quality.

> *"Minimum of ten years to lifetime (twenty-five year warranty). I like to refer to us as being 'consultant redundant', and what that means is, we go out there, address the need and then we go away and know the client doesn't have to be ringing us every five minutes saying; "This is broken, or this needs repair, or this needs to be changed."- External Consultant*

6.2.5 Materials

Teachers and executive believed the furniture put into flexible learning spaces should be considered an investment, thus it was important to choose pieces that would last. Ensuring furniture is made from quality materials was an important consideration during the purchasing process. Choosing materials that were robust and easy to clean would help to ensure the durability of the furniture. Many executive staff and teachers spoke of taking materials into consideration when purchasing furniture. Vinyl was a common choice, particularly in primary schools, as accidents were more likely to occur.

> *"We look at the age of the kids. For example, if it's kindergarten, we're probably more likely to get vinyl because there's more accidents, there's more spills, and you don't want something that's ruined within 3/4/5 months, because again we're not going to tell the kids, don't touch that… So we do tend to get vinyl down in the kindergarten classrooms"- Primary School Executive*

> *"We go for vinyl because it's much easier to clean, and we've also gone for colour" – High School Principal*

Teachers valued having a range of quality materials to choose from and often selected furniture companies who could meet this need.

> *"BizFurn and Furnware have a lot of different materials you can choose from. You can mix and match things, so we'll have a lot of the back of these but the front of that. With this vinyl, with that fabric, and it's very user friendly to be able to do"- Primary School Teacher*

Staff were happy to sacrifice expense for quality, when it came to material choice, recognising the benefit of durability and long term versus short term financial savings.

"we have gone with like with a mix of vinyl and material. We do try and get materials that last a bit longer. Upholstery could be very expensive. That plays a part, but then again we want to bright, engaging colours"- Primary School Executive

External consultants noted that good quality upholstery can be cheap but if it doesn't fit with schools budget than other materials such as vinyl are the next best option.

External companies also noted the need for durable materials in the school context, but preferred to avoid vinyls when attempting to create a more welcoming environment.

"making it a welcoming and warm environment, we like to use fabrics as opposed to vinyls, and there's plenty of really good quality, heavy-duty commercial fabrics on the market"- External Consultant

"If they can't afford a really good quality commercial upholstery, which can be as cheap as eighteen dollars per metre, they then need to put a good quality vinyl on it. Materials or upholsteries rather, if they look worn in that short a period, they are going to be terrible within eighteen months, and looking like the item needs replacement. So upholstery is an important one just in terms of longevity"- External Consultant

If given the opportunity to inform the purchase students valued, comfort in the furniture they chose. Many commented that hard standard plastic classroom chairs were uncomfortable. Primary school students also stated how uncomfortable it was to sit on the standard issue classroom carpets, preferring instead to have an additional rug for the space where dedicated 'circle time' (sitting) was held.

"they feel really comfortable because the fabric that they use is really nice"- Primary School Student

6.2.6 Choice of Supplier

Schools fell into two distinct groups in regards to the suppliers chosen to 'fit out' their flexible spaces. To a certain degree this depended on how long ago the schools had started replacing furniture with more flexible options. Schools who had begun to make changes between 5-10 year ago, opted for more affordable generic furniture suppliers such as IKEA and Freedom Furniture, where they could source a range of products at relatively low cost. Their reasoning was that they were prototyping and testing the furniture and getting

feedback from students about what worked, then replacing items that didn't function well. A large financial outlay at this phase was seen as being wasteful.

> *"You could go out and spend thousands and thousands of dollars on furniture, put it in and it may not suit the purpose for that subject for that space for the teachers at that point in time. So it really has been a trialling and testing, and refining the kinds of furniture that we're using" - High School Head Teacher*

> *"also because it was a trial, we weren't sure what we would want to use so we needed to buy things that were cheap so we could kind of roll it out really quickly and then see what happens"- Primary School Executive*

Although for many schools the decision to purchase cheaper furniture was due to an initial trial, from the perspective of those in the business of supplying school furniture, it was thought to be a waste of money in the longer term due to lack of durability.

> *"unfortunately the people or the schools that do that, find out only too quickly that the money that they've been spending has just been a waste. Which is unfortunate and I've seen that hundreds of times, to be totally honest"- External Consultant*

Schools who had made changes more recently, had clearer ideas from the outset as to what they expected the space would enable, and were therefore more open to using suppliers of industry standard school furniture that could deliver products of the required quality standard. Sebel was the most frequently used supplier in high schools. Some schools discussed having initially purchased cheaper furniture of lower quality while they were experimenting and prototyping their spaces, and then turning to Sebel once they were sure of what they wanted to invest in.

> *"we've subsequently invested in more robust furniture in the common room, and in the learning hub, and in all of those instances we used Sebel. It's far more expensive, but it's proven to be really robust" - High School Principal*

Primary school's tended to use a variety of both educational and generic furniture suppliers. In some cases, schools made a conscious decision not to extensively use educational furniture companies to source their furniture, in order to create a learning space that did not resemble a traditional classroom. Several staff commented that at home students do homework on the lounge, or lying on the floor or bed and that a classroom could emulate this environment.

"So there was a conscious decision made, and that was based on research, to make the classrooms more like non-school" - Primary School Executive

However, one flexible school furniture supplier commented that from their experience teachers and students require a space with a sense of purpose:

"we find the one thing within your learning environment design is that it must still look like it has a purpose, must still look like it has some sort of design and meaning to it otherwise, not only do the teacher or lecturers find it hard to connect in that space and deliver a good learning experience, but the students also don't like being within a chaotic space either. Most students want to have some sense of design, sense of geometry I suppose" - External Consultant

In contrast, other primary schools avoided generic companies and opted to source the majority of their furniture and resources from educational suppliers, based on the superior quality provided by these companies.

"I recommend, although that other companies have really cool things and they are usually cheaper, I would recommend in retrospect, sourcing everything from the educational furniture place"- Primary School Teacher

Primary schools used a range of educational furniture suppliers other than Sebel. Suppliers were chosen based on their range and how well they met school's needs.

"So we've sourced a lot from Bizfurn. We've worked very closely with Bizfurn. Also another company called Furnware. Batger is another one and Raeco would probably be the main ones...So we use a variety of suppliers but they are the key ones that we would be using because they know us well, they know what we need, they are very responsive- Primary School Executive

An external flexible furniture provider, believed that sourcing furniture from an educational supplier allowed schools to have access to experts who could make informed recommendations in regard to classroom design.

"I think obviously experience, and that experience comes from speaking to people really. We do that every day of the week and so we learn obviously from that. And you can also, let's go back to the ottomans again, suddenly a principal or a teacher might be going out there to go and get ten or twenty ottomans to put their

classroom and you could say, "Hey, have you thought about this?"...I think taking advantage of that track record and experiences is advantageous for an educational institution"- External Consultant

6.2.7 Upcycling

Schools spoke about removing their old furniture from classrooms to make room for the new pieces, but were generally very conscious of not discarding older items that could still serve a purpose. Some schools donated their spare furniture to other schools in the locality, or stored them for future use. Other schools looked at options for recycling the pieces into new creations.

"here's an old whiteboard which we don't want to use anymore because we want to put an interactive whiteboard in. Well we're not throwing it in the bin, we're going to flip it over, we're actually going to put some legs on it and now we can have our six kids using that as a brainstorm with recycled material... think about all the different ways in which you can recycle. And even putting it to the kids, like 'this is our space how can we recreate it'? The ideas are endless" - High School Executive

"I find the community can donate things if you put it out there"- Primary School Teacher

Up-cycling allowed schools to save money and stretch their dollar further to purchase other educational resources that would benefit students.

"It's about repurposing what we already have so we haven't gone down the path of looking into those flashy catalogues and spending heaps of money. It's about let's grab some blackboard paint or is there something that you've seen in the school that would help you learn that we can take into our own classrooms"- Primary School Executive

"I'd rather have recycled things in my room - better readers for example, than expensive tables and not very good readers, so I think that the money could be put into technology or something else"- Primary School Teacher

6.3 Teacher Furniture and Resources

6.3.1 The Teacher's Desk

A significant change that occurred in many flexible learning spaces was the removal of the teachers desk. In a traditional classroom a significant proportion of space is typically occupied by the desk itself, and further space is lost due to the 'no go zone' that surrounds it.

> *"Removing this big old teacher desk that took up in a percentage wise like 15% of the room, plus the other 10% of no one wants to go near that desk" - High School Head Teacher*

By removing the desk and the additional 'no go zone', teachers felt the student-teacher relationship was strengthened.

> *"I don't have a teacher desk anymore. Because there's no point in that anymore. And I think it helps us to build relationships with our kids as well a lot quicker and a lot deeper as well"- Primary School Teacher*

With the changes in pedagogy many teachers no longer spent large portions of time sitting at their desks; rendering them somewhat superfluous.

> *"in my room there actually isn't a teacher's desk. There's a lectern type piece of furniture at the front which usually puts the technology that connects to the board. But I'm not stuck there because I've got a little presenter so I'm around the room" - High School Executive*

6.3.2 Storage

In the past the teacher's desk typically served a two-fold purpose of providing a place to sit, work and teach from, and also a storage place. Removing the desk resulted in teachers requiring better storage options in their rooms.

> *"I don't have a teachers desk, I've gotten rid of it... I just found it was my dumping ground"- Primary School Teacher*

> *"You need space to put all the stuff"- Primary School Teacher*

> *"People have three desks worth of stuff. What do we do about all the teacher storage and things like that?"- High School Teacher*

When showed various storage options, teachers saw a need for both fixed storage options such as built-in cupboards, as well as storage trolleys to be included in the flexible classroom design. Teachers were not phased by having a storage area for their belongings instead of a desk.

> *"Now I have a tub that I put my handbag and shoes and all my bits into"- Primary School Teacher*

6.4 Student Furniture and Resources

6.4.1 Tables

Tables and desks were a key item of furniture. Students appreciated being able to lean on a hard surface to complete their work. Many teachers and students commented on the benefits of having three different heights of desks; low to the ground for sitting or kneeling on the floor, traditional seating height and standing desks. External consultants labelled this *"three tier learning"* and believe it allows students to become more engaged with a learning activity. For this reason and for use across stages, teachers prefered to have height adjustable desks.

However, while many rooms had height adjustable desks, where each leg could be extended, this feature was reportedly rarely used as it was seen as too cumbersome. External consultants advised if setting up an adjustable table, that the height was considered.

> *"Primary school level could be 900mm high and secondary school level could be 1050mm high"- External Consultant*

The practicality of height adjustable desks was also discussed. Both teachers and students felt that students would get distracted and frequently adjust the height of their desks if this was easy to do. It was agreed by external consultants that height adjustable desks, both electric and mechanical could become chaotic as students could easily change the height of the desk. Stability and durability were also raised as concerns. Some students spoke of the disruption to their 'line of sight' when desks were at various heights across the room; obstructing their view of the content on the board or screen.

There was however general consensus that standing desks had a place in the classroom and that it was best if they were fixed to a wall on one short end to increase stability, while still providing access to three sides. External consultants commented that standing desks are becoming increasingly popular in schools, which was also reflected in workplaces.

"we love standing tables, the workplace has proven that they're good for your health. It's good for when we're talking about ergonomics and having movement within your learning environment"- External Consultant

Students frequently commented on standing desks and could identify that they helped them learn.

> *"I love them, they're really helpful" - Primary School Student*

> *"I probably like our standing tables. I don't know why, but it just feels better when I stand" - Primary School Student*

> *"it's so comfortable to stand up and draw. For me, I'm not comfortable when I'm sitting and drawing. Now, I can't do sitting, I just stand and then I do my things" - High School Student*

Other frequently mentioned desks include whiteboard tables, semi-circle/kidney shaped tables, round tables, tables with storage and coffee tables. Students and teachers identified that each table served different pedagogical purposes.

> *"a whiteboard in the middle and then like mind map or brainstorm things on the whiteboard with your groups… students seem to really like writing on whiteboards. They're probably my favourite because I'm able to see what everyone else is thinking and I can just like write down what I'm thinking and show everyone instead of writing in my notebook" - High School Student*

> *"I like the white board table, because you get to work out on them and write down your notes, and then you can rub them out instead of making your books messy"- Primary School Student*

Primary school students often used coffee tables to work on when sitting on the floor. However, high school students found that coffee tables were too low to work on productively.

> *"Well a lot of the small tables, they are not very good" - High School Student*

Semi-circle style tables were highly popular in primary schools. They were frequently used for small group activities where a teacher could sit to provide instant feedback.

> "*They have it in a circle like a doughnut, so some people can sit around it and sometimes the teacher goes in the middle of it to talk to them"- Primary School Student*

> *"Half-moon round whiteboard tables, like they're one of our favourites. The teacher sits there and can deal quite quickly with three, four, five students and that just makes sense. That piece of furniture really suits that need. It's something we spend a couple of hours a day doing"- Primary School Teacher*

Round tables were used extensively in both primary and high schools to facilitate collaborative work. Round tables were seen to increase student interaction and were ideal for group work. Students frequently noted the perceived and experienced benefits of round tables.

> *"I'd like to have this [round table] in my classroom because more people can sit in it, and we can each do some - six people can sit here, and we could share one idea if we had one piece of paper with our idea in the middle"- Primary School Student*

Teachers noted that while it may be tempting to buy alternate shaped tables, they may not be practical. Not only do some physical shapes make it difficult for students to use their resources, but they may also restrict the 21st century pedagogies trying to be implemented. External consultants perceived a standard classroom was too small to accommodate some of the shaped tables.

> *"some of the desks that had the sharper corners didn't facilitate group work or engagement because there seemed to be a type of barrier and it didn't flow around to be a collaborative space" - High School Executive*

Additionally incorporating too many tables without straight edges made it difficult to push furniture to the sides of the classroom. Students also commented that the legs of alternative shaped tables often got in the way.

> *"So you're trying to push your chair in and you're running into the legs on the tables. So you're, like, sitting really far out from the table and you're trying to write - it's pretty messy" - High School Student*

External consultants agreed that alternative shaped tables took a lot of space in the classroom.

> *"waved-shaped tables, and triangular tables, and crescent-shaped tables… every single one of those are part of our range, so I'm going to sound like a total hypocrite here, but every single one of those tables take up more space and are less efficient, and less user-friendly than a good old-fashioned rectangular table"- External Consultant.*

6.4.2 Seating

Students commented on a range of seating options, with the most popular pieces being soft seating. This included cushions for the floor and seats, couches, beanbags, modular furniture, soft floor seats and padded chairs. Students commented that comfortable seating contributed to an enhanced learning environment and experience.

> *"So it's mainly sitting on nice comfortable furniture instead of the desks all of the time"- Primary School Student*

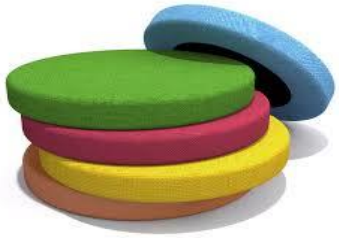
Beanbags were common, particularly in primary schools. They provided an area for students to work comfortably and proved to be quite flexible.

> *"Yeah and I also like the beanbag and the cushion area because it's easier to work because you are more relaxed and not as tense"- Primary School Student .*

> *"I like sitting on a beanbag because it's very comfortable"- Primary School Student*

> *"I would like to have a beanbag. That would be great"- High School Student*

Flexible learning spaces in primary schools tended to have fewer desks and chairs and more open floor space. This meant students frequently spent time working on the floor. It was a common concern for students that sitting on the floor for long periods of time was uncomfortable. Students enjoyed having floor cushions or thick rugs when sitting on the floor.



"I like nice rugs and mats to lay on… cushions too"- Primary School Student

"We have these disks called cookies, which we use when we sit on the floor… they're good"- Primary School Student

"Yeah, in our design technology class we have pillows and they're really comfy to sit in"- High School Student

Ergonomically, sitting on the floor during lessons caused some students to slouch. Both teachers and students found this concerning and spoke of having back support when sitting on the floor. When shown a picture of a floor seat (see below) teachers and students responded positively to the idea of using one.

"Because you can lean on it (floor seat) when we're outside in the corridor"- Primary School Student

"I really like the look of it (floor seat) because a lot of the kids sit on the floor. And it's a bit of back support if that's what they are after" - Primary School Teacher

Lounges were another common seating option in both high schools and primary schools. Lounges provided a comfortable seating option, allowing students to complete their work in a more relaxed environment.

"People like the couches a lot… We use them a lot, we are always on them"- Primary School Student

"I think the lounges and the comfy chair would be better in the library when we're all relaxed and we have to be quiet and read. I think that will make people not dislike it as much, because we're sitting on those hard chairs and we're all stiff trying to read our book and people are looking at each other"- High School Student

Modular furniture of various shapes and sizes, were a frequently purchased furniture item in both primary and high schools. However there were mixed opinions about their benefits. Most teachers and students valued the flexibility they provided.

"Also we use ottomans a lot. Generally we can move the ottomans around to see which side of the classroom because it's two classrooms but there's no wall in between. We can move the ottomans around depending on which white board we are using"- Primary School Student

"Yeah we've got the flowers. Love the way that it can be broken apart" - Primary School Teacher

Although teachers and students enjoyed the flexibility provided by ottomans, the lack of back support made it difficult for students to complete work.

"if you're having purely just a discussion then these (ottomans) are good. But if you need to be writing stuff... or working with paper or anything, that's very challenging" - High School Student

Teachers worried about the ergonomics of ottomans when students were completing work. This was supported by a comment from an external consultant who stated that ottomans are not the best ergonomically designed piece of furniture for a classroom environment.

"when a kid is working on an ottoman and whenever anybody works really, they lean forward and lean onto the desk or their laptop table, or whatever. When the teacher gets up and starts to speak, the kid sits up and listens to the teacher, and when they sit up, there is no back there, so they've got nothing to lean on or nothing to sit back on, so the first thing that they'll do is to sit up to start with, then they'll slouch, then they'll start squirming and what-not, and you lose any hope of trying to maintain that kid's attention" - External consultant

Replacing hard plastic chairs with padded or soft seating styles proved to be popular with students. Students often spoke of soft chairs reducing the discomfort they had previously felt when sitting on hard chairs.

"And the chairs are very comfortable, they're not really hard chairs, they're like cushiony"- Primary School Student

"I would rather have one chair that has a soft bottom, so you could feel better when you sit down, and like when you sit down for ages, your bottom would not feel really sore"- Primary School Student

"The seats are really like soft and cushiony"- High School Student

External consultants also commented on the benefits of replacing hard plastic chairs with chairs that allowed student to move.

"They sit on a chair and the very first thing that they do is they lean back on it and swing back on it… we've gotten rid of all of our rigid chairs and put in chairs that have some 'give' in the back. It provides a more comfortable sitting environment for the kids and it also eliminates a problem for teachers… where kids are swinging back on chairs... But the other thing that does as well, apart from a discipline thing, it provides an opportunity for for kids to concentrate more and to be more focussed"- External Consultant

Similarly to height-adjustable tables, students enjoyed using seating of different heights including floor seating, traditional height chairs and waist height stools. Some schools built tiered seating options, allowing students to learn in an amphitheatre style.

"My favourite part is the stand, there's a top level, and pretty high, and you get to see outside the window, and then there's a bottom level where you can let your legs dangle down and let them just rest."- Primary School Student

"My classroom we have this stands, it's like stairs and we get to sit on it… it's much cooler and very bright to stand and study on"- Primary School Student

Pedagogically, tiered seating allowed students to watch demonstrations, complete presentations and engage with classroom lessons.

"The teacher will be down here and we'll be doing it as part of a demonstration, they'll be with us, but they're up there and they can see what's kind of happening but it doesn't take up a lot of room and that's a great thing too for creating another little hub in what was a very big space"- Primary School Teacher

6.4.3 Flooring

An interesting aspect of flexible learning spaces that was considered in one school, was the use of flooring to define learning zones.

"one of the things that I noticed as I go around the places is how important flooring is in terms of creating space for people"- Primary School Principal

Different coloured patterns and shapes were designed into the carpet, taking teaching and learning into consideration. The patterns enabled teachers to define spaces and could be used to facilitate group activities and creative play.

"So we put them out like as that's where your group has to sit around, so that's your space. Just as a way of identifying zones in the room"- Primary School Teacher

Patterned flooring provided an added element of flexibility to these classrooms, as students could easily identify zones without the need for physical barriers. The removal of the physical barriers created even more open space further enhancing the flexibility of group work.

"...changing their flooring and they're kind of using colours and shape and design to create areas. I guess we live in a society where shapes and colours define space anyway. We've got soft fall that defines this is the area where children will play in an equipment area and so the colour and the shape suddenly defines the space. So that's something that we've been exploring"- Primary School Principal

The school worked with an external company to design and install the flooring. This provided another example of working with an external service provider to ensure maximum benefit for both students and teachers.

> *"We worked with a design team and looked at the spaces using colouring and texture and design of flooring. We're just about to prototype and are waiting for the designers to come in and install….The flooring design was different seating areas, all different spaces"- Primary School Principal*

Using carpet tiles also served a functional purpose, as they could be replaced easily when needed.

6.4.4 Technology

As well as implementing flexible learning spaces, many of the participating schools also implemented flexible technology to allow their students to develop 21st century skills. A range of technology was used in flexible learning spaces including interactive whiteboards, iPads, Surfaces, XO's and touch screen televisions.

> *"Other schools don't really get the opportunity to have a lot of technology, have iPads, have XO's, have computers, have laptops, cameras, different kinds of technology and our school gets all of them because they not just us to learn, they want us to learn different types of learning, like technology of different kinds and we're really thankful for that." – Primary School Student*

> *"I really enjoy having the technology because, before we had flexible learning space we would always have to come here, or in here there would be a computer lab and there were all of these computers, but now we can just share around the computers and laptops and it's much more easier" – Primary School Student*

Students valued being able to use a range of technologies in their classroom lessons on a regular basis.

> *"I really enjoy having the technology because, before we had flexible learning space we would always have to come here, or in here there would be a computer lab and*

there were all of these computers, but now we can just share around the computers and laptops and it's much more easier" – Primary School Student

"My favourite room would have to probably be the sports science room because it's the most advanced in the technology bit so we can use a TV for presenting and it's pretty cool because I did my PDH assignment on that and everyone got to see it. Instead of like a smart board they can see it on a flat screen"- High School Student

Teachers commented it was important for the technology to complement the space and also be flexible in nature.

"So that's probably one of the most useful, and also not computers, using some kind of tablet technology that's portable, easy, can be used for anything. It doesn't have to be iPads or surfaces, it can be absolutely any type of tablet but something that is completely flexible." - Primary School Teacher

"I also have an Apple computer and we have Apple TVs in the room so I can go to any spot in the room and still be talking and I can still change what's happening at the board or you can flick from people's Apple devices or you can ask the students to put their device in and project to the front of the room" - High School Executive

It was also considered that charging facilities needed to be flexible.

"We have these tables that have chargers in them. That could be very convenient for putting your chargers at"- High School Student

The increase in technology in the classroom also facilitated the flexible space as students could access information from anywhere in the room with their devices and were no longer dependent on the teacher to stand at the front at the board. Consequently many classrooms no longer had a dedicated 'front' of the room and larger double rooms in particular utilised multiple boards around the space.

"You can't have them facing the front – there's no front, not in our classes, there's no front"- Primary School Teacher

Technology was found to increase student engagement and was perceived to better prepare them for life after school. An external technology consultant spoke of how incorporating technology into lessons could significantly increase teaching and learning opportunities.

> *"Technology can significantly transform and improve teaching and learning opportunities, equipping students to be active participants in the 21st century, but it can also be used to simply replicate or relocate traditional teaching practices"- External Technology Consultant*

6.4.5 Support Resources

As flexible learning spaces typically have less furniture than a traditional classroom, students may require additional aids to assist their learning. The most popular support resource quoted by both students and teachers was a lap table. Both students and teachers loved the flexibility of the learning aid.

"we also having leaning boards so if you want to work on the carpet you don't always make holes in your work, you just have a leaning board and you can work on that. "- Primary School Student

"little lap tables, so you don't have to just lean on your lap and knees"- Primary School Student

Another favourite aid was the mini whiteboard. This was particularly popular in the early years in primary school.

> *"So I'd definitely say that every child you need to have a whiteboard and a whiteboard marker per child because we also do a lot of work on those"- Primary School Teacher*

> *"We have mini whiteboards that sometimes when we do group work, we can use the mini whiteboards using textas"- Primary School Student*

Teachers found students enjoyed using the mini whiteboards as it allowed them to make mistakes without creating a mess in their books. Students were found to provide more responses on a whiteboard surface as they weren't afraid to make mistakes.

6.4.6 Storage

In the past every classroom has required areas of storage to keep student work and resources, affording a tidy classroom and ensuring students know where to find materials and resources. When asked if storage was important in a flexible learning space a Primary School Student stated:

> *"Yes, because we can keep our work safe" - primary school student*

The flexibility of storage options was a common desire from many teachers.

> *"One of the most useful things that I've actually found is the tote tray cupboards. It's got 16 pockets of tote trays at the base of it and the top is a lounge. So they have their own tote trays with their labels on them, so they know where everything goes" – Primary School Teacher*

Teachers spoke of the importance to have different storage areas for different needs, including student: work, resources and personal belongings. Classrooms with storage spaces ensured students knew where to put things away and where to find them. Teachers believed this created a more harmonious classroom.

External consultants also agreed that storage was important, mentioning the need for the capacity to store furniture items that could be easily folded for storage, adding an extra element of flexibility to the classroom. Additionally it was found to be important that the storage of furniture was student friendly.

> *"Furniture that's easily moved and easily stored is highly popular. So, rather than a regular four-legged desk, or whatever, having a mobile desk and a table that has tilt functionality, so that they can be folded and moved away and stacked in a corner"- External Consultant*

> *"Likewise, with chairs; chairs that are strong but light enough to be moved quickly and stacked quickly"- External Consultant*

6.4.7 Breakout Spaces

Flexible learning spaces were often much larger than a traditional classroom. As such teachers felt it was necessary to have breakout spaces for a variety of reasons. Teachers perceived breakout spaces as important spaces to provide explicit instruction.

> *"I do love the open space and it gives you so much opportunity to move around easily, for the kids to collaborate, but I think having breakaway rooms and a place that you can provide explicit instruction I think is really valuable"- Primary School Teacher*

Teachers also felt that breakout spaces provided an area for students with special needs, as well as students who needed time out, to have a place to go to within the classroom. Some schools did not have room for a breakout space in the classroom design. In these instances furniture items were used to create these spaces. Students and teachers perceived booths, pods and tents as viable options for breakout spaces in the classroom.

Primary school students frequently spoke of using the booths to peer teach and have group discussions. They enjoyed using the booths and it was perceived by their teachers that they felt more mature working in the space. Primary school teachers also felt the intimacy of the booth, allowed students to concentrate more than being in an open environment.

"The booth is a place like two chairs and there's a table in front of you and you can sit with your friends there, you can work there. It's a pretty big space – that's why I like it."- Primary School Student

"Because the back of it is so high when they sit in it they don't get distracted by what's outside. They can't see anyone so they're very focused"- Primary School Teacher

In contrast, in high schools it was found that there were mixed opinions about booths. Students acknowledged that booths enabled individual or small group work and provided a useful escape for students who needed to withdraw from the larger class to focus on a task. However students also noted that they could easily become distracted if the teacher lost sight of them in the booth.

"The secluded chairs they are good and bad because sometimes you can hide what you are doing from the teacher which means that they can go on games or watch YouTube if they can access that. So yeah and there's a good things where you can just stay there if you want to work by yourself. So it's a toss-up" - High School Student

One school had implemented a 'hanging pod' style chair in one of their flexible learning spaces. Both students and teachers thought the pods created a small group sanctuary which were beneficial for activities such as silent reading and researching.

"I'd like to have them (hanging pods) in our classroom, that would be a nice way to work"- Primary School Student

"As a breakout for kids that need time out, because that encloses them"- Primary School Teacher

Small tents were also used in many primary schools to act as breakout space for students. Tents were perceived positively by students; however teachers spoke of them causing behaviour issues in some classes, resulting in them being removed in some instances.

"It was fun though having a tent"- Primary School Student

"In year two, we had the little tents that we could read inside and it felt really good because we felt the perspective of our home and felt really comfy and homely"- Primary School Student

6.5 Layout and Design Considerations

When planning the aesthetic appearance of flexible learning spaces, school's took a number of aspects into consideration.

6.5.1 Space

One of the most important considerations, which could potentially, was the need to create open space.

"I've come to a conclusion that it's not about furniture, it's about space that's important for the children"- Primary School Teacher

Teachers warned it was important not to fill the room with furniture but instead to limit the number of pieces in the room. Creating open space in a classroom provides teachers and students with opportunities to interact, collaborate and work efficiently.

> *"It became really clear that the empty space was as crucial... and that students were often choosing to sit or lie on the floor; they needed the opportunity to move around so they could shift between working collaboratively, doing some research, talking to their teacher, coming back to here from the teacher as a whole group" - High School Principal*

> *"It's much easier so you can move around it more, and you have more room to enjoy yourself to impact on your learning"- Primary School Student*

> *"it just creates such an open forum for discussion rather than having those physical barriers there"- Primary School Teacher*

In an attempt to create open space, teachers spoke of having cleared out rooms and thrown away old unused resources. The dated resources took up space and often made the room feel timeworn. A sense of worth was created by removing unused items.

> *"the rooms are all de-cluttered" - High School Teacher*

Carefully planning the layout of the space enabled rooms to feel larger than they had previously.

> *"I just feel like there's more space in those classrooms... but there really isn't. It's the same classroom, it's just got different equipment and it just makes it feel, you know, like there's more physical space" - High school student*

> *"There's a lot of floor space, which is really good, and we still have enough room for furniture and that"- Primary School Student*

Some schools not only wanted classrooms to feel bigger but wanted physically larger spaces for their students.

6.5.2 Layout

Particular layouts of furniture were seen to lend themselves to different pedagogies. Rows of tables allowed students to work individually with less opportunity for distraction, while grouped tables were more suited to collaborative work. In a traditional classroom it was

deemed more likely for a teacher to choose the layout for the desks, depending on their teaching style. In contrast it was found that in flexible spaces the layout of a classroom was rarely determined by the teacher.

> *"the key word is "flexible" because it isn't about setting up a classroom that's going to look the same in every lesson. It's about setting up a classroom that students use flexibly in response to how they need to learn"- Primary School Executive*

> *"even with the spaces they can move furniture throughout the day but we tell them at the end of the day try to put it all back together as it was so that we like a fresh start the next day"- Primary School Teacher*

It was common for students to move furniture items around the room to where they needed them. In order for this to be successful, teachers sometimes found they had to stimulate thought from the students as to how and why they would set up the classroom for a particular activity.

> *"Different sessions where we might say 'okay, we're going to do this today. How might the room look?' or look at a space just to get them thinking about that but typically, we don't. In the mornings, when we do literacy groups, they know what they have to do, they know what box to take and I don't tell them anything. They just get what they need and they find their group and find a space and some furniture" - Primary School Teacher*

Teachers perceived that the layout of their flexible learning spaces allowed them to try pedagogies previously not practical in traditional space. They believed flexible learning spaces no longer limited the pedagogies used, especially for play-based and project-based learning.

> *"So play-based learning is like the precursor to project based learning. So we do play-based learning - and there's no way you could do play based learning the way we do it in a traditional classroom. So for that hour of play based learning a day the classroom is completely turned into enquiry development play. The space is completely changed into what the students want to make it and the resources that you need and the space that you need to do that. You just couldn't do it in a (traditional) classroom"- Primary School Teacher*

"As the teacher now there is no limit on what I am able to do. I could do whatever I like… where as before in the traditional setting it would be a little bit too difficult to do this collaboration task because the environment wouldn't facilitate that"- Primary School Teacher

External consultants stated that particular classroom layouts, lent themselves to certain pedagogies. It was common to design the layout to facilitate a range of pedagogies.

"There's 'focussed collaborative space', 'open collaborative space' and 'focussed individual space' and then 'corralling space'; or group space"- External Consultant

The layout of the room needs to be designed, not only considering the pedagogies each teacher may wish to use, but the differing learning styles and preferences of the students who will use the space. Incorporating a range of different learning environments into each space will help ensure all students have access to work in their prefered way.

6.5.3 Colour

The colour of classroom walls was reportedly significant to student wellbeing. From a design perspective, schools spoke of researching colour choice to inform decisions about which colours to use on their walls.

"there was a lot of research and we've got the papers that [the executive] went through, so obviously the colours of the rooms are the ones that stimulate students the most" - High School Head Teacher

Additionally some schools used the expertise of a design team to help choose a colour scheme for their flexible learning spaces.

"So we worked with a design team and looked at the spaces using colouring and texture and design"- Primary School Principal

"In primary schools, we go colour crazy, and we really try to encourage colours to make it vibrant and lively. Obviously there's lot of research that's come out of the UK and also the US in relation to what specific colours to use and what reaction you will get from those, but in high schools and particularly senior high schools, we use the same colours, like you might use primary colours but make them more 'earthy' so it's more of an adult environment than a kiddie environment"- External Consultant

Colour schemes of furniture were usually selected to be aesthetically pleasing and to also increase student wellbeing.

> *"When we asked the students, they wanted it to be colourful, inviting… their environment matters to them. The learning matters too, but that's not what they think about when they walk into that space. They want an environment that is aesthetically pleasing and visually appealing. It's pretty demoralising when students walk into a classroom that no-one's taking care of, and there's graffiti, and it's looking pretty glum, it's pretty hard to be enthused about your learning when you're walking into a space like that" – High School Principal*

> *"If the colours are more subdued and more professional, their perception is that they are being treated like an adult, which is what they are, and they are being made ready to go out into the university environment, or the world, or a work environment"- External Consultant*

Students valued the bright colours selected for flexible learning spaces and overall believed this contributed significantly to creating a positive learning environment.

> *"Well, I'd rather go into a room with colourful furniture than a room with brown desks and green chairs. It's not really inviting" - High School Student*

> *"I think the whole bright colour thing it genuinely sets a more positive happy mood in the classroom. Rather than sitting in the traditional dull classroom with the dull grey walls" - High School Student*

> *"I also think that the rooms like we have, are good because it's colourful, the tables are all colourful and stuff"- Primary School Student*

The choice to use bright colours in flexible learning spaces was benefitial in many schools as it was found to have a positive effect on student well-being, with many students agreeing they felt more positively toward school.

> *"I remember when I first came to school, the only colours that were really in the school were kind of just green and white and just like really boring colours and stuff just everywhere. But now there's awesome coloured furniture and everything like that, it's a lot more vibrant now. I'm more excited about coming to school"- Primary School Student*

6.5.4 Lighting

A small number of schools spoke of increasing the natural light in their classrooms. One school had embarked on the process of knocking down interior corridor walls to allow more light into the adjoining classrooms. Many students spoke of the importance of natural light to enhance their learning.

> *"I really like the corridor outside the bag room, because it's nice and sunny and not much people go out there"- Primary School Student*

> *"My favourite piece of furniture would probably be the desk that we have near the window... I like it because the window gives a good view as well as some natural light… it helps you concentrate and sometimes having those artificial lights, they used to flicker. But, it (natural light) just feels nicer"- Primary School Student*

Overall increasing the amount of natural lighting in classrooms was seen as beneficial and it was perceived that it should be considered in the design of flexible spaces.

6.5.5 Noise

Due to the number of students in one classroom in conjunction with the collaborative pedagogies used, flexible learning spaces were found to become quite noisy. This was particularly true of larger spaces that used team teaching and where classes were combined. This needed to be taken into consideration when planning a flexible space and was addressed by considering the use of physical barriers to reduce noise and allowing students to access breakaway spaces outside of the main room.

> *"Because there can be a lot of noise because people are always talking about the furniture and stuff so it's a bit hard to work sometimes…"- Primary School Student*

> *"when we're doing our videos, instead of being in the classroom, where there's heaps of noise from the other two groups that are working there, we go out in the corridor and make it"- Primary School Student*

This need was also recognised by flexible space designers:

> *"... an area that would be a screened off, or blocked off in some way, so that a group of four, six or eight kids can sit down and work on a project together without interruptions from the other things that are happening around them"- External Consultant*

6.6 Special needs

When designing flexible learning spaces, principals and teachers spoke of the importance of considering students with special needs. Knowing the unique needs of the school population and understanding how best to accommodate all students was reiterated across many schools.

> *"I've got 3 kids with autism, I know that I've got one child with a sensory disability, I've got one child with a visual impairment. We're mainstream so we are very proud to be inclusive of all children with needs and I need to provide this furniture to suit those children. Or I've got a child with physical disability, I know they wouldn't be able to access that furniture, so I'm not going to put that furniture in that room, because that wouldn't be fair" - Primary School Executive*

> *"we might have some students who need really explicit instruction; we might have some students with diagnosed behavioural issues in the space; we might have students with autism spectrum disorder who are wanting routine and not a lot of noise" - High School Teacher*

Teachers felt that each child should be accommodated by considering their individual needs, addressing potential learning distractions and means to assist their learning.

> *"I've got a child in a wheelchair in my classroom at the moment... he can access everything in the room?"- Primary School Teacher*

> *"We had a lot of children with sensory needs, so when we got our classrooms transformed, we're constantly collecting data and talking to the kids, talking to teachers and talking to the parents, to adjust the loose fit, because we need to really make sure that it suits the kids needs at the end of the day"- Primary School Executive*

The flexible learning space consultant believed there was a need to accommodate students with special needs.

> *"One of the things that modern teaching emphasises is 'collaboration'. In my view, that can tend to overlook the introverts in this world and so I think they also need to be accommodated because they probably represent about forty or fifty per cent of the population, and so the individual focus spaces allow those sorts of people, and kids with special needs as well, allow those kids to have that individual space. So*

that might be a little booth which is for a single person, or a table and a chair or whatever it is, but it's very, very important because they represent a huge percentage of the population and may not necessarily work well in a collaborative environment"- External Consultant

6.7 Implementing Flexible Learning Spaces Across NSW

Teacher and executive voiced concerns about the roll out of the NSW Department of Education classroom transformation of 1600 classrooms in the next 10 years, becoming a assets driven one-size-fits-all approach.

"The other thing we've learned is that the choice component is really critical. When we put the expression of interest out to the faculties, they have very different needs. The learning space that the TAS has developed is very different to what the performing arts faculty is developing, which is different to what English wanted. That local choice at a school level is really critical, but actually within a school, local choice for teachers and faculties is really critical" – High School Principal

"I guess the systems level message around that is, if you design a space that looks the same, and dump it into every school, and there's been no local choice, and there's been no ownership, you absolutely will not be successful. Some schools will love it, and lots of schools will probably say it's pretty, but it's not necessarily going to be used to enhance learning outcomes, and it won't be maximised, and it might not even meet the needs of that school" – High School Principal

"I can tell you already that principals will be outraged and up-in-arms; that in a political climate where we keep hearing about local schools/local decisions, if there aren't local decision made about what those learning spaces will look like, it won't work" – High School Principal

"I just think in my experience any large scale system that the Department rolls out, you run the risk of something that is a one size fits all solution for however many hundreds of thousands of people are involved, however they are all different" - Primary School Teacher

When asked what process they would recommend for the broader roll out of this initiative, the following quotes illustrate principals and executives thoughts.

"I would make sure there is good choice, and parameters, but there is process where the learning has to come first and to identify the learning you would have to say "These are the needs of our kids; these are the pedagogies that we want to implement in there; this is the intended design of our space; this is how we are going to evaluate it" – High School Principal

"if there was a set couple of suppliers and that really had the range which would then facilitate the creativity and the imagination of the professionals that are thinking I want to do this that'd work pretty well" – High School Executive

It was commonly raised that the roll out of flexible learning spaces should be considered more than a roll out of furniture. The majority of Principals and executives considered it important to emphasise the change of pedagogy that needs to be coupled with the physical change.

"the fundamental issue is that it has to come back to pedagogy and there's absolutely no point in giving schools a catalogue unless they're ready for it because the furniture doesn't get used properly"- Primary School Executive

It was seen as important to have some level of professional development for Principals and staff, both in terms of flexible pedagogy and the use of a flexible space.

"it's really about the funding and the school making that decision. But being informed about what the potential is. And lots of demonstrations, lots of examples of what potentially could happen" - Primary School Principal

"I think you need professional development for principals around how this is going to work. Because again there are so many reforms going on, I think it would be challenging, I think people would again just kind of choose something that was pretty, or choose something that was nice. So I think they need professional development for principals. I don't really think…I don't think a catalogue would necessarily help, maybe just some ideas or suggestions. I think they need to have a few showcase schools. So principals of that school can mentor other principals. I think you need to have other people mentoring, showcasing, demonstrating, just like a different similar model to what we've got the staff thing, we just need to have it at another level. What's out there, what can you see, what's the research and what are some options. I don't think you can give people open choice because again

people don't know what to choose, but a rather a guided process" - Primary School Executive

Some Principals thought it was important for the Department of Education to help with professional development for schools embarking on this process.

"Maybe the Department's role in this is to guide those schools towards other schools that are doing stuff and any role that schools like ours could play in that of course we'd want to be a part of it because that gives us a lot of joy"- Primary School Principal

Many Principals spoke of the importance of building staff capacity before implementing the spaces. It was perceived to be critical that there was a school culture that would support a large change such as implementing flexible spaces.

"Unless you've got the pedagogies in place and the culture in place – the culture's the big thing though. That's what everything sits on top. If you do not have a culture of trust and innovation this will not work. That has to be there'- Primary School Principal

"School leaders have to engage their teachers, their communities in discussions about what's expected, about what happens in classrooms. That's the fore runner to any talk about the introduction of any kind of infrastructure that supports it. You don't put the infrastructure in first"- Primary School Principal

Although many schools understood that the Department of Education wanted to roll out flexible learning spaces across the state, they felt each school needed to feel properly prepared before making the change. This meant that there needed to be a culture of trust and a group of staff willing to make the change.

"you have to be ready for it. It had to come from you, that desire, so it's never going to work if somebody in authority says "Here's what we're going to do guys," you know it's got to be that home-grown stuff because there's a much more powerful connection to it"- Primary School Principal

Principals believed it was important that there was a process in place which schools were required to work through before given funding. They believed this would help each school to consider critical factors such as: school context, professional development, planned

pedagogies and spatial constraints. By ensuring schools followed the such a process, Principals believed flexible learning spaces were more likely to be effective.

> *"Where maybe the string that's attached to funding is something along the lines of you need to tick some boxes to say that you've been through a process because without the process it's probably not going to be anywhere near as effective as what it could be because there has to be that underlying commitment and an understanding of why we are doing this and what sort of benefits we can expect to gain… Please do not rush out and buy furniture, you know, bold, capital letters at the top of it. First of all, take your staff through this questionnaire, plot yourself on the continuum. Whereabouts are you guys pedagogically? Because that's the critical thing. 'Where are you guys culturally? Because that's the other critical thing"- Primary School Principal*

7. OBJECTIVE 3

The potential impact of flexible learning spaces on teaching, learning and wellbeing.

7.1 Impact of Flexible Spaces and Resources on Pedagogy

Teachers particularly commented on the reciprocal relationship between flexible learning spaces, resources and pedagogical approaches. As detailed previously, it was commonly stated that changes to pedagogy preceded physical changes to spaces and furniture; but it was also noted that flexible classroom layouts facilitated the use of a variety of pedagogical approaches, requiring teachers to adapt their teaching styles.

7.1.1 Collaboration

Flexible learning spaces enabled teachers to plan and deliver more collaborative lessons than traditional classrooms. Grouped layout and the use of larger tables as an alternative to individual desks were a key element supporting collaborative work. As a result, students were physically able to sit or stand in groups which enhanced the possibility of discussions and group work.

> *"the inside is completely changed in terms of how the kids work and in terms of how the teachers teach. So instead of the teacher being the focal point at the front of the room, they are not. It's more grouping, so the furniture has enabled that grouping children to work together' - Primary School Executive*

Teachers more frequently structured lessons to use group work, knowing that the physical space facilitated group work. Greater focus on using this style of teaching was found to allow students to learn in a more deep and engaging way.

> *"There's more opportunities for collaboration and discussions and communication and so that's when you start changing the way you teach"- Primary School Teacher*

Teachers believed it was important to encourage student collaboration as students were developing skills that would benefit them later in life.

> *"So instead of maybe doing a chalk and talk lesson, they'll be doing something where they have to create a solution to a problem with a team of people, so they are building those skills"- Primary School Teacher*

> *"So that discussion, that communication… that's I think a significant change. Rather than just working with the person next to them they've got more*

people to draw on when they're sitting in a pod like that because there's more heads working on the same thing and you've got more perspectives " High School Executive

"There's definitely been a push for more interactive and team work activities in class. That is much easier to do with these designs. I think it has shifted a lot in the way that it's not just the teacher standing at the front of the board writing things up and explaining it... It's much more evolved to having a discussion between the students and the teacher and the students themselves" - High School Student

"The children are working collaboratively - the space allows for that, it's student directed, it's critical thinking that's happening in those spaces, it's preparing them for life after school. It's less about content knowledge"- Primary School Executive

It was also acknowledged that the transition to collaborative work required greater effort on behalf of the teachers to ensure students remained consistently engaged and did not become distracted by their peers.

"It forced us to think outside the box in terms of how we were going to present things too, because you know your kids are going to sit there and chat and get off task if you don't put something in front of them that they are forced to work with each other on and engage in" - High School Teacher

Furthermore students were not necessarily accustomed to working collaboratively and this could presented problems regarding classroom management and student participation.

"They're not all used to working in a space like this... they're not used to not having a desk each and a chair each… making sure that they understand how to work in the space and how to collaborate and what this is for" - High School Teacher

"Sometimes your really quiet kids just got swamped, especially in group work and I think that was just a learnt thing that they needed to pick up" - High School Teacher

Due to these problems, teachers spoke of the importance of teaching students how to work in flexible learning spaces.

7.1.2 Teacher Led Instruction

Due to the student focused nature of flexible learning spaces there was a pedagogical shift away from didactic teaching. Students were no longer expected to sit quietly throughout lesson or passively accept teacher's views, but rather they were guiding their own learning.

> *"We are not didactic teacher-dominated classrooms anymore"- Primary School Executive*

> *"There's no chalk and talk; the teacher isn't the fountain of all knowledge"- Primary School Principal*

While teachers were changing their pedagogies to transition away from a didactic approach, it was frequently stated by executives and teachers that there was still a time and place for explicit teaching.

> *"See everything that we do means that the teachers can't be that traditional person in the classroom. So you rarely see a teacher preaching from the front of the room. But there are still times when that's the desired mode."- Primary School Executive*

> *"That's alright. Nobody's going to walk into a classroom and say you can't do that, you know, you do what's necessary. But the vast majority of the time teachers are trying to exit out"- Primary School Executive*

There were some items of furniture used by teachers to support this pedagogical approach. For example teachers used kidney shaped tables to assist explicit teaching practices.

> *"they're great for explicit teach (kidney shaped tables) as well because the teacher can sit in the middle and then you can have your kids around the outside and you can set them all. You're doing a reading whatever, they can do whatever around you but you've still got that little bit of structure"- Primary School Teacher*

7.1.3 Student Centred Learning

Reducing the amount of teacher led instruction in flexible learning spaces allowed for greater student centered learning. It was viewed as important to provide students with the skills to find answers rather than provide them with answers.

"It's about providing tools for children to find their own answers or to research things instead of just saying, whats the teacher telling you. It's about how do you find that out, or let's brainstorm the answer"- Primary School Executive

When reflecting on the differences between a traditional classroom and a flexible learning space, students acknowledged the difference in pedagogy and believing they had more freedom in flexible spaces.

"I think the way the teacher teaches is different because in the flexible learning spaces they just tell you to do your own thing. Like they give you a set task and they're like yeah you can do it in however many ways you want but in a traditional classroom it has to be their way. In a way we're taking their vision and we're not exploring our own" - High School Student

"It's [pedagogy] a lot more student based, so the teacher isn't constantly nagging you about things. You kind of like do your own thing until you need help and then they come over and help" - High School Student

The individual needs of each student was often taken into account. The flexible nature of the spaces allowed students' strengths to be valued and their weaknesses identified.

"Kids right around the school determine their own learning goals. They determine, to a large extent, what's important for them to learn"- Primary School Principal

7.1.4 Project Based Learning

Project based learning has become increasingly popular, particularly in primary schools. Using flexible learning spaces as an enabler, teachers were able to create real-world tasks, combining a range of content areas and teaching methods.

"it's probably becoming more and more prevalent that you have to integrate curriculum areas rather than have stand-alone curriculum areas"- Primary School Executive

While teachers said it was possible to conduct project based learning in traditional classrooms, it was found to become more fluid in a flexible learning space, as students had room to work independently or in groups, using different resources around the room. Prior to facilitating project based learning in the later stages of primary school, teachers of younger

grades in participating schools would practice play-based learning. Teachers placed great value on play-based learning particularly in the younger years as it allowed them to develop skills and a positive outlook toward learning. Teachers commented that they could not facilitate play-based learning in a traditional classroom.

> *"So we do play based learning - and there's no way you could do play based learning the way we do it, in a traditional classroom. For that hour of play based learning a day the classroom is completely turned into enquiry development play. The space is completely changed into what the students want to make it and the resources that you need and the space that you need to do that. You just couldn't do it in a classroom"- Primary School Teacher*

7.1.5 Teacher-Student Interaction

The nature of pedagogies used in flexible learning spaces allowed teacher-student interaction to become more frequent and of better quality. Students and teachers are now viewed as equal partners in learning, rather than the teacher being a dominant authoritative figure. The removal of furniture, removed physical and social barriers between teacher and student and allowed for teachers to easily access any student at any given time. Both teachers and students valued building relationships with each other.

> *"And just that relationship with kids and you. I think is important as well. That you're seen more of an equal and not an authoritative figure I guess. I think that's important...So I guess some kids were scared of their teacher when they were younger so it's okay not to be scared of your teacher"- Primary School Teacher*

HIGH SCHOOL QUOTE

7.2 Impact of Flexible Spaces and Resources on Learning

Students showed awareness and were able to articulate their own learning needs and how these differred among their peers.

> *"it caters for everyone in a way, so people who are really advanced in technology can go off to the technology, they can go and do it. But people who are more creative on paper or in their writing can do that, or people who speak – they can talk to the people around them" - High School Student*

7.2.1 Collaboration and Group Work

Flexible learning spaces enable pedagogies to change and thus have an impact on student learning. Students frequently spoke about working collaboratively or in groups. Generally, students enjoyed working in groups and could see academic and social benefits.

> *"We have more group work now, so it feels more lively and bubbly"- Primary School Student*

> *"I like working together. Together, so you can use other people's ideas. And they can use yours. You see other perspectives of an idea, instead of just seeing your one view"- Primary School Student*

While majority of students appreciated the opportunity to work in groups, they also appreciated the option to work independently at times. Students spoke of group work occasionally being distracting or too noisy to focus. They additionally identified that group work usually took more time to complete.

7.2.2 Peer Teaching

Flexible learning spaces and particularly the round tables that facilitate group work, reportedly created greater opportunity for peer teaching, with students viewing this as positive.

> *"In all the (traditional) classrooms it seems like the teacher mostly teaches you, you don't learn from your other peers but in the library where the furniture is different how you sit in groups it helps when you are working with your friends as well. They explain everything to you as well. They are like a teacher in a friend" – High School Student*

When asked if students enjoyed peer teaching majority of students agreed that they did. Not only did students enjoy peer teaching but they could see the academic benefits.

> *"When you don't understand a concept and it's like, I can't go and just ask the teacher, they've just explained it to us 10 times. Could someone give me a new insight on what this kind of concept is? Then your friend explains and then you also explain to each other and it's just really beneficial in the long term, especially for your HSC, like teaching your friends kind of just solidifies in your mind as well. I think definitely the circle structure of the tables is really good" – high school student*

"Also if you're, say for example, doing maths, instead of just always going to the teacher and asking, "Hey is this right?" you check it with somebody else" - Primary School Student

"One of the activities is to make a video about teaching someone else about whatever we're learning, so if we're doing fractions, we teach them about fractions, or what we are learning about fractions"- Primary School Student

For teachers this was also viewed as a positive benefit of the flexible learning spaces and they often deliberately incorporated peer teaching into their lessons.

"I also found that a lot of students were helping other students and that was really important for me" – High School Teacher

"I think they feel more empowered and they feel privileged that they're in this space. They didn't always have to ask the teacher the question. They can just ask another student"– High School Teacher

"Yes and particularly with our selective cohort who really find it hard to share because there's a sense of potential loss there if you share and it's only safe to share once all your marks have been converted to ranks. I think doing that kind of changes that mindset and helps facilitate the growth mindset"– High School Teacher

7.2.3 Self-Regulation

Flexible Learning Spaces help develop skills that students require as they progress through schooling and into the workforce. Students are required to act responsibly and make smart choices in regard to their learning and behaviour in these spaces. This expectation was often set out by the teacher at the start of the year to help develop student's ability to self-regulate.

"So coming into that is the metacognition and the self-regulation and the self-awareness that they're learning. So all really good things coming from it" – Primary School Teacher

Not only could teachers see the benefits, but students also recognised the importance of self-regulating.

"I think it would be good for us to learn to be sensible in spaces. Like in an office space no one's just watching you, you're in your own little area, and no one's

watching you, so it's good to learn that discipline. What to know when and when to do it"- Primary School Student

Additionally, students could identify particular items of furniture that were more suited to certain activities. Students took subject areas and working styled into consideration when making choices about how to work.

"We can do PBL and art on the couches and beanbags… just relaxed learning, but if it's maths, spelling, literacy we are on the tables usually, but with art and maybe if I was sitting down and doing something sports related we might sit somewhere relaxed because it suits with the lesson"- Primary School Student

"I like the stool for individual work… I like the round table because six people could sit there, and we could share one idea"- Primary School Student

The quality of the work they were producing was often considered when students chose where to work.

"…like so if you are doing handwriting at a couch you wouldn't be doing a neat one so it should be at a table but when you are spelling at a table'- Primary School Student

Overall students were very aware of their individual learning styles and recognised that everyone learns differently. Students really appreciated how flexible learning spaces enabled them to work and learn according to their individual needs.

7.2.4 Personal Research Projects

The concept of flexible learning spaces goes beyond the space being physically flexible, and incorporates flexibility in students learning. Students are able identify topics of their choice and create their own research projects.

"Miss gets us to choose something that we are absolutely passionate about so you get to learn about something that you want to learn about but as well as still learning all the maths and the stuff on the curriculum. We are also getting to explore the world for your own mind and interest"- Primary School Student

Incorporating personal research projects into lessons, shows students their personal strengths and interests are valued. It reinforces the concept that a well-rounded education is important for developing 21st century citizens. As students often have to present their

research project to their class, other students have the opportunity to learn about a wide range of topics.

> *"'I'm going to become an expert in this field and then I know I'm going to have to get up and present to my classmates'"- Primary School Executive*

7.2.5 Hands on Learning

The available space in flexible learning spaces, makes hands on learning activities easier to facilitate. Teachers can set up work stations for activities and have additional space for demonstrations. Including hands on activities into lessons increases student engagement in the subject matter as well as developing fine motor skills.

> *"our teachers make, not boring stuff, but maths and literacy, fun. We're doing measuring with liquids and solids and gases, and we got to use water outside, and we also get to cook and things like that, which is really good fun" - Primary School Student*

> *"in year six, we get to do something called 'Learning Goals', which is what we learn about. I'm learning about the Sydney Harbour Bridge and I'm going to make a presentation on it, but also make a model of it, so we don't really have to learn as much on it, but we learnt to 'do' something, not 'about' something"- Primary School Student*

7.2.7 Performance-Based Activities

Performance based activities such as drama, debating, role play and making short movies allow students to be immersed in their learning. Students enjoy these learning activities but physical space constraints often limit use in traditional classrooms. The open space in flexible classrooms enables performance based activities to take place.

> *"drama and role play and all of those sorts of things is a lot easier because you've got space in your room"- Primary School Executive*

7.2.7 Use of Technology

Technology is greatly shaping how students conduct their work and the types of activities they do. Across many of the participating schools technology was integrated into students learning in almost every lesson.

"Almost every one of our lessons include technology. Even English, like how we all an individual novel. What we do is we read a chapter and on our surfaces we go on to OneNote, in to our account of OneNote and then we have this reading book that we type in – first we type in the main setting of the chapter and the characters, and then we type in the vocabulary that we didn't know, then the main events and questions or responses"- Primary School Student

Technology has greatly impacted on how teachers can present their lessons and in turn how students learn. School classrooms have become technology rich, greatly increasing teachers options for lessons.

"Both digital learning platforms and physical classroom set ups have significant potential to favour and promote a particular learning approach"" - External Technology Consultant

"The technology I think is probably, initially was one of the biggest factors in the school. When you add technology and what it can offer you and then us looking to explore every aspect of what the tech could offer a student in their learning, that then – that started the ball rolling" - Primary School Teacher

An external consultant believed the use of technology in the classroom was virtually limitless. She spoke of numerous ways teachers could incorporate the use of technology into a lesson.

"A teacher might start with a concept for a learning activity that is shaped around an online simulation where students can explore and experiment with a planet's mass, radius and gravity - and decide that it would be valuable for students to be able to work through a set challenges using this simulation in small groups before coming to share their findings with the whole class. A classroom with well designed spaces for group discussion, laptops and wifi for students to use and also a space to present with comfortable seating and a large display would best support this task. If a teacher was scheduled to take such a class in a room that did not support either group work or presentation easily, they might adapt the lesson to allow for discussion and presentation to take place online - in a forum or wiki" - External Technology Consultant

Technology was used as a way of classroom communication, to submit work, assignments and receive feedback. Additionally students used technology for extra-curricular activities such as robotics and game coding.

"We sort of do like the same thing in our class and if someone did something, then we put it on Google classroom and send it to the teacher. Then the teacher can show it to the class"- Primary School Student

"last year, some boys in year six made a robot and actually it worked"- Primary School Student

School executive and teachers spoke of using technology as a way of re-engaging students in their learning.

"that's really one of the things that has been a driver for using technology to support learning. It's one way of getting the kids engaged" - High School Executive

It could be seen that investing in technology to increase engagement had been worth-while. When asked if students enjoyed the regular use of technology they all responded positively.

"I love it"- Primary School Student

In traditional classrooms there was a designated spot or separate computer lab to be used when teachers wanted to use technology. Teachers valued the advancement in wireless technology as it made it easier to integrate technology into daily lessons.

"And then they can move the iPads as well so there isn't a designated spot. Now we have technology. Technology can be moved"- Primary School Teacher

Not only had the capabilities of technology improved but additionally the capacity of students to use a range of technologies.

"And also the interactive whiteboard is a student technology item now.The kids use it to research so having another platform if you're collaborating in a group, if there was us collaborating and we'd be watching – we'd be working together on a document or researching that would be amazing"- Primary School Teacher

Technology was usually seen as a tool, which helped teachers to deliver traditional content in more flexible ways or completely revitalise learning.

"I had a team of young teachers who were keen to experiment, who were keen to take on the new technology, who were keen to make a new approach to teaching or take an old perspective but jazz it up and dress it up in something new and offer to

the kids and that's how it started for us and it evolved into a project-based learning. It involved into digital curriculum" - High School Executive

There were mixed opinions about the use of technology in the classroom. Some schools had a one to one scheme where each student had access to their own laptop or ipad equivalent, while others preferred to only use technology for group work or whole class activities.

"I think that technology has really helped as well with the way we've changed the teaching because now they can work with laptops or bring their own device to school and because there is no front and they're not looking at the board and doing work from there we now use online platforms as well or websites where we upload work and they access that on their device and work in small groups so there's no one who's saying I can't see the board from where I'm sitting, or can I work outside instead? It's possible because all their work is on that laptop or on a site that they can access."- Primary School Teacher

"our philosophy on technology is not to use it for independent research or independent work. It's about collaboration. So if everyone was bringing in their own device, would that undermine our pedagogical approach to the use of technology in the classroom?"- Primary School Teacher

"Having the TV mounted on the wall at the end of it so that at whatever activities where that's appropriate you've got about half a dozen kids standing around that table that's anchored to the wall with the audio visual right there instead of it just being up on the big screen. So we'll have multiple audio visual points around the classrooms."- Primary School Principal

Executives reassured that the possession of technology did not cause any behavioural problems in terms of theft.

"we don't have issues that probably other people think we've got in terms of theft, kids stealing laptops. I don't think I've ever heard of a kid losing a laptop or having someone pinch it from them. So when I hear other people at other schools talk about "Oh they will lose their laptops", they don't, they don't lose them, they treat them well. They don't misuse them and it's something I suppose that they respect and value" - High School Executive

7.3 Impact of Flexible Learning Spaces on Wellbeing

When asked about how students feel when they are in their modified classrooms, the overwhelming majority reported that they experienced positive feelings.

> *"it's more modern. It's more up to date and it just - it feels more, like, our generation and, like, we can relate to it more" - High School Student*

> *"In our flexible learning space, I feel kind of calm because I just think to myself, 'I'm doing what I love, I'm learning in my classroom where I'm really comfortable and calm, and nobody is distracting me' and I just love to learn when I'm like that"- Primary School Student*

When asked to comment on difference between traditional classrooms and flexible learning spaces, students generally preferred working in a flexible space. Traditional classrooms were perceived as dull and drab, whereas flexible learning spaces were perceived to be comfortable and offer a variety of choices in relation to learning.

> *"It gives you a sense of freedom really. It's like you are not confined to just one area. You can treat this area as everyone's area and your own area at the same time. Where in the old classrooms there's one desk that you are given, that's your areas so you just have to stay there. It's like different territories, you can't pass this one or you can't pass that one" – High School Student*

> "*With the traditional classrooms, in a way I kind of dread it just because it's plain, you're all crowded together, you don't get much open space. But in the flexible classrooms it's more enjoyable" – High School Student*

> *"I find it much more welcoming. I used to not like going to school, not just because it was uncomfortable, I didn't really enjoy going when I was at my other school. But I have to say, and be completely honest, I really look forward to going to school in the morning now and the idea of the work, because of all the comfortable furniture and there's lots more opportunities too, so it makes me feel like I'm so much happier to go to school" - Primary School Student*

> *"So rather than it being a droll affair walking into classes, having to sit down, listen to maths for forty minutes, you walk into an environment where it welcomes you and makes you comfortable and places you in a position where you can make a*

decision as to how you actually want to learn, and that makes you more attentive."- External Consultant

Students not only commented on changes in furniture and layout, to many the more intangible aspects to the room were just as important.

"it's colourful, you can stretch out, you can actually move" – High School Student

"*I learn better in an environment where I'm sort of happier. I don't know why. Maybe it's got something to do with the science behind it, but I feel that if I'm in an environment where it's bright and positive, I absorb more. I absorb more information" – High School Student*

7.3.1 Engagement and Motivation

Students must be engaged and motivated to gain the most out of their lessons. The implementation of flexible learning spaces in participating schools was often identified as a key reason for improved student engagement. An increase in student engagement often led to other beneficial outcomes.

"The kids are far more engaged in the learning space and they are far more intrigued by what's going on around them and what they are doing"- Primary School Teacher

"We've seen an improvement in engagement and we can actually measure that. Not just through attendance but in terms of behaviour and positive behaviour" - Primary School Executive

Students who have lessons in flexible learning spaces are more motivated to attend particular subjects.

"English is probably my least favourite subject - but we've gone from a more traditional classroom to one of the new classrooms and I feel like English isn't as much of a struggle to go to now" – High School Student

"It makes school more fun to come to, more exciting"- Primary School Student

7.3.2 Student Choice

Student choice in learning is important as it contributes to increased motivation, engagement and commitment to tasks. The provision of choice supports self-regulation and self discipline.

When students have choice and opportunities to engage in activities of interest to them, their well-being is enhanced (NSW Department of Education and Communities 2015). When asked about what choices students have in the flexible learning spaces that allow them to be comfortable students spoke about the increased autonomy they felt.

> *"it's very independent where we get to choose when we do it (move furniture), how we do it and why" – High School Student*

> *"in the traditional classroom you are just stressed out, where the teacher writes on the whiteboard or the chalkboard it's overwhelming, you feel overwhelmed like the teacher's empowered" – High School Student*

> *"What I like about the flexible classrooms like our ones, are you can sit wherever you want"- Primary School Student*

Flexible Learning Spaces enable teachers to run multiple activities at one time. During group work, the teacher is only able to attend to one group at a time. This means students are often working in conjunction with their peers without the teacher watching over. As a result students found they could be easily led off task by their peers or distracted by the noise level in the classroom. Students perceived that their peers could take advantage of the lack of teacher supervision.

> *"So some people see flexible learning as a right, but it's a privilege and it's a lot easier for lessons to be disrupted"- Primary School Student*

> *"But one thing I probably found that's a little bit of a weakness is the Stage 2, the kids are a little bit older, they might not always make the right choices about where they're sitting but to be honest, all that takes is you redirecting them. Have you made a good choice and where do you think is better to work, those sorts of things. There's always a handful. The majority of the people are always on task but I just think having that freedom, you still need to set a few boundaries"- Primary School Teacher*

> *"it can be quite distracting for the kids as well and I do worry about their level of focus...it's hard to get them to engage at certain times"- Primary School Teacher*

"our history teacher's just, like, after each lessons he's just like he seems so stressed out because, like, nobody can concentrate, like, nobody can listen. There's too many focus points in the room…. keep the desks but maybe do something different

Teachers felt that allowing students to have a choice in their learning, rendered many benefits.

"It's the choices they're making about learning that I can see the biggest change. It's not the actual learning but the choices about learning"- Primary School Teacher

"the message of trust that we trust them enough to make those choices. That we don't say 'you're not capable of making a choice'. You are and we expect you to make that choice. Not you can do it. No, I expect you to" – Primary School Teacher

7.3.3 Student Movement

Flexible learning spaces are typically larger than a traditional classroom. The lack of furniture in the rooms, coupled with increased group work invites students to move around the room more frequently.

"We get to move a lot. We have a lesson, and because year five and six have that middle area that they sit in, if the teacher needs the Smartboard, we get to go on the Smartboard side of one of the Smartboards on either side of the room and it's really comfortable with that, because you're not always sitting on the one space"- Primary School Student

"Both students and teachers move more… like if we have to do hands on stuff or if we have to move around and discuss"- High School Student

Students enjoyed being able to move more.

"You can move around the room a lot, and it's really like fun"- Primary School Student

"When we do rotations, we actually all move, you can stand up, do stuff, it's fun when we do rotations"- Primary School Student

Allowing students to move around the room and in between activities was seen to be a health benefit. Teachers also recognised that many students struggle sitting still for extended

periods of time and that a flexible learning space enabled these students to move as needed without resulting in the student feeling as though they were disturbing the lesson, or the teacher needing to reprimand the student and guide them back to their work; in the same way that would be necessary in a more traditionally run classroom

> *"The best ergonomics you can provide to students, to the users, is simply through movement... that is you allow flow to occur within the learning environment"- External Consultant*

7.3.4 Teacher Movement

Due to the pedagogies used in Flexible Learning Spaces, students tend to sit in small groups around the classroom. As the teacher needed to interact with each student or group of students, they perceived to move around the room more frequently than in a Flexible Learning Space.

> *"If you're at the front of the room and you want to get to that child on that side of the table even just physically being able to get to different groups or do those workshops you can move in a more free way"- Primary School Executive*

> *"Getting up and moving around means you can respond to all sorts of children"- Primary School Executive*

7.4 Other Benefits of Flexible Learning Spaces

Principals, executives and students perceived there to be many benefits of flexible learning spaces. While many benefits were spoken about, the following were perceived to be the main benefits.

7.4.1 Comfort

Comfort was perceived to be a main benefit, particularly for students. When asked if being comfortable enabled them to learn to better, majority of students agreed that being comfortable contributed to them being more engaged in their work.

> *"The fun furniture helps us focus on what we're doing and also there's a lot of options in our classroom, so we can sit on an ottoman or a couch, or simply on the floor. It really bases on what we like, instead of the traditional chairs"- Primary School Student*

7.4.2 Inclusiveness

Across all levels of participants, it was perceived that flexible learning spaces provided a more inclusive environment for students than a traditional classroom. From the perspective of many Principals and executives, flexible learning spaces allowed students to excel as individual learners rather than having to conform to the traditional student mold.

> *"We are all about embracing diversity" – Primary School Executive*

> *"I don't really think it's fair to make kids be a certain way, I think we need to really embrace that individuality. That's to say, we're not comparing them to the kid next to them, we're comparing them to themselves."- Primary School Executive*

Students found they created quality relationships with their peers due to increased opportunities for group work and collaboration. Building relationships with peers was perceived to be important in increasing student inclusiveness.

> *"I think I've made more friends with the group work, I know we've been in the same school for about three years but with the group work you become a bit closer… you can make new friends so it's really good for that" – High School Student*

In many of the participating schools, there were students with a physical, learning or emotional disability. Teachers spoke of how flexible learning spaces physically provide a more welcoming space for these students.

> *"I've got a child in a wheelchair in my classroom at the moment… I feel that it's such more an inclusive environment for him because everyone is at different levels and there's no judgment because he can be on the floor and that's where he's comfortable and there's other kids on the floor… they're so accommodating of him. And he can access everything in the room as he's not getting through rows of chairs and tables"- Primary School Teacher*

Not only are flexible learning spaces physically accommodating, but they also create a more socially inclusive environment for students with special needs.

> *"I think of one particular student in my class who really doesn't handle noise very well, often seeking refuge from a noisy area and he knows that it's okay, he has permission. It's going to be okay to leave the room to be able to concentrate*

somewhere quieter in that moment in time and I love that he knows that it's fine to do that. All he has to do is let me know that he's going"- Primary School Executive

Flexible learning spaces and the surrounding culture, teaches students that people learn in different ways and that this is acceptable. All students could identify they had differing learning styles and needs, and were accepting of these differences.

"They realise that everyone learns differently and they all are showing that. So you'll get some that are sitting at the tables or you'll get some that are standing or on the floor so then they don't really pay attention to that stuff (students with special needs)"- Primary School Executive

"I think they are more accepting because it's not - that person's not so singled out or doesn't look so different in the room" - Primary School Executive

7.4.3 Classroom Management

Establishing classroom boundaries and rules was said to be critical when transitioning to Flexible Learning Spaces. Failure to effectively implement classroom boundaries was found to be a weakness of these spaces, and is explored in greater detail below. However, teachers found that when expectations around classroom behaviour were set early in the transition, classroom management became much easier than in a traditional classroom.

"I wasn't sure how that would sit with how I'd be able to manage the classroom, manage behaviour, so it was a little bit daunting to come into but I've actually found that it's been okay, it's been better. I haven't had to tell kids sit in your chair or had to move people around because they can't work together. They actually make the choices and you tell them you don't mind where they work, as long as they're working"- Primary School Teacher

"I think the behaviour management is easier. So I'm not say "Stop swinging in your chair…."Stop doing this. Stop doing this because they've actually chosen to work in a place where it works for them and so they're more focused on their work so I'm not doing that low level stuff all the time"- Primary School Executive

7.4.4 Parental Engagement

An indirect benefit of flexible learning spaces is the perceived increase in parental engagement. Improved classroom facilities and use of 21st century pedagogies reflect the expectations of the community and indicate their views are valued and respected.

"we have seen a lot of data in terms of parental engagement with the school and communication has improved in a positive way because we use our future focused pedagogy"- Primary School Executive

7.5 Perceived Weaknesses of Flexible Learning Spaces

Whilst participants across the board spoke positively about the impact that introducing flexible learning spaces has had on their school, there were several themes that arose around the challenges experienced by teachers and students.

7.5.1 Classroom Management

Teachers advised setting classroom expectations and boundaries early in the transition, around how to engage with the space and furniture when first working in a flexible classroom with a of students. Without boundaries clearly set in place, teachers said classroom management could become increasingly difficult.

"Some students, it's very new to them, so they don't see it as learning, they take advantage of it. I think a way that people can stop that is getting people to understand why and how the responsibility"- Primary School Student

"make sure you know your kids, you know their boundaries, they know your boundaries, they physically know where they can go. You really have to have that established very much at the beginning of the year otherwise it can be very difficult"- Primary School Teacher

Many teacher noted that classroom management was particularly difficult for casual teachers who may not understand the expectations of classroom behaviour in flexible learning spaces.

7.5.2 Distraction

Flexible Learning Spaces enable teachers to run multiple activities at one time. During group work, the teacher is only able to attend to one group at a time. This means students are often working in conjunction with their peers without the teacher watching over. As a result students found they could be easily led off task by their peers or distracted by the noise level in the classroom. Students perceived that their peers could take advantage of the lack of teacher supervision.

"So some people see flexible learning as a right, but it's a privilege and it's a lot easier for lessons to be disrupted"- Primary School Student

"But one thing I probably found that's a little bit of a weakness is the Stage 2, the kids are a little bit older, they might not always make the right choices about where they're sitting but to be honest, all that takes is you redirecting them. Have you made a good choice and where do you think is better to work, those sorts of things. There's always a handful. The majority of the people are always on task but I just think having that freedom, you still need to set a few boundaries"- Primary School Teacher

"it can be quite distracting for the kids as well and I do worry about their level of focus… it's hard to get them to engage at certain times"- Primary School Teacher

7.5.3 Noise

Flexible learning spaces often have the capacity to hold more students than a traditional classroom. The spaces are generally open plan and don't have walls or dividers to close off spaces. As a result students felt the classroom was often quite loud.

"it's always really noisy and there's people everywhere. Because our class is quite a big one, it has 29 students"- Primary School Student

"there can be a lot of noise because people are always talking about the furniture"- Primary School Student

Students perceived this to be of disadvantage to their studies.

"I think the seniors are technically supposed to study more. So we probably need more quiet time for us to work on our studies" - High School Student

7.5.4 Ergonomics

When asked about the weaknesses of flexible learning spaces, some concerns were raised about physical discomfort, particularly in regards to seating without back rests on ottomans or the floor and writing on tables that are inappropriate heights.

"the coffee tables are great but I'm always hunching over to get to write" – High School Student

"the flower one (ottoman) doesn't have a back rest and sometimes it gets a little bit difficult having to hold your back-up" – High School Student

"We have to hunch over like we do on the floor, and nobody really likes sitting on the floor, because there's really no back to it and it's not as comfy."- Primary School Student

Due to concerns about ergonomics, some schools worked together with occupational therapists to ensure the health of their students.

"We have an OT who comes in and works in the Stage 1 classes and she actually loves our flexible learning spaces"- Primary School Teacher

"Only because we are conscience of students back health and we've worked very closely with occupational therapists"- Primary School Executive

One issue that raised frequently by students was the need to ensure furniture was of appropriate height and size for them.

"I don't like the standing tables. One I'm a bit too short for them, I don't feel I have the proper height to work comfortably"- Primary School Student

7.5.5 Quality of Furniture

Many of the participating schools had implemented Flexible Learning Spaces as a trial and as such some items of furniture were not of the best quality. Students noted this as a weakness of the space and spoke of how furniture items often fell apart or broke. This was identified as distracting by students and not seen as the best use of money. Students recognised low quality furniture impacted on their learning.

"not quantity over quality, or quality over quantity, so less things, or maybe just bigger furniture that's got quality so that more people can sit there, but it won't fall apart as easily"- Primary School Student

"what I found is that the things that I bought from an educational furniture supplier compared to the things that I've bought from regular furniture shops like Ikea, have not aged as well. So the things from – I recommend, although that other companies have really cool things and they are usually cheaper, I would recommend in retrospect just, if you can, sourcing everything from the educational furniture place" - Primary School Teacher

8. RECOMMENDATIONS

The following recommendations are a result of findings from interviews and focus groups as part of this evaluation. It is recommended that:

1. A 'bottom-up' approach should be used to successfully scale the implementation of flexible learning spaces across the state. A 'one-size-fits-all' furniture fit-out, in the absence of an aligned pedagogical shift, would not maximise the potential benefits of flexible learning spaces.

2. A library of current research evidence and resources informing 21st century pedagogy and learning environments should be developed and maintained. This could be housed on the Department of Education's *Futures Learning* website, providing schools with a resource to develop informed, evidence-based practice for flexible learning spaces and pedagogy.

3. Further development of existing tools on the *Futures Learning* website to provide schools with a process for implementing flexible learning spaces, which includes:

    a. Ensuring a whole-of-school commitment to the initiative,

    b. Understanding the needs of key school stakeholders,

    c. Determining pedagogical approaches to be used, and

    d. Providing a rationale for classroom design and furniture preferences.

4. Efforts be made to build the capacity of schools who have already adapted their pedagogical approaches and transformed classrooms into flexible learning spaces, to serve as 'demonstration' schools.

5. A system linking demonstration schools with schools embarking on the process should be developed, to allow for observation of lessons conducted in flexible spaces as well as opportunities for professional development.

6. Schools who engage with the concept of adopting pedagogical practices to better meet the needs of 21st century learners could be identified and targeted in the first round of funding, ensuring that key stakeholders within these schools have been consulted and are on board with the initiative, and are keen to follow the implementations process.

7. Professional development opportunities be created to assist schools along the continuum from contemplating change, through to implementing and maintaining flexible spaces. Opportunities should include:

a. Professional development supporting pedagogy,

b. Professional development supporting the design and configuration of flexible spaces, and

c. Professional development to assist students to transition to a flexible learning space.

8. Where possible, implementation of flexible learning spaces be carried out in partnership with or with support from suppliers of quality furniture designed for educational settings. These suppliers could provide additional assistance to guide, design and fit-out flexible learning spaces to meet classroom teaching and learning needs.

9. REFERENCES

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10. APPENDIX

10.1 Appendix 1 Rationale for Questions

Interview questions for principals/executive	
Questions	**Objective/Rationale**
1. Could you please tell us about your school and changes you have made…?	Objective – 2 To identify the key changes made to classrooms within the school
2. Why is your school making modifications to classrooms? a. Is there an educational vision or strategic direction inspired the changes that have been made in your school?	Objectives – 1 & 2 To gain insight into what has motivated schools to make changes, what factors are schools interested in eg. innovative pedagogy, learning needs, learning outcomes, examples from industry, applying research evidence etc.
3. What process was used to introduce these changes into the school community? a. Who within the school or otherwise was consulted? b. Was anyone else involved?	Objective – 1 To determine if a 'top down' or 'bottom up' approach was used. To see whose and what input was valued, and how this impacted on decision making.
4. How were decisions made around designing the flexible learning spaces, such as which rooms to modify, the resources and furniture? a. Did your school's social or physical environment play a role in this? b. Was there a dedicated budget and	Objectives – 1 & 2 To ascertain if the process varies greatly between schools due to contextual differences or whether similar criteria were used to guide decisions. If results are consistent, could inform recommendations for a process.

how was the funding allocated?	
5. Can you describe the ways in which staff responded to the suggested changes? a. Were there any positive responses? b. Were there any negative responses? c. Did teachers have any thoughts on the impact this might have on teaching, learning or student behaviour?	Objective – 1 Anticipate that there may have been resistance from some teachers who are set in their ways, don't see the benefits for their faculty/subject, worried about increased behavioural issues etc.
6. Did teachers require support with transitioning into the flexible learning spaces? a. What support was offered?	Objective – 1 To understand what types of support are useful for teachers who are transitioning into flexible learning spaces. To determine whether the DoE may have a role in providing this support.
7. What pedagogical approaches are being used in the flexible learning space and do they differ from teaching in a more traditional classroom? a. Are they similar or different to a more traditional classroom and how?	Objective – 3 To determine whether teaching practices change in the flexible learning space. If pedagogies remain unchanged the benefits of the space may not be fully realised.
8. Now that your school has flexible learning spaces in place, what do you feel are the main benefits?	Objective – 3 Insight into perceived benefits and how these correlate to research findings.
9. Reflecting back on the journey your school has been on, is there anything	Objectives – 1 & 2 Lessons learned from implementation process, choice of furniture, resources, layout etc.

you would change?	
10. The Department of Education will be supporting the implementation of flexible learning spaces across NSW government schools. Which of the following options would you recommend is used: *1) You receive information on flexible learning spaces and a budget are able to choose how you spend this* *2) You decide how you will use the space and the Department will select furniture accordingly* *3) The Department provides you with information on flexible learning spaces and a catalogue from which you can choose furniture and resources.*	Objectives – 2 To get insight into schools preference for possible processes for rolling out implementation of flexible learning spaces across NSW.
11. Is there anything you think is important that we haven't asked in regards to the flexible learning spaces?	Objectives 1, 2 or 3 In case we have missed something.
Focus group questions for teachers	
Questions	**Rationale**
1. How was the flexible learning space designed and implemented? a. Who was involved in this process?	Objectives – 1 & 2 To determine what processes were used in the design process, who were the key stakeholders, how much involvement teachers and students had in this process.

2. What support or training was provided to assist you with transitioning into the flexible learning space?	Objective – 1 To understand what types of support are useful for teachers who are transitioning into flexible learning spaces. To determine whether the DoE may have a role in providing this support.
3. What pedagogical approaches or ways of teaching do you use in the flexible learning space and how does this compare to what you did previously?	Objectives – 2 & 3 To determine whether teaching practices change in the flexible learning space. If pedagogies remain unchanged the benefits of the space may not be fully realised.
4. Are there any key pieces of equipment or resources you think are particularly useful when teaching in this space? a. Flashcards	Objective – 2 To understand what equipment/resources are valued by the teachers and seen as useful. To informs a catalogue of possible choices to assist schools with decision making.
5. Have aspects such as technology, furniture, resources or the layout influenced the way you teach in the flexible learning space? If so, how?	Objective – 2
6. In what way has the flexible learning space influenced the way students work and learn? a. Have you noticed differences in student's movement throughout the lesson?	Objectives – 3 To understand if there are differences in the way students interact and work
7. What do you perceive are the strengths of the flexible learning space?	Objectives – 1 & 3 To gain insight into the benefits of flexible learning spaces

a. Level of student engagement? b. Level of interaction? c. Focus – time on task?	
8. What do you perceive are the weaknesses of the flexible learning space?	Objectives – 1 & 3 To understand the disadvantages of flexible learning spaces from a teacher's point of view. This will help inform the DoE of any issues that may need to fixed or that can be avoided.
Focus group questions for students	
Questions	**Rationale**
1. Can you tell me about any lessons you can remember doing in your classroom/the flexible learning space? a. What have you learnt about? b. What did you have to do? c. Did you work alone or with others?	Objectives – 2 & 3 To gain insight into pedagogies used (PBL, group work, solitary study, teacher directed learning etc.)
2. Do you use any of the furniture, resources or equipment, or a particular area in the classroom/space? If so, how and why?	Objectives - 2 To understand what equipment/resources are valued by the students and seen as useful.
3. How is your lesson similar or different when you have it in a flexible learning space compared to a normal	Objectives – 2 & 3 To identify if there are pedagogical differences in flexible learning spaces compared to traditional classrooms

classroom? (High school only)	
4. What are your favourite parts of the flexible learning space?	Objectives – 2 & 3 To determine the benefits and key items in flexible learning spaces
5. Are there any parts of the flexible learning space that you would change?	Objectives – 2 & 3 To determine any weaknesses of flexible learning spaces
6. What feelings or emotions do you have when you are in the flexible learning space? a. Is this different to when you are in a normal classroom (if students complete lessons in both)?	Objective – 3 To establish the impact flexible learning spaces have on student well-being.
7. What choices do you have in the classroom that allow you to be comfortable?	Objective - 2 & 3 To understand if student choice is related to comfort
8. Were you or any other students involved in designing how the flexible learning space could look?	Objectives – 1 & 2 To gain insight into the process used to introduce the changes to the school.