THE 2022 SOPHIA PROGRAM

Marian Mahat and Vivienne Awad

In partnership with:

Sydney Catholic Schools
RECOMMENDED CITATION


Dr Marian Mahat is an Associate Professor in the Learning Environments Applied Research Network at the University of Melbourne. Her research focuses on learning environments, with an emphasis on co-designing curriculum and pedagogy, teacher-led inquiry, and professional learning of teachers across different educational contexts. Working across multiple fields of inquiry, utilising innovative quantitative and qualitative methodologies and interdisciplinary collaboration with other universities, industry and schools, she has co-authored over 50 peer-reviewed journal articles, book chapters and reports, and recipient or co-recipient of over AUD$2.2M in internal and external research funding. Her core research program is recognized nationally and internationally, exemplified by a strong record of publications, research grants and consultancies.

Vivienne Awad is an educator and School Design Specialist at Sydney Catholic Schools. Her role focuses on the design of future learning environments and assists school leaders and teachers to transition into them. Vivienne co-established the Sophia Program in 2022, a research collaboration between Sydney Catholic Schools and the University of Melbourne focusing on providing professional learning and action research within each school through the use of prototyping. Prior to her current role, she was Principal at Domremy College where she led the building of a contemporary learning space, theatre and library. Vivienne established a prototype to assist the school community with the transition from traditional classrooms to more agile, flexible spaces. The prototype was recognised nationally at the 2019 Learning Environments Australasia Awards for its innovative approach to education.

ACKNOWLEDGEMENTS

This work was contracted to the University of Melbourne by the Sydney Catholic Schools. The authors acknowledge the support of the administration, educators and students from Sydney Catholic Schools. We also acknowledge the support of the University of Melbourne’s Graduate School of Education and the Learning Environments applied Research Network, in particular Chengxin Guo for his research assistance and Dr. Chris Bradbeer for his comments and feedback. Without the professionalism and support of those who were involved, this study would not have been possible.

ACKNOWLEDGEMENT OF TRADITIONAL OWNERS

The University of Melbourne acknowledges the Aboriginal and Torres Strait Islander traditional owners of the unceded land on which we work and learn. We pay respect to the Elders, past and present, and the place of Indigenous knowledge in the academy.

DISCLAIMER

This document has been prepared for Sydney Catholic Schools.

Front cover photo: Domremy College. Courtesy of Sydney Catholic Schools.

Copyright The University of Melbourne, 2023.
EXECUTIVE SUMMARY

The Sophia Program is a one year professional learning program established by Sydney Catholic Schools in collaboration with the University of Melbourne. The professional learning program is unique, in that it not only involves the acquisition of knowledge and theory of school learning environments but also action-oriented evidence-based research within a professional learning community where groups of educators work collaboratively at the school- and system-levels to improve student outcomes.

Thirty five participants from six Sydney Catholic Schools participated in the 2022 program. This report provides a summary of aggregated findings around teacher efficacy, teacher mind frames, student learning, student engagement, perceptions of students on the prototype learning environments and furniture, as well as overall evaluation of the program by participants in the inaugural cohort.

Lessons learnt from the Sophia Program have found seven important characteristics of effective professional learning. In summary, effective professional learning is one that is:

- contextualised, i.e. aligned with school goals, priorities and values, and addresses the learning needs of staff and students.
- includes the engagement of a strong leader with a committed group of educators.
- is longer in duration, reinforced over a longer period of time.
- includes establishing a prototype that enables educators and students to test and evaluate both design and pedagogy.
- includes multiple forms of active learning.
- includes forms of action research that enable evidence-based improvements.
- can be delivered virtually and face-to-face.

In essence, the world-first Sophia program illustrates what a high-quality professional learning could look like—one that is ongoing, connected to both content knowledge and teacher practice, incorporates active learning and research-based practices, and encourages networking, collaboration, mentoring and time for practice, feedback, and reflection. The report concludes with directions for future practice that provides important school- and system-levels implications.

Our Lady of the Assumption Primary School. Courtesy of Sydney Catholic Schools.
Sydney Catholic Schools, like many education systems around the world, are investing in more agile and flexible educational spaces. These learning environments encompass the complete physical, pedagogical and psychosocial contexts in which learning is intended to occur (Closs et al., 2022), that encourage flexibility for a variety of pedagogical practices and enable student-centred learning.

An innovative learning environment can be more succinctly defined as the combination of innovative space designs and innovative teaching and learning practices (Mahat et al., 2018). Innovative space designs are physical spaces that “facilitate the widest array of flexibility in teaching, learning and social education activity”, whereas innovative teaching and learning practices are pedagogies that “assist in the best possible learning outcomes for students” (p. 8). To maximise the potential of the space, educators and learners alike must first understand the range of teaching and learning opportunities offered by the learning environment.

CONTEXT
Sydney Catholic Schools identified a change management and professional learning gap in the area of teacher transition into new learning environments. Teachers do not necessarily know how to move from teaching in a traditional classroom to a more flexible environment where they may be inhabiting the space with other teachers and students at the same time. Learning about ways to collaborate, co-plan and co-teach in a more agile and social environment requires significant professional learning. Additionally, some of the flexible learning spaces in Sydney Catholic Schools are currently not being utilised as intended. Affordances such as glass sliding doors that would enable co-teaching remain closed. In some of the schools, the glass doors are covered in posters and furniture is placed in front of them which prevents the doors from being opened. Transparency through the use of glass that helps build relationships and improves visible practice is inhibited.

Whilst the reconceptualising and inhabiting of new school architecture is moving at an unprecedented pace such as that within the Sydney Catholic Schools, “teachers’ abilities to utilise new spaces are not always matching this growth” (Imms et al., 2016, p. 6-7). In the absence of sufficient support to enact the pedagogical transition, teachers in these ‘shiny new’ spaces are more likely to stick with the practices that are more associated with conventional classroom layouts (Alterator & Deed, 2013).

Furthermore, previous research shows that pushback from the change may happen when principals from schools merely focus on remodelling and refurbishing classrooms without offering teachers the professional learning they need (Charteris et al., 2016; Imms & Mahat, 2021). Given the large financial investment within Sydney Catholic Schools, research has provided strong indications that such investment may be wasted without structured professional learning in the use of learning environments (Imms, 2018; Imms & Mahat, 2021).

WHY ‘SOPHIA’?
The Sophia Program was developed to provide professional learning for educators across Sydney Catholic Schools system of 152 schools. The program involves studying, networking, mentoring, collaborating, prototyping, action research and reflection.

Sophia is a Biblical reference that means ‘Divine wisdom’ within the Christian belief. The Sophia Program recognises that the participants enrolled in the program are experienced leaders and teachers. The program is designed to provide these educators with greater wisdom to assist them plan future learning spaces that will help them realise their learning vision.

OBJECTIVE
The overarching objective of the Sophia Program is to support educators in Sydney Catholic Schools to use space as a pedagogical tool and support their transition into new flexible learning environments. The project has several aims:

- To develop teachers’ spatial competencies through professional learning and mentoring;
- To use these spatial competencies to implement a suite of school-based action research strategies relevant to each school’s context; and
- To use evidence from the action research to make continual improvements to teacher practices relevant to each school’s context.
2. STUDY DESIGN

The Sophia Program has been conceptualised as having three key components: knowing what, knowing how, and knowing with (Mahat, 2022a), illustrated in Figure 1. Knowing what or replicative knowledge demonstrates competence or knowledge in spatialised pedagogies. Knowing how or applicative knowledge demonstrates applicability of spatialised pedagogies in teaching practice, and knowing with or collaborative knowledge demonstrates collegial learning and reflection within teaching as a profession. These three key components provide the knowledge base for developing teachers’ spatial competency in implementing and using school learning environments.

Figure 2 provides an overview of the 12-month process and timeline. Six schools participated in the inaugural delivery of the Sophia Program:

- Marist Catholic College North Shore, St Mary’s Campus
- Our Lady of the Sacred Heart College, Kensington
- St Declan’s Catholic Primary School, Penshurst
- Trinity Catholic College, Auburn
- St Joseph’s Catholic Primary School, Como-Oyster Bay
- St Francis Xavier’s Catholic Primary School, Lurnea

Each school involved a team of educators, known as the Sophia Team, which included their principal and a group of dedicated teachers—a total of 35 participants. All 35 participants participated in two Melbourne Microcerts. Whilst all educators participated in the first microcert, Learning in Innovative Spaces, schools select educators to participate in either the Teaching in Innovative Spaces or Schools’ Transition to Innovative Spaces in the second half of the program. Learning in Innovative Spaces focuses on contemporary approaches to student learning, Teaching in Innovative Spaces focuses on contemporary pedagogical approaches to teacher practices, whilst Schools Transition to Innovative Spaces focuses on leading change in schools through a change management framework. Melbourne microcerts were delivered synchronous and asynchronously between four to eight weeks. Additionally, all educators attended two face-to-face professional learning workshops. Mentoring was provided throughout the program by a dedicated person from Sydney Catholic Schools. At the end of each Melbourne Microcert, the Sophia team implemented an intervention.

Note: From A conceptual framework for developing spatially responsive educators by M. Mahat. 2022b. Copyright M. Mahat.

The first intervention was a design intervention of a prototype learning environment. Each Sophia Team identified a learning space within their school where they could establish a prototype, otherwise known as a sandpit, where they could trial and test more collaborative pedagogical practices. In this program, an ‘enduring prototype’, i.e. the use of a suitable existing space that allow teachers to test some of the approaches believed to be useful in an innovative learning environment (Osborne, 2020), was designed and implemented. Schools worked with their mentor and with Sydney Catholic Schools to construct a prototype where needed. In some of the participating schools, this also involved purchasing and trialling furniture to test its usefulness ahead of large-scale purchase.

The second was a pedagogical intervention implemented within the prototype learning environment. The pedagogical intervention involved a change in teaching practice aligned to the design of the prototype learning environment. The importance of pedagogical practice in a learning environment forms the basis of the definition of innovative learning environment (see above), and underpins the belief that teachers are the “greatest influence on student achievement over which we can have some control” (Hattie, 2012, p. 25).
The Sophia team supported the action research in their schools through the gathering of data from teachers and students involved in the interventions. Action research is an iterative approach, combining theory and practice (Avison et al., 1999; Baskerville & Wood-Harper, 1996) that typically involves educators examining, and ultimately improving their pedagogy and practice. Action research helps educators focus on one aspect of their practice they would like to improve (Cunningham, 2008), is contextualised (Wood et al., 2007), smaller in scale (McDonough, 2006), and operates over reasonably short time spans (MacColl et al., 2005). In action research, findings emerge as action develops and takes place; however, they are not conclusive or absolute, but ongoing (Koshy et al., 2010). In the Sophia program, data collected as part of the action research, involved surveys pre- and post-interventions, measuring teacher efficacy, teacher mind frames, student learning and student engagement. In each school, participants were teachers and students involved in teaching and learning in the prototype space, consisting of one or two teachers and approximately 50 students in each school. An overview of the survey and variables are provided in Appendix A.
3. RESULTS

TEACHER AND STUDENT SURVEYS

The results for teacher and student variables varied across schools, with a couple of schools showing the most improvements across three phases. Aggregating the means for all teachers and students over time (see Figure 3), results found that the overall means for both teacher and student variables increased after the prototype intervention but did not increase after the pedagogical intervention. In the cases of schools where improvement was shown across the three phases, a new pedagogical model was identified and trialled in the prototype (see Figures 4A and 4C). In School C, teacher mind frames, student learning and student engagement improved across all three phases except for teacher efficacy. In schools where there was no improvements across the three phases (see Figures 4B, 4D, 4E and 4F), educators either continued to implement a pedagogical model that had been previously used or implemented spatial strategies without changes to their teaching practice. Whilst this is an important recognition that an effective pedagogy is crucial when transitioning into an innovative learning environment, an in-depth inquiry is needed to investigate this further.

FIGURE 3. OVERALL MEANS FOR TEACHER AND STUDENT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Efficacy</td>
<td>4.5</td>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Teacher Mind Frame</td>
<td>4.0</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Student Learning</td>
<td>3.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>3.0</td>
<td>2.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Mean scores for teacher efficacy, teacher mind frame, student learning, and student engagement across three phases for design intervention and pedagogical intervention.
1 Teacher efficacy and mind frames data were not available in Phase 1 for Schools E and F.
LEARNING ENVIRONMENT AND FURNITURE SURVEY

The implementation of the prototype learning environments varied across the six schools. In two schools, the library was refurbished as a larger learning space. Furniture was brought in specifically for trial in the re-purposed library spaces. Two other schools used their current learning spaces to re-zone learning areas and/or move furniture around. The remainder two schools used new learning environments recently built as their prototype spaces.

A photo elicitation method was used to explore how teachers and students perceived the new prototype learning environment and the furniture in the space. This section focuses on the responses of students (n=219). Students were asked to upload images of their furniture and learning space, and comment on how the furniture or learning space helped them learn. Thematic analysis of the learning space images found that students predominantly referred to the spatial settings in the spaces. It is important to note that students’ qualitative comments could be coded in multiple ways and hence categorised into several themes. Eleven themes emerged as reasons that help students learn: Comfort, Concentrate, Collaborate, Choice, Space, Auditory, Functionality, Privacy, Psychological, Accessibility, and Vision (see Figure 5 and Appendix B), with the top four reasons being: Comfort, Concentrate, Collaborate, and Choice.

Figure 5. Students’ Perceptions of their Learning Space and Furniture, n=219

- Comfort: 26%
- Concentrate: 16%
- Collaborate: 8%
- Choice: 15%
- Space: 8%
- Auditory: 7%
- Functionality: 7%
- Privacy: 5%
- Psychological: 4%
- Accessibility: 3%
- Vision: 1%
Comfort refers to furniture or spatial settings that help students feel mentally and physically relaxed while learning. Figure 6 provides examples of furniture or spatial settings that provide comfort. Examples of comments by respondents include:

“It is comfortable and there are not many people to disturb me.” (School A)

“Because it is flexible and comfortable.” (School B)

“I like this learning space because it is quiet and comfortable.” (School C)

“These spaces are couches so they are comfortable for me to sit and I can sit with my friends.” (School D)

“It can make us feel more comfortable while learning and engaging in school work.” (School E)
Collaborate relates to furniture or spatial settings that support students to work collaboratively with their peers. Figure 7 provides some examples of furniture or spatial settings that support collaboration. Example of comments by respondents include:

“It helps me learn better because I can work with different people in my class. I also get a go of working with peers that are in the other class.” (School A)

“I like this learning space because I feel like I can share my ideas in a small group.” (School C)

“Whiteboard tables are best for group work and mind maps.” (School D)

“This space helps me learn because it is collaborative and encourages me asking my peers for help and to work together.” (School F)
Concentrate relates to items of furniture or spatial settings that support students’ concentration on their own work by minimising distractions from peers or the surrounding environment. Figure 8 provides some examples of furniture that support students to concentrate. Examples of comments by respondents include:

“This furniture helps me by focusing with my work.” (School A)

“Because it makes me feel comfortable and it makes me more focused.” (School B)

“It helps me concentrate and I’m part of the class but it feels like I’m on my own.” (School C)

“Comfy furniture makes me sit longer and concentrate better.” (School D)
Choice refers to furniture or spatial settings that allow for flexible ways of working, for example the ability to sit or stand, or alone and with others. Figure 9 provides some examples of learning space and furniture that affords students choice. Examples of comments by respondents include:

“Because I can work with other peers and work in different places than our single classrooms.” (School A)

“I like these spaces because I can work in groups on the white board table, and I can focus on the single couch table tray seat.” (School C)

“This space helps me learn better because it has multiple different seats, some independent, some not.” (School D)

“This space creates opportunity for interactive and collaborative learning and is nice to look at. I enjoy both individual and collaborative learning in this space.” (School F).

**FIGURE 9. EXAMPLES OF LEARNING SPACE OR FURNITURE THAT AFFORDS CHOICE**
OVERALL EVALUATION OF THE PROGRAM

Formal evaluation of the program was conducted by the University of Melbourne’s Centre for Program Evaluation consisting of two data collection methods: (1) Learning Experience Surveys implemented at the end of each microcert; (2) Semi-structured interviews using the Success Case Method (SCM). SCM is an established evaluation technique that combines storytelling with rigorous evaluation methods and principles to produce compelling evidence about the effectiveness of programs; what is working, what is not, and why (Brinkerhoff, 2003).

Informal evaluation was also collected from participants during the face to face workshop on 15 June 2022. Initial results from the two formal surveys are provided here.

At the end of the first microcert (Learning in Innovative Spaces), 14 participants responded to the Learning Experience Survey. 88% of respondents agreed or strongly agreed that the Melbourne Microcert was informed by the latest research, intellectually stimulating and provided useful learning resources. This was illuminated by a number of comments from participants:

I will be able to include aspects of the latest research and good practice models in the planning of future learning spaces. This knowledge will inform conversations with the architects in the design of our build and has given me knowledge which can be used to better prepare staff for the pedagogical transition to these spaces.

Key research based learnings will inform the design principles for our future capital works project to deliver innovative and flexible learning spaces.

All respondents (100%) found that they were part of a group committed to learning, learned new ideas, approaches and skills, and were challenged in their way of thinking. 88% of respondents felt the group task on designing a prototype was practical and very beneficial. This was particularly reiterated in a number of comments from participants:

We will use our prototype as the model for the use of the space and to build the capacity of teachers to use innovative collaborative strategies to engage students in their learning.

We will provide the learning from Microcert 1 to continue to experiment with the prototype environment that we designed. We will use the co-teaching method and the set-up of classroom to support this.

The prototype exercise will provide a space for teachers and students to try out various furnishings, spatial configurations and teaching / learning approaches.

Some respondents provided overall comments on their participation in the Melbourne Microcert and the Sophia Program.

I really enjoyed the opportunity to participate in this Microcert and reflect on and refine my current practice.

It has been a highly beneficial project to engage in and I believe our team’s engagement in this project will better inform the design principles of our future capital works project and facilities upgrades.

I believe the idea of the Sophia program is vital in meeting the needs of our students and teachers moving forward.

Seven responses were received from participants in the Teaching in Innovative Spaces, and two responses from the Schools’ Transition to Innovative Spaces. Within the Teaching in Innovative Spaces Melbourne Microcert, 86% of responses agreed and strongly agreed that the Melbourne Microcert was intellectually stimulating, well-coordinated, well-taught and supported by useful learning resources. Participants provided rich comments on how they will apply the concepts to their current or future intended workplace context:

I have learnt so much about using ILEs [innovative learning environments] to facilitate learning and am quite excited about trialling new ideas and modes of learning. I feel there has been so much personal growth for me as a teacher through my participation in the program.

The content of the course has continued to reinforce the importance of ensuring our learning spaces are student centred and catering a variety of learning styles. Being able to see different schools and hear from many teachers/principals, has been invaluable in creating spaces in our school that fit with our future focused pedagogy.

The concepts will be put into place every day when teaching in the classroom, whether it be the classroom (physical) setup, group work, pair work, student voice/choice, collaborative planning and co-teaching with colleagues.

Respondents also offered comments relating to areas for improvement and aspects that should be kept for the next cohort. Three themes consistently emerged from the respondents’ comments related to timing, pace and volume of content.

The pace of the modules were also very hard to keep up with when also trying to begin a new school year. I didn’t feel that I was able to get the most out of it because I was rushing through.

The commencement of the microcert (at the start of Term 1), was very challenging. Delaying the start for a week or two would assist greatly.

The workload was very intense for the beginning of the school year. Starting the program later into the term would have been better.
In the context of school learning environments, professional learning is founded on the premise of spatial literacy where teachers understand and know how to use the affordances of school learning environments (Campbell et al., 2013; Charteris & Smardon, 2018). Several types of professional learning have been used in the context of school learning environments, including professional learning communities (PLCs), short courses such as those provided by peak bodies and educational institutions and industry-focused professional learning. The Sophia Program is one model of professional learning that incorporates three key components of knowing what, knowing how and knowing with (Mahat, 2022a), which are found to be critical in developing teachers’ spatial competency.

Many studies that investigate the effects of professional learning programs focus on teacher variables such as satisfaction as opposed to student outcomes (Knapp, 2003). This study focused on both teacher and student variables. Results found that the overall means for both teacher and student variables increased after the prototype intervention but did not increase after the pedagogical intervention. This suggests that teachers’ and students’ variables improved as a result of being motivated and excited to teach and learn in the new space and with the new furniture. However, as can be seen from the data, an appropriate pedagogical intervention is required in order to maintain this increase. Consistent with the definition of innovative learning environment used in the Sophia Program, this provides a strong acknowledgment of the importance of an effective pedagogy—one that is aligned to the design of the learning environment (Mahat et al., 2018).

Whilst the impacts of the program are yet to be seen statistically, positive change is evidenced by the qualitative evaluation data. The prototype enabled educators to grow their mind frames as they “consciously think about their teaching roles, the content and pedagogical knowledge.... that have significant impacts on student learning” (Mahat et al., 2018, p. 33). This growth takes time, and the finding highlights the importance of longitudinal data in the transition of teachers and students into innovative learning environments.
Data gathered as part of this study have shown that results vary between schools. This is an important acknowledgement that context matters (Blannin et al., 2020). At each school, many other confounding variables were occurring that impact on the efficacy of the professional learning program. For example, in one school, teachers who were involved in the interventions were not involved in the professional learning program. Whilst the teachers were provided with the know how in using these spaces from the spatial learning team, they were not provided with the knowledge in spatialised pedagogies. This highlights the importance of the knowing what and knowing with in any forms of professional learning.

The Sophia Program emphasises the importance of prototyping. Developing ‘enduring prototypes’ (Osborne, 2020) has provided key benefits for schools, including developing capabilities in key areas such as expertise in co-teaching, facilitating conversations between colleagues, providing opportunities to trial—taking risks and failing, and failing better each time, allowing teachers to adjust their mindsets as they adopt new practices, and gathering data about what works (and works well) and what did not. From a finance point of view, transition costs are reduced as educators have the ability to trial designs, furniture, systems etc ahead of large scale investments. For example, through this program, it was found that learning spaces and furniture that support students in their learning tended to centre around four themes of Comfort, Collaborate, Concentrate and Choice. Schools can use these factors as key considerations to drive decisions in their school designs and furniture purchases.

The inclusion of a strong leader with a committed group of educators in the Sophia Program was critical to the success of the program. Strong leadership is necessary to successfully engage teachers in professional learning within schools (Garet et al., 2001; Karacabey et al., 2022), particularly when the school leader models the process of learning and enquiring (Godfrey, 2016). For this to be successful, however, there needs to be a culture of trust and support (Muijs & Harris, 2006) and structures that afford time, resources and space for dissemination and collaboration of findings (Darling-Hammond, et al., 2009; Godfrey, 2016).

Other attributes of professional learning that was found to be effective within the Sophia Program include; professional learning that is longer in duration and more sustained over time (Wei et al., 2010); the inclusion of multiple forms of active learning (Van Veen et al., 2012; Yoon et al., 2007); the inclusion of action research that enable evidence-based improvements (Bleicher, 2014), and can be delivered virtually and face-to-face (Powell et al., 2010).

Consequently, lessons learnt from the Sophia Program have found seven important characteristics of effective professional learning, which can be summarised as follows:

- Effective professional learning is contextualised, i.e. they are aligned with school goals, priorities and values, and addresses the learning needs of staff and students.
- Effective professional learning includes the engagement of a strong leader with a committed group of educators.
- Effective professional learning is longer in duration, reinforced over a longer period of time (six months or more).
- Effective professional learning includes establishing a prototype that enables educators and students to test and evaluate both design and pedagogy.
- Effective professional learning includes multiple forms of active learning such as observing expert teachers, being observed, and having pedagogical discussions.
- Effective professional learning includes forms of action research that enable evidence-based improvements.
- Effective professional learning can be delivered virtually and face-to-face.

The collaboration between Sydney Catholic Schools and the University of Melbourne ensured that the program was research-based and met the definition of high-quality to support meaningful change in teaching practices. This program has shown that high-quality professional learning is one that is ongoing, connected to both content knowledge and teacher practice, incorporates active learning, encourages collaboration, models research-based practices, mentoring and time for practice, feedback, and reflection (Dorph & Holtz, 2000; McGatha et al., 2018). This would not have been possible without the strong support from Sydney Catholic Schools, not only in terms of financial resources but also time and human resources, particularly in the provision of a mentor. Coupled with their strong commitment to establishing a prototype, this provided a recipe for the program’s success.
The lead investigators of the Sophia Program was awarded a Melbourne Graduate School of Education Collaborative Grant in October 2022. The grant enabled the lead investigators to work in partnerships with other colleagues and two furniture companies to investigate the impact of furniture types and spatial configurations. The Furniture for Engagement report (Mahat et al., 2023) is available here: https://doi.org/10.46580/124374.

The Sophia Program is being extended to a new cohort of six schools in 2023. Minor adjustments have been made to the program based on evaluation and feedback from participants. These include extending the duration of the microcerts (from four to eight weeks), starting the microcerts two weeks after the start of term, and minor modifications to the surveys to ensure more robust data. An exciting opportunity exists to gather longitudinal data of the impact of school learning environments on students outcomes. This would provide Sydney Catholic Schools a robust body of evidence that can help support strategic decision-making in their school infrastructure and sustainable pedagogical transformations to improve the outcomes of all their students.
REFERENCES


### Overview of surveys and variables used in the Sophia Program

<table>
<thead>
<tr>
<th>Survey</th>
<th>Variable</th>
<th>Survey items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Efficacy and Mind frame Survey</td>
<td>Teacher efficacy</td>
<td>Teacher efficacy is the belief of teachers in their ability to positively affect students and is strongly correlated with student achievement (Hattie, 2015). 20 items were derived from the Classroom and School context model of teacher efficacy (Friedman &amp; Kass, 2002). An example of an item is “I know how to improvise in response to changing circumstances when I teach.”</td>
</tr>
<tr>
<td></td>
<td>Teacher mind frame</td>
<td>Teacher mind frames describe the ways in which teachers consciously think about their teaching roles and the content and pedagogical knowledge (Mahat et al., 2018), which are the “greatest influence on student achievement over which we can have some control” (Hattie, 2012, p. 25). 34 items were derived from the Teacher Mind Frame Survey (Murphy, 2020) based on Hattie and Zierer’s (2017) ten mind frames. An example of an item is “I meet with colleagues to discuss my impact &amp; next steps.”</td>
</tr>
<tr>
<td>Student Learning and Engagement Survey</td>
<td>Student learning</td>
<td>Student learning in this context focuses on student’s deep learning and is characterised by critically applying new facts to existing knowledge and accepting that learning as part of their personal development (Mahat et al., 2018). 11 items were derived from the Space Design and Use Survey (Imms et al., 2017; Mahat &amp; Imms, 2021) adapted from Kember et al. (2004). An example of an item is “I try to relate what I have learned in one subject to what I learn in other subjects.”</td>
</tr>
<tr>
<td></td>
<td>Student engagement</td>
<td>Student engagement in learning is defined as a balance between student’s capability for learning and expectations of learning in a particular learning environment context (Cavanagh et al., 2008). 26 items were derived from Survey of student engagement in classroom learning (Cavanagh, 2015). An example of an item is “I am confident about my ability to perform well.”</td>
</tr>
<tr>
<td>Learning Environment and Furniture Survey</td>
<td>Student creativity</td>
<td>In addition to the photo elicitations questions, items also measure student creativity, which is identified as a “key educational goal and essential 21st century skill that should be supported in schools (Richardson &amp; Mishra, 2018, p. 45). Richardson and Mishra (2018) argued that the set up and design of the physical space has been shown to be critical for creativity (Richardson &amp; Mishra, 2018). 17 items were derived from the Support for Creativity in a Learning Environment (SCALE; Richardson &amp; Mishra, 2018), consisting of four items in the Physical Environment subscale, six items in the Learning Climate subscale and seven items in the Learner Engagement subscale. An example of an item is “Students are involved in discussions among themselves, with or without the teacher, that deepen their understanding” (Learner engagement subscale).</td>
</tr>
</tbody>
</table>
## APPENDIX B

### Themes relating to students’ perceptions of learning spaces and furniture

<table>
<thead>
<tr>
<th>Theme</th>
<th>Definition</th>
<th>Example of comments by students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborate</td>
<td>Collaborate relates items of furniture or spatial settings that support students to work collaboratively with their peers.</td>
<td>“These spaces help me because I get to think about new ideas from others in the other class and I get to communicate and chat with my peers.” (School A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I believe that the space allows me to interact and work collaboratively with others and I feel that the quality of my work has improved.” (School F)</td>
</tr>
<tr>
<td>Comfort</td>
<td>Comfort refers to items of furniture or spatial settings that help students feel mentally and physically relaxed while learning.</td>
<td>“It is comfy and it makes me feel better when sitting down so I could easily concentrate, and I don’t need to keep moving myself to make myself comfy.” (School A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“The places I photographed made me feel comfortable studying in these places. And these comfortable places can help me study.” (School D)</td>
</tr>
<tr>
<td>Concentrate</td>
<td>Concentrate relates to items of furniture or spatial settings that support students’ concentration on their own work by minimising distractions from peers or the surrounding environment.</td>
<td>“There are less people and I’m at the very end of the classroom by myself. This helps me concentrate because there aren’t many people around.” (School D)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It helps me learn better because it lets me concentrate.” (School E)</td>
</tr>
<tr>
<td>Choice</td>
<td>Choice refers to items of furniture or spatial settings that allow for flexible ways of working, for example the ability to sit or stand, alone and with others.</td>
<td>“There is a bunch of different things you can do with it like there are book and holder that you use on the floor and two sets of pillows like things and a cover that you can cover your work in.” (School C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I like to work independently but some tasks are with partners so I can sit with them”. (School D)</td>
</tr>
<tr>
<td>Auditory</td>
<td>Auditory refers to items of furniture or spatial settings that are designed with acoustic considerations, such as minimising noise level.</td>
<td>“It feels calm and relaxing and it’s like the noise is blocked out.” (School C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It feels like a quieter space and it’s not as noisy.” (School C)</td>
</tr>
<tr>
<td>Space</td>
<td>Space refers to items of furniture or spatial settings that have adequate space to work or the ability of students to spread their work and move between learning areas.</td>
<td>“I like these places because they are very open and I have a lot of space to learn.” (School A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Both these pieces of furniture help me learn better because they both provide a place where you can place your device/working material.” (School D)</td>
</tr>
</tbody>
</table>
Themes relating to students’ perceptions of learning spaces and furniture

<table>
<thead>
<tr>
<th>Theme</th>
<th>Definition</th>
<th>Example of comments by students</th>
</tr>
</thead>
</table>
| **Functionality** | Functionality refers to items of furniture or spatial settings that enable a specific task and opportunities for storage through tubs or shelves. | “...because this space has a couch underneath and you can put your things on a shelf.” (School C)  
“Whiteboard tables help me with a growth mindset and mind maps, which help me brainstorm, understand and consolidate my thoughts.” (School F) |
| **Privacy** | Privacy refers to items of furniture or spatial settings that afford some form seclusion from peers.                                                                                                         | “It helps me because it is comfy and it’s like you have your own space.” (School C)  
“I like enclosed private spaces and I find it hard to do my best to learn with lots of people, noises and classes.” (School D) |
| **Psychological** | Psychological refers to items of furniture or spatial settings that evoke feelings in students such as fun, safe and confidence.                                                                                  | “I like this learning place because they make it more fun to do work in something nicer than boring.” (School A)  
“This space does help me learn better by giving me more confidence in learning.” (School B) |
| **Accessibility** | Accessibility refers to items of furniture or spatial settings that provide access to resources and teachers.                                                                                                 | “These learning spaces help me learn better because they are comfortable and both are easily accessible, and they [are] good places to work in.” (School D)  
“It helps me learn better because I am getting access to technology devices.” (School E) |
| **Vision** | Vision refers to items of furniture or spatial settings that provide visual access to desired stimuli including teachers, peers and resources.                                                           | “This furniture helps me learn better because I can sit with new peers and learn with new people. This can also help me see more of the room and more people.” (School A)  
“They have big spaces and I can see the board.” (School D) |
Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:
Mahat, M; Awad, V

Title:
The 2022 Sophia Program

Date:
2023

Citation:

Persistent Link:
http://hdl.handle.net/11343/325686