Innovative Learning Environments and Teacher Change Project: Phase One Report


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Image credit (right): Australian Science and Mathematics School.
Overview

The ILETC project presents a unique opportunity for a team of experts in education and architecture from across governments, schools, business and academia to co-design new solutions to the challenges of delivering 21st century learning to students in Australia and New Zealand.

The Innovative Learning Environments and Teacher Change project (ILETC) commenced officially in June 2016. The aim of this 4 year project is to build understanding of how physical classroom space impacts on learning and how best to support teachers in making the most of the spaces in their schools. It will develop resources and strategies to support educators, school leaders, policy makers and architects in developing and inhabiting new learning spaces.

In its busy first 18 months the project has not only accomplished all planned milestones, but has achieved extensive engagement with partners, teachers, architects and researchers both within Australasia and internationally. This highly efficient and collaborative, cross-disciplinary group has maximised the expertise of the project team and partners in building a comprehensive base of evidence about teaching in innovative learning spaces in Australasia. The group has made it a priority to not only conduct their research in an open and transparent way, with regular newsletter updates, blog posts and articles, but to publish findings as soon as data is analysed and share these with an ever growing following of educators, designers and other researchers.

This report provides a summary of the project’s activities, findings and engagement in the first 18 months of research. It draws together the many outputs, events, media and activities to highlight some of the key discoveries and how these inform the next stage of investigations.
ILETC 2016-2017 AT A GLANCE

PhDs now 8 in total, with 4 PhD workshops, 4 confirmations and high level of engagement with project team, co-authoring outputs, articles, reports and presenting at research conferences.

59 abstracts submitted for Transitions 2017 (all events) and 240 participants from 16 countries

High level of engagement from project partners with full attendance at 2017 partners meeting, sponsorship of international events by 3 partners, increased connections between partners and multiple members of the project team including CIs, research fellows and PhDs.

Publications including 1 peer reviewed journal article, 2 open access reports, 3 conference proceedings, 6 fact sheets, 64 blog posts, 17 conference presentations

800+ ILETC NEWSLETTER SUBSCRIBERS

1300+ FOLLOWERS

822 SURVEY RESPONSES

153 WORKSHOP PARTICIPANTS

16 COUNTRIES

1300+ twitter followers with 1.8% average engagement rate, with highest engagement for releases of findings, guest posts and events.

With 120 participants

153 teacher/principal participants in teacher workshops.

International connections in 16 countries with leading academics in learning environments research, educators, architects, interior designers, school leaders, policy makers, businesses and consultants.

Figure 1: ILETC 2016-2017 at a glance.
Survey
Survey of principals in our partner schools in Australia and New Zealand, asking them:

- What sort of classrooms and learning spaces are in their schools?
- How teachers are using them, and
- How they would characterize the kinds of learning happening.

Outcomes:
- 822 survey responses
- Technical Report 1/2017. Type and Use of Innovative Learning Environments in Australasian Schools (Imms, Mahat, Byers, & Murphy), and
- The ‘state of play’ concerning New Zealand’s transition to innovative learning environments: Preliminary results from phase one of the ILETC project (Bradbeer, Mahat, Byers, Cleveland, Kvan, & Imms).

Key findings:
1. Traditional classrooms were the dominant classroom type, amounting to approximately 75% of all spaces;
2. The dominant teaching approach was characteristic of teacher led pedagogies;
3. Participants from schools with a higher prevalence of traditional classroom spaces reported a lower assessment along the teacher mind frame continuum, with the reverse in more flexible learning spaces; and
4. Students in traditional classrooms exhibited fewer deep learning characteristics, with the opposite in more flexible learning environments.

Existing Research
Systematically searching all existing research relating to:

- Learning spaces and their impact on deep learning,
- Learning spaces and how teachers interact with them, and
- Learning spaces and how they impact on students’ learning outcomes.

The process of conducting this review involved all members of the research team and created a collection of all existing research on key topics as a resource for the team.

Outcomes:
- Three technical reports (forthcoming 2018).

Key findings:
The systematic literature reviews found only 21 empirical studies that evaluated impact of the physical environment on student learning outcomes in schools. It highlighted how little is understood about the long-term impact of different learning spaces and reinforced the importance of building evidence through our study.

The results will be published in 3 technical reports which will be available in 2018 on the project website.

Teacher Workshops
We conducted workshops with teachers in Australia and New Zealand about:

- How innovative learning spaces affected teachers’ practices.
- Teachers’ mind frames and belief systems.
- Student deep learning and the innovative learning environment.
- Transition journey maps.
- Changing teacher practice.

Outcomes:
- 153 workshop participants in 12 workshops.

Key findings:
- Teachers associate ILEs with the notion of student-centred learning - ways of teaching that shift the focus of instruction from the teacher to the student.
- Innovative learning environments help students to be active, responsible participants in their own learning placing the teacher as a facilitator of learning for individuals rather than for the class as a whole.
- One of the key barriers identified was on issues around loss of teacher control, changing ‘old’ practices and on taking risks.
Research Symposia & Think-Tank meetings

In 2017 the project organised the Transitions symposia and industry think-tank meetings in Australasia, Europe and North America with the support of our partners Telstra, Ecophon and Steelcase. The aim of these events was to gain a global perspective on research currently under way on innovative learning environments internationally and to connect with educators and architects interested in and active in this field.

Outcomes:
• 240 participants from 16 countries,
• 59 abstract submissions, and
• 3 published proceedings.

The events provided an international perspective on current research and practice in design and use of innovative learning environments, increased awareness of the project and enhanced connections with our project partners and their networks.

ILETC MILESTONES

Systematic Reviews
January 2017 - December 2017
• Testing assumptions, teacher input and experiences
• Defining key concepts
• Situating our research

Research Symposia
June 2017 - September 2017
Three symposia and industry think tanks in Melbourne, London and Grand Rapids to identify the range and focus of research in the use of ILEs internationally.

Survey of Principals
October 2016 - December 2016
Report published October 17.

Teacher Workshops
November 2016 - May 2017
Collecting input from teachers. Report published November 2017

PhD Fieldwork
June 2016 - December 2017
8 topic areas across 3 disciplines – education, design and architecture.

Figure 2: ILETC milestones.
Phase One provided a rich and broad array of solid evidence concerning research that explains learning environments and teacher transition. This was intentionally collected from a diversity of sources in order to triangulate the ILETC knowledge base:

- **From academia**, through a set of three systematic reviews of the literature that identified existing evidence concerning ILEs and teacher mindframes, student deep learning, and student learning outcomes;
- **From teachers**, through a series of workshops conducted across Australia and New Zealand, that has gained practitioner knowledge about transitions to ILEs, teacher mindframes, student deep learning, and associated concepts;
- **From external observers** (the PhDs) who conducted multiple case studies within Australian and New Zealand schools, museums and galleries about the ways teachers utilise space to maximize educational outcomes;
- **From principals**, through a large survey that gathered data on types of spaces, their use, and the learning that occurs in them;
- **From international sources** through:
  - Three graduate-research symposia in Australasia, Europe, and North America, where local projects helped explain problems and solutions around this topic;
  - Three industry think-tank meetings in Australasia, Europe, and North America, where current and required research was explored by industry partners;
- **From a critique of the literature** by our PhDs to create a common understanding of key terms and concepts critical to this topic.

The data collected via these strategies were coded and common themes identified.

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Our data shows there exists a logical, reasonably common pathway that teachers follow as they transit into an ILE. In ILETC, an ‘innovative learning environment’ is the combination of innovative design and innovative teaching/learning practices (ILE = ILD + ILP).

This pathway is constituted of a large variety of change strategies that facilitate teachers’ transition into an ILE across time. In ILETC, a ‘strategy’ is an explicit concept, theory or practice that the case studies indicate enhance teachers’ use of innovative learning environments.

It is possible from our data to make tangible the spatial learning tools that teachers use to turn those strategies into actions which help them transit into an ILE. In ILETC, a ‘tool’ is an identifiable activity or protocol, that implements a strategy.

This pathway is often highly individualized, at the school and the teacher levels.

Taken as a whole, this constitutes the pathway/s along which teachers and schools travel as they grow their ILE-relevant mindframes.

**Figure 3: Key findings, phase 1.**

The themes identified during the Phase 1 analysis arguably represent the common issues being addressed by key players (policy, school administrators, teachers, and researchers) as teachers transit from traditional classrooms to an ILE.
The key themes identified in Phase 1 are mapped in Figure 4. The reasonably common pathway is indicated by the dark dotted line. The oval emphasises that a wide range of methods are used by teachers and schools to undertake this transition. The individual ‘cells’ contain the tools that teachers use to proceed down this pathway. These are organised according to the ‘phases’ of transition our research shows exist;

- Early planning stages,
- Implementation stages as ILEs are occupied, and
- Consolidation stage where practices, design, affordances are continually refined to best meet the overall educational vision of each school.

Phase two research will, therefore, be spent in populating this pathway schema using observed and to-be-constructed tools. It will test the usefulness of this pathway through trials with a broad range of ILETc schools. It will test our methods of evaluating the pathway’s effectiveness.

In this way, ILETc will be positioned to offer the educational community a theoretical and practical resource that supports the building of spatial learning capacity in schools. It will provide robust, confidence-building evidence of what works.

Figure 4: Model of ILETc Teacher Transition Pathway.
**Partners**

The team of partner organisations is key to informing the research by providing expert advice and contextual knowledge on school infrastructure, design, teacher professional development, pedagogy, curriculum, acoustics, furniture, technology and student learning. Our partners help in practical ways too by providing guidance to our PhD researchers, trialling workshops and tools and providing feedback.

In addition to regular conversations, information sharing and meetings, the project team has been collaborating with partners through:

- Partner meetings, held annually, to enable collegial input on project directions, opportunities for engagement with teachers and dissemination.
- Partner reference group meetings and staff briefings throughout the year to support partners’ input to the project and engagement with outputs.
- Identifying data collection sites – with data collection in 29 partner schools, museums and galleries by our PhD researchers.
- Symposia and think tanks, e.g. support from Ecophon and Steelcase in hosting, marketing and logistics for Transitions 2017 & 2018.
- Three partner events- presentations at an international partner conference in Singapore, and regional forums in Brisbane and Melbourne.

We aim to involve our partners in the research process as much as possible and also welcome opportunities to inform their research activities with overlapping ILETC project activity.

In 2017 we were approached by two partners to contribute project insights and expertise to assist in undertaking nested research with direct relevance to partner priorities.

- Specialist input from partners that extend research in the specialist fields of acoustics and ICT.
- Sharing partner resources, expert and contextual input to research activities, network connections, extension of project reach within own organisations.

**Research team**

We have developed routines and practices to support effective collaboration between our cross-disciplinary, dispersed team. The project management team works closely to maximise use of project resources to not only meet all project goals, but to capitalise on all opportunities to extend the reach and impact of project activities and findings, while also supporting development of independent PhD researchers.

The team of lead academics meets on a regular basis to review progress and provide specialised input on key project activities. In addition to this, regular email updates and informal communications ensure that all Chief Investigators (CIs) are engaged with the project. CIs also provide valuable multi-disciplinary, expert input to data collection and analysis, publications and events.

The project Research Manager and Project Manager work closely with researchers Terry Byers (QLD) and Chris Bradbeer (NZ) to shape the research activities, analyse data and write publications. Terry and Chris also provide valuable local insights and connections in their regions to support links with partners and project participants. The team had additional research support from Kirra Liu in conducting the systematic literature review and data analysis and Lachlan Stewart in development and design of publications.

Since the beginning of the project our team of graduate researchers has grown to 8, with the addition of new members in 2017 who will expand the focus areas addressed in our research, range of expertise and workforce capacity for data collection and analysis. These researchers not only contribute their own research data and analysis to the project, they also bring with them a wealth of professional expertise and academic skills.
Network
The project is achieving significant engagement and reach beyond the project team and partners in Australia and overseas by building an informal network of professionals and academics. Our ever growing mailing list (over 800) and Twitter following (1300) receive regular updates on blog posts, publications, events, key findings and activities. This ensures our findings, which we publish in accessible reports and fact sheets, are shared with a wide audience and will support broad participation in our Phase 3 trial of resources, as well as stimulating interest in learning environments research more broadly. The network also provides input to the project by connecting us with researchers and practitioners in our region and beyond.

1. Anne Knock, teachers approaches to collaborative or team teaching.
2. Dan Murphy, developing measures for impact of spaces on teachers and students.
3. Dion Tuckwell, using design thinking in effecting change in education.
4. Ethel Villafranca, what we can learn from museum educators use of learning spaces.
5. Fiona Young, what are the design affordances that support teaching and learning?
6. Raechel French, characteristics of ‘good transition’.
7. Mark Osborne, leadership practices that lead to the successful implementation of an innovative learning environment.
8. Vicky Leighton, teacher spatial competencies, and ways to measure these.
The project has published findings in two reports that are publicly available.

- Technical Report 1 - Survey findings:
  - Teachers utilise ILEs better than we believed (the assumption that they are not “transitioning” is being questioned), and
  - Their practices, even in traditional classrooms, suggest that ILEs are a useful way to assist better teaching, but we need to be mindful of their importance relative to pedagogy (they certainly are not a revolution).

- Technical Report 2 - Teacher workshop findings:
  - Teachers’ definition of ILEs
  - They felt their practices were supported by the flexibility of spaces
  - When new to a space they are concerned about how the difference will impact on students.
  - The need for support mechanisms for teachers to adapt practice to new space.

Publications and presentations

Journals/Periodicals

1. Bradbeer, C. (2017). Think piece: If teacher collaboration in ILEs is the answer, then what was the question? Education Review, 8(5), 5-6.


Books


Reports


Factsheets


Brochures


Video


Public Workshops

1. Changing teacher practices in ILEs, Department of Education, Brisbane, 2017
2. Transitioning into ILEs; Journey maps, Charles Weston Primary School, Canberra, 2017
3. Deep Learning and ILEs: Learning from deep learning experiences, Avonside Girls High School, Christchurch, 2016
5. ILEs in the classroom: Learning from practice and potential, Department of Education, Sydney, 2016

Conference Proceedings


**Presentations at conferences**

*Keynote address*


**Conference Papers (Academic)**


In 2016/2017 the project organised a series of workshops for teachers and principals in our partner schools and education regions to find out about educators’ views on and experiences of innovative learning environments. The workshops were:

- Sydney, November 2016, Future Learning, Department of Education.
- Auckland, November 2016, Stonefields School.
- Canberra, March 2017, Charles Weston Primary School.
- Melbourne, April 2017, Methodist Ladies College.
- Brisbane, May 2017, Autism and Reading Hub, Department of Education & Training.
- Sydney, May 2017, Northern Beaches College.

Key findings:

- Teachers defined an innovative learning environment as one with adaptable spaces and ubiquitous resources and technologies, which can evolve and change to support transitions between different types of student-centred learning. Participants identified changing teacher practices through transforming teacher mindsets and resistance as a barrier to effective use of innovative learning spaces.

- Key elements that supports teacher practices are flexibility of space to meet varying learning needs, the ability to use different teaching approaches regardless of the space, as well as the use of technology within the space.

- Elements of the physical environment that would enhance student deep learning included a variety of space, moveable furniture and fit-outs, access to a range of tools and materials for hands-on activities to meet a range of teaching approaches.

- Teachers transitioning into innovative spaces are concerned with configuration of the new space, the use of furniture in that space, and how students transition into the space. Two important considerations are the mindsets and lack of professional development for teachers.

- Support required to enable teachers to undertake change in their practices include human resources, tools, equipment, resources, facilities and assets. Teachers noted the importance of the cycle of improvements to ensure that its direction-setting and resourcing processes, core activities of learning, its enabling systems and infrastructure are continuously monitored and improved.
In 2017 the project organised the Transitions symposia and industry think-tank meetings in Melbourne, London and Grand Rapids with the support of our partners Telstra, Ecophon and Steelcase. The aim of these events was to gain a global perspective on research currently under way on innovative learning environments internationally and to connect with educators and architects interested in and active in this field.

The symposia featured presentations by graduate and early career researchers, leading academics and peak bodies, with facilitated discussion sessions following presentations. The presenters were invited to submit full papers and these have now been published as proceedings and some will be further developed for inclusion in Teacher Transition into Innovative Learning Environments (upcoming book 2018).

The think tank meetings were invitation only half day discussions involving business, educators, researchers and architects. The discussion focussed on identifying the current research available and what research needed to be done. The transcripts of these meetings are being analysed and will be published in Teacher Transition into Innovative Learning Environments.

Transitions symposia and think-tank findings:
The content was surprisingly similar across the continents.

- Current research is addressing issues of ‘inhabiting design’, ‘risk and change’, ‘teacher practices’ and ‘measurement/impact’.
- There was a common sense of optimism about teachers’ willingness to discuss change.
- There was a common expression of students’ adaptability to new spaces, and how this had a perceived positive effect on the quality of their school experience.
- There was a common understanding that while the need for change is immediate, it will take time.

There were also notable dissimilarities. In broad terms,

- The Australian papers had a stronger focus on ‘carry-over’ impacts of good design, such as spatial literacy, formative evaluation, and iterative design. They tended to argue that spaces have changed dramatically, so teaching must follow. However this was hindered by a perceived preoccupation with learning outcome metrics that dictated restrictive pedagogic practices, particularly in the senior years.
- The European papers focussed on regional strengths and weaknesses, and tended to argue that teachers need to acknowledge that change is required. A major challenge was (not surprisingly) the fragmentation of knowledge caused by differing agendas across its many countries.
- The North American papers focused strongly on students’ schooling experiences, and argued (in direct comparison with the Australian event) that teaching and learning is changing, so spaces must follow. The key challenge identified was the influence of educational policy on practice, and in particular the negative impact of funding models.

The events identified some future directions for research in learning environments that would assist architects, educators and governments frame their practices and policies for development of school spaces, pedagogy, design and supporting student learning:

- Mechanisms that support greater collaboration and consultation between designers and teachers in development of learning spaces.
- Linking existing academic research and evaluation research on impact of learning environments on student outcomes, engagement, teacher practice and building performance.
- Identifying how 21st century learning is supported through research into blending virtual and physical learning spaces.
- Raising awareness of the affordances of physical space to support teaching through teacher education programs, networks and dissemination of research.
- Building collaborative research projects to gather evidence of how learning spaces impact on student outcomes.

Figure 5: ILETC project reach - participant partners in project events and activities.
Our Partners

The University of Melbourne

ACT Government Education

Catholic Education Diocese of Parramatta

Churchie.

Ecophon Saint-Gobain

A Sound Effect on People

hayball

Association for Learning Environments
Enhancing the Educational Experience

Museum of Applied Arts & Sciences

Marshall Day Acoustics

Ministry of Education
Te Kāwanatanga o Aotearoa

New Zealand Government

NSW Government Education

Queensland Government

Steelcase Education

Australian Science & Mathematics School

Woodleigh School