Critical & Creative Thinking

The Australasian Journal of Philosophy in Education

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Welcome to *Critical & Creative Thinking*

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About the Journal

Critical & Creative Thinking is an international journal published under the auspices of the Federation of Australasian Philosophy in Schools Associations (FAPSA). The focus of the journal is philosophical inquiry with school-age students. What was once called Philosophy for Children has now grown into a sub-discipline of philosophy with its own history, traditions and pedagogy, and incorporates what could be called philosophical inquiry in the classroom, reflective education and, generally speaking, philosophy in schools, as well as related methodologies such as Socratic Dialogue. The journal performs two roles. The first is to publish scholarly research concerning the theory and practice of philosophical inquiry at school level. These articles will appear in the 'Research Articles' section. The second is to publish reports of practice, comments on resources, suggestions and ideas about philosophising with school students and so forth, with a view to encouraging professional interchange among those interested in philosophical inquiry with school-age students.

Aim and Scope

To provide a vehicle for the communication of ideas and a forum for discussion and debate of issues concerning the practice of philosophical inquiry with school-age students.

To promote better teaching and curricular design for the development of critical and creative thinking amongst school-age students through increased understanding and use of philosophical inquiry in the classroom.

To enrich the understanding of philosophy and philosophical inquiry as well as its role in the development of good thinking and good judgement.

To increase interaction and collaboration between the academic community of scholars in universities and teachers in schools on matters of logic, epistemology, creativity, metaphysics, aesthetics, ethics, inquiry, philosophy of science, mind, personhood, community, understanding, learning, thinking, dialogue, discussion, and related matters concerning philosophy, inquiry and classroom pedagogy.

To promote discussion of the place of philosophy in the nation and school curriculum and its infusion into the present curriculum, as well as the place of philosophy in the intellectual, creative, moral and social development of individuals.

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Editorial

Welcome to the second issue of *Critical & Creative Thinking* for 2009 and, sadly, to the very last issue of the journal. We shall save our reflections and thanks for the moment, however, as there is much to celebrate in the current edition.

The first 'Special Issue' section comprises a collection of papers by a team of researchers working in the 'Smart Green Schools' project, a genuinely interdisciplinary group from the fields of architecture, education, educational planning, urban design and sustainability. Sincere thanks to Susan Wilks (University of Melbourne), a chief investigator on the project and long-time supporter of *Critical & Creative Thinking*, for her initial idea of developing a special issue on the relationships between pedagogy, space and sustainability, and for her help in bringing such an interesting collection of papers together. The first of these, by Clare Newton, sets the context of the Smart Green Schools project and challenges educators to engage more in the planning and design of learning and teaching spaces. Although Newton does not claim to '...present a road map for teachers new to thinking about the impact of space', her paper provides more than enough background information to enable readers to understand at least some of the reasons why educators have thus far been reluctant to engage with the design process. The second author, Sue Wilks, helpfully locates the research project within the current context of billions of federal and state dollars being invested in school infrastructure under the Australian 'Building the Education Revolution' and other stimulus packages. She includes case studies describing teachers preparing to move into new spaces but also cautions that unless they are properly supported to understand and work with innovative school spaces and pedagogies, teachers are highly likely to reorganise such spaces to resemble more traditional classrooms. In the third paper, Ben Cleveland introduces the concept of 'equitable pedagogical spaces' and discusses the potential for school spaces to play a significant role in supporting the personalisation of student learning. His descriptions of learning environments that '...enable

individuals to flow between activity settings' are thought-provoking for those of us who are more used to teaching within a traditional square or rectangular classroom. The next two papers take us squarely into schools and, excitingly, also into already up and running innovative learning spaces. Dominique Hes explores aspects of two such schools that '...wear their green credentials on their sleeves', noting that curiosity, playful exploration, deep thinking, analysis and understanding, characterise these largely sustainable learning environments. Hes also introduces us to the notion of school buildings serving as '3-D textbooks'. Philosophy and English teacher, Emmanuel Skoutas, describes firsthand his experience of moving from a traditional learning environment to a new cultural space created to foster genuine inquiry. The author's examples of students working enthusiastically within these new spaces capture well the real educational and social benefits for both students and teachers. The final paper in this section is not part of the Smart Green Schools project itself, but rather, a response to the inspiring but also unsettling ideas presented by the project's authors from the perspective of a teacher educator and researcher working in the area of philosophy in schools (Carol Collins). Thanks to all involved in this Special Issue section and best wishes for the completion of your worthwhile project.

The 'Regular' section of this edition includes a research report from a colleague working in Singapore, two papers concerned with bringing philosophy to early childhood settings and a review of Matthew Lipman's recent autobiography. Teacher and researcher, Yip Meng Fai, reports on the favourable results of a study conducted with high school students that utilised a newly developed model for identifying student moves in Community of Inquiry discussions. The second paper by Marta Giménez-Dasí and her colleagues in Madrid and Montreal encourages readers to reflect on the need to further develop Philosophy for Children style programmes within early childhood education and provides a detailed outline of how this might be achieved. In her paper highlighting the connections between Montessori and Lipman's work on the development of reasoning in very young children, Virginia Tregenza also calls for more emphasis on fostering philosophical thinking in the early years. Finally, we are grateful to Clinton

Golding for his timely and sincere review of Matthew Lipman's recent autobiography *A Life Teaching Thinking*. This is surely a most fitting way to close the final issue of *Critical & Creative Thinking: The Australasian Journal of Philosophy in Education.*

The decision to stand down as editors was not an easy one, especially in the knowledge that our decision would herald the end of the journal. *Critical & Creative Thinking* was first published in March, 1993, with Clive Lindop and a small editorial team at the helm, helping to put Philosophy for Children – Australian-style – on the world stage. Many of you will recall that Gil Burgh, Stephan Millett and Phil Cam shared the editorial for a short period during the mid-2000s following Clive's retirement and worked to keep the publication alive and to develop a more contemporary, professional format for the journal. Our initial goal in taking on the role as dual-editors from 2006 was to extend the editorial board to include national and international colleagues from the field of cognitive psychology as well as from philosophy and Philosophy for Children. We are pleased to have developed the editorial board in this way and to have worked with such an impressive group of scholars and leaders in their various fields. We are saddened too, of course, by the loss of Ross Phillips and Phil Guin during our time as editors. We also aimed to broaden the scope of the journal to consistently include contributions from researchers reporting on empirical studies in the field, crucial in a time when governments and policy makers are (rightly) becoming increasingly concerned to seek out evidence-based research in education. Here, too, we have been successful and are grateful to the authors and reviewers who made this development possible. Also during this period, Gil Burgh and the Queensland Association of Philosophy in Schools funded and managed the creation of an electronic back catalogue of the journal. Importantly, *Critical & Creative Thinking* has recently been listed in the Australian Education Index and SCOPUS-Elsevier databases and included in the ERA ranked journal list.

As we write, the journal has subscribers based in every state and territory of Australia, as well as in New Zealand, Singapore, Hong Kong, Malaysia, Thailand, South Korea, England, Scotland, Slovenia, Germany, the

Netherlands, Canada and the United States. Similarly, during the last four years, papers have been published from philosophers, psychologists, teachers and teacher educators working across Australia and in Singapore, Scotland, Wales, Spain, Canada, the U.S, Turkey and Iran.

In very many ways, the journal has been a successful venture for some seventeen years, and an important forum for scholarly discussion in the field of education for thinking. It seems it has also been highly regarded by many. We have been moved by messages received from subscribers and contributors since the pending closure of the journal was announced, from colleagues who recognise the gap it will leave for teachers and academics, for early career researchers and student teachers, and for those who follow Australia's contribution to Philosophy for Children through this publication. Still, the running of a scholarly journal, today more than ever, demands at least some level of financial and administrative support. Taking the journal forward would also have required support from colleagues to establish a relationship with an online publisher and to promote the journal more widely. Without such support, regrettably, publication of *Critical & Creative Thinking: The Australasian Journal of Philosophy in Education* will not continue beyond the printing and posting of this issue.

In closing, there are some very important acknowledgements to be made. Firstly, we would like to thank Justine Gallasch, a recent Education Honours student, primary school teacher and friend, whose work as sub-editor during the last four years has ensured that every issue of the journal arriving in your letter box was of the highest editorial quality. We would also like to acknowledge the work of past editors, especially the founding editor, Clive Lindop, along with all who have served on the Editorial Board. Thanks also to colleagues who reviewed papers and provided invaluable feedback to authors, and to the contributors themselves for sharing their ideas, theories and reflections through the journal. And finally, whether you have been a long-term, intermittent or recent subscriber, we extend our sincere thanks for your interest in and support of the journal. We have very much enjoyed being in touch and working with so many colleagues across the globe during the last four years and hope our paths will cross again sometime

in the future. Our very best wishes to you all for the remaining weeks of 2009, and for the years ahead.

Warmest regards,
Carol and Sue

Carol Collins and Sue Knight: Editors 2006-2009

Disciplinary Dilemmas: Learning Spaces as a Discussion between Designers and Educators

Clare Newton (Faculty of Architecture, Building & Planning, University of Melbourne)

Abstract

As an architect and academic, I have been attempting to engage in conversations outside my discipline around the theme of education with a particular focus on how space can support learning. Currently undertaking a Doctorate of Education as the only non-cognate student, I am struck by the different languages that the disciplines of architecture and education use. We each have our own shorthand for capturing and communicating complex ideas. Architects and educators come from different tribes with different ways of viewing the world. These different languages support effective communication when we are working within an academic discipline but can alienate and confuse when we are attempting to work in interdisciplinary ways.

The context of this paper is a research project called 'Smart Green Schools' funded by the Australian Research Council (ARC) as part of their Linkage Grant program. The aim of the Smart Green Schools research is to investigate the relationships between pedagogy, space and sustainability. Our team is supported by nine industry partners including the Department of Education and Early Childhood Development (DEECD) (Victoria), the Government Architect (Victoria) and a range of architecture and design firms which specialise in school design. The five chief investigators come from the diverse fields of architecture, education, educational planning, urban design and sustainability. There are two PhD students; one who was a science teacher prior to accepting the ARC scholarship and the other, an architect.

Drawing on some moments of uncertainty, if not critical moments[1], this paper explores a cross-section of difficulties and opportunities being experienced by various stakeholders working towards the design of new learning spaces. During the research process for Smart Green Schools, we have found that the research focus on space, sustainability and education has needed to expand to include other issues such as leadership, school structure, timetabling and professional development. It is the background to the research proposal and the story of the shift in focus that is presented in this paper as a series of unsettling moments.

The paper does not claim to present a road map for teachers new to thinking about the impact of space. Instead the paper attempts to tease out some issues and discrepancies at play between the disciplines of architecture and education in order to provoke educators to take a stronger interest in the complex relationships between space and learning and to challenge designers to reflect on the impact of their design decisions.

In conclusion, the paper suggests that the design of new learning environments is best considered as the design for new learning experiences within a context of increasingly portable ICT. As such, design is best perceived as a partnership between educators, students, design professionals and ICT experts.

An insight into the tribal nature of disciplines

Some years ago I was with a group of academics from all faculties within the university beginning a Graduate Certificate in University Teaching. The fifteen or so academics were being rapidly introduced to a range of theorists and educational concepts such as Lave and Wenger's concepts of a 'community of practice' and 'situated learning', and writings from Paul Friere and John Dewey. Terms such as 'situated learning', 'embedded cognition', 'constructivist learning', 'praxis-oriented learning' were being introduced along with concepts such as Gardiner's

[1] Critical moments are recognised in education as specific and identifiable moments when transformative learning occurs. These may be related to emotionally difficult issues which might be best understood in retrospect or may not even be recognised as occurring. The moments in this paper are unsettling rather than critical moments and are included as marking points for understanding some of the complexities in the relationships between space and learning.

'multiple intelligences' and 'Bloom's taxonomy'. The terminology was so foreign and being introduced at such rapid pace that the academic class members in a moment of 'fun' replayed the terms back to our educators as jargon. In an unsettling moment, the shock showed on the educators' faces. What we perceived as jargon was the language which defined and supported the discipline of education. It was a useful lesson for later interdisciplinary work between educators and architects. Language helps define outsiders to, and cohorts within, knowledge domains. As different disciplines meet together on a common topic, there is a need for each discipline to respect the 'foreign' language being used but also a need to empathise with others new to the discipline by understanding that language can alienate and confuse and by attempting to modify language into more accessible terms.

An educator and senior research associate with the Smart Green Schools team noted how architects presenting designs for schools are not well understood by all teachers. 'The vocabulary and ways of representation used by architects, facilities experts, acoustic engineers and builders are foreign for teachers and vice versa' (Wilks, 2009, p. 24).[2] Not only is much of the terminology being used incomprehensible, but the abstract plans and elevations may not be easily understood by those outside the design and construction disciplines.

For a publication co-edited with Dr Kenn Fisher, two glossaries were developed; one educational and one architectural.[3] Our aim was not to give comprehensive dictionaries of terms, but to demonstrate an inherent communication difficulty when different tribal languages are in play.

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[2] Wilks, S. (2009 – in publication), 'Building Leading Pedagogy' in C. Newton & K. Fisher (Eds), *TAKE 8 Learning Spaces,* AIA, Australia, p. 24.
[3] Newton, C. & Fisher, K. (Eds) (2009 – in publication), *TAKE 8 Learning Spaces,* AIA, Australia.

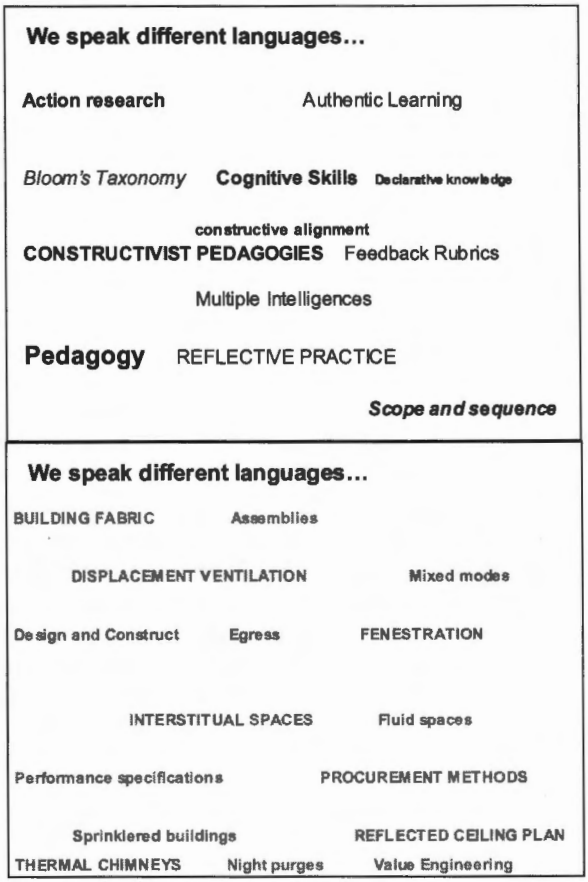

Figure 1: We speak different languages...
(From a presentation by the author to the CEFPI 2009 World Conference)

Each discipline sees the world through its own cognitive models or 'paradigms'.[4] Once university students are inducted into a discipline it can become difficult to see the world outside of their discipline. There is a risk that knowledge outside one's cognate discipline is not valued or even fully perceived as knowledge.

A silence on space

Coming from an architectural discipline where our entire discourse is embedded around issues to do with space, it has been alarming to realise that some teachers do not perceive

[4] Kuhn, T. (1962), *The Structure of Scientific Revolutions*, Chicago University Press, Chicago.

that links may exist between space and effective learning. For example, in the two year program of the Graduate Certificate of University Teaching, the impact of space on learning was not mentioned. More recently, a DEECD (Victoria) document of 64 research priority areas agreed for 2008-11, did not include priorities directly focused on the impact of space even in the midst of this country's largest injection of funding into school infrastructure.[5]

As offices and hospitals are being transformed in response to new technologies and new understandings of work and health practices, it is curious that the classroom has persisted as the main venue for learning. Kenn Fisher (2002), a learning spaces expert, writes:

> ...spatiality is not legitimised in pedagogical discourses: it is predominantly dealt with through the unconscious and is accompanied by deep silences. Yet we experience space and place constantly throughout our lives and my instincts tell me that our schools and home-based spatial memories go on to shape our spatial understandings in our adult civic lives. The production of public spaces and the associated lack of critical civic engagement is, in my view, a direct result of our limited level of spatial literacy and vocabulary, as well as a severely lacking focus on critical literature in pedagogy.[6]

Early school models

Because the classroom has become the main teaching venue, it is useful to look back to the school template designs that arose in England and were adopted within Australian nineteenth century schools. In these layouts the main teaching spaces were called 'school rooms' rather than 'class rooms'. The school design accommodated a monitorial system of education. In the large school room, students sat in orderly groups on tiered seating divided by curtains. Each

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[5] Department of Education and Early Childhood Development (2008), *Research Priority Areas of Interest 2008-11,* Department of Education and Early Childhood Development (Victoria). Research into space was not precluded. For example, Priority 42 – 'resource and equity implications of a more personalised approach to learning' could include the impact of design.

[6] Fisher, K. (2002), *Schools as 'prisons of learning': A manifesto for a critical psychosocial spatiality of learning,* PhD Dissertation submitted to the School of Education, Flinders University of South Australia.

group was just three deep to enable the head teacher and monitors to inspect students' writing slates. The teaching method was based on acquisition of knowledge through instruction, rote learning, repetition, visual surveillance and bodily discipline.[7] Note in Figure 2, a class room is an adjunct to the school room where smaller groups could be taken from the larger space for more focused instruction. The window sills were high to prevent distraction. This was a school model developed to train a workforce in which accuracy, repetition and the ability to follow instruction were core skills.

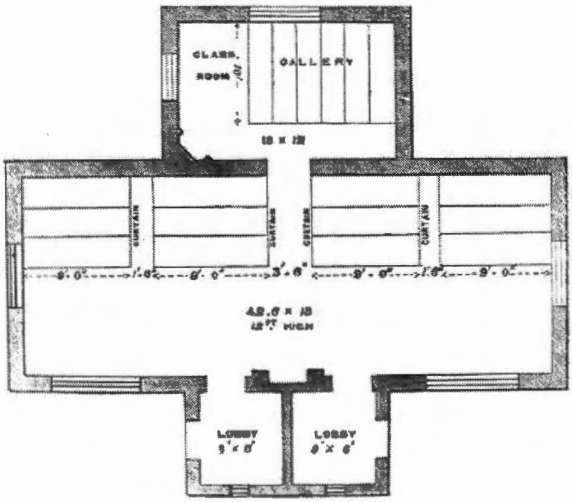

Figure 2: Template design for a nineteenth century school
(Source – Burchell, L. (1980), *Victorian Schools: A study in colonial government architecture 1837-1900,* Melbourne University Press, p. 16.)

Following a United Kingdom Act in 1870 legislating compulsory education, the architect E.R. Robson developed a school model for the London School Board in which classrooms were laid around an assembly hall. The school room had evolved into the classroom which is still the predominant model today.

[7] Markus, T.A. (1993), *Buildings and Power: Freedom and control in the origin of modern building types,* London, Routledge.

A classroom today

What does a contemporary classroom 'say' about the education occurring inside? In a case-study primary school, we walk between existing classrooms with the principal. In this building, the architecture has remained largely unchanged since the 1920s, but the range of furniture layouts and the computers tell us that this is a twenty-first century classroom. The paraphernalia, tools of learning and the children's displayed work give character to the rooms. One classroom we see is particularly neat with beautiful student work displayed on the walls. The principal quietly states his concern that this classroom says more about the needs of the teacher rather than a classroom where students are encouraged to experiment, take risks and explore. The teachers' desks play a prominent role in each room taking up to 25% of the classroom floor space. Whiteboards at the 'front' of the classroom suggest a particular teacher-focused mode of learning. Outside many of the classrooms are the messy accumulations of work from previous years and discarded furniture. This communal space does not appear to be cared for. There are no direct links between the playground and the classroom. There are also no direct links between different classrooms, although class spaces do open onto a large high-ceilinged common hall. No students are in the hall as we walk through. A useful question for teachers to consider is who owns the learning spaces?[8] Who controls movement and behaviour? Are students able to physically adjust their environment to personalise with their work; to open a window; move around; or talk with another? Does control stay with the teacher all day or does it shift between students and the teacher?

A visual reading of the space of the classroom is just one part of a more complex understanding of how space is utilised and what messages students receive about their learning and the value which their community places on education. For example, in this school the students are in uniform and grouped according to age. The principal is male and most of the teachers are female. In an identically-

[8] Lisa Delpit, writing on the education of African-American children, provides a framework for understanding power in classrooms. For example, Delpit, L.D. (1988), 'The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children' in *Harvard Educational Review*, vol.

designed school, the activities and use of space might be very different. Students might be in vertical age groups, they might move between classrooms according to a fifty minute timetable or they might do some of their learning in the community or in a range of support spaces such as libraries and art rooms.

Teachers do have control to adjust classrooms in minor ways, but what does the average current classroom design limit? There is usually no water in the classroom and the space does not suit a range of learning activities. The size of the classroom limits the number of students and does not easily support team teaching and project-based learning. Rarely is there easy access to the exterior.

Does space matter?

Since beginning the Smart Green Schools research, some educators have said that a good teacher can teach anywhere; what matters is the quality of the teacher rather than the space; others have said that a more effective use of limited funds is to improve teacher quality rather than classroom design. Health care research has shown a link between hospital environments and patients' healing time. For example, a patient in a room with an outlook to trees recovered more quickly than those that had no window. Unfortunately, the same level of interrogation has not been undertaken for schools.

Three reasons for many teachers not perceiving space to matter have been presented in this paper. The first is that space is not part of an educational discourse. If something is not spoken about and is not part of the research paradigm, then it is difficult to even realise it exists. The second reason is that the classroom is still largely ubiquitous and therefore remains unseen. The third observation is that teachers do control and adjust the classroom, albeit in minor ways, and therefore may not be aware of the space as restricting their teaching methods.

What does the traditional classroom enable and what does it restrict? To understand this question better, it is useful to see examples of schools where the classrooms have been opened up.

Beginning with one case-study school, we see three traditional classrooms where segments of walls have been opened to allow team teaching with a group of 75 students.

An efficient work space for the three teaches is located in one corner allowing them to collaborate as a team. There is a range of student furniture suggesting different modes of work; sometimes in small groups ranging in size from 2 to 6; sometimes at computer stations or laptops; sometimes on the floor, on couches or on bean bags. Some extra work spaces are 'stolen' from spaces such as the adjacent corridor or the nearby after-school care space. The principal carefully selected the teachers who would teach within this new space as a prototype for more widespread changes within the school. The principal gave the teachers time to construct new ways to deliver content. Feedback from the users of the new spaces, after six months of occupation, is generally positive. In our research we have realised how important it is for culture change to be led by a leadership group in each school with teacher advocates who are early adopters within the new spaces.

Examples where space has been mismatched to teaching and learning methods also help illustrate that space and pedagogy are irrevocably linked. In another case study school, a 'learning hub' space was constructed as an open plan shell the size of four classrooms. After two years of occupation, the staff members are still struggling to use the space effectively. Whenever possible, staff timetabled into the hub try to relocate their student groups into the library spaces or the computer hubs. Acoustic readings show unacceptable reverberation times in the open space. The ICT equipment in the space is insufficient. The furniture does not allow for a range of learning settings. A recent workshop was held in the hub space between educators and the Smart Green School research and partner team. During this workshop, which focused on how the hub space could be improved, there was a growing realisation that the space would not be resolved simply by providing better acoustics, ICT and furniture. For project-based learning to occur, students need more than the standard 50 minute period, three times per week. It was realised that the space might be best 'owned' by specific teachers and student cohorts so they had time to gradually learn to work and behave in new ways. Furniture carefully selected in response to the teaching program would need to be laid out with an understanding of how space might be used over the course of a day, the length of a project and from year to year.

The unsettling moment in this process for teachers was the realisation that this space would not be easily resolved by addressing only the perceived problems of acoustics, poor ICT and inadequate furniture. Even once these were resolved, effective utilisation of the space would need to extend beyond teaching methods. A list of issues raised at the workshop included:

- A reworking of the timetable to allow for more extended learning opportunities;
- The need for teachers to have both physical space and time to collaborate on new programs;
- The need for a teacher group to be spatial advocates for the new space and take 'ownership';
- Time for students to develop new learning modes and behaviours;
- Support and commitment from the school leadership team to support transformation of teaching and learning methods.

The role of FFE - Furniture, Fixtures and Equipment

The following unsettling moment was related by an architect working on a new school model in Australia called a SWIS or Schools Within Schools model. Instead of the more common year-based model, the principal and leadership group decided on smaller Year 7-12 sub-schools forming learning communities in seven matching new buildings. The transformation process was lengthy and complex. The architect described an almost existential moment where, after working for eighteen months, they had an outline of the buildings which could be tendered for construction but only a schematic internal layout which needed a lot more work done before it could be built:

> We couldn't draw because we didn't understand the project brief as the school was still going through the machinations within the school, outside the school with the school community, and also at the department level. Across all sorts of levels a lot has to happen before reaching a point where we could say, now we have some clarity to progress as an architectural project. That would have taken at least 18 months before we got to that sort of footing... My gut feeling is that even if

> we reached the same design a year earlier, I don't think it would have been successful in the sense that you had to go through the transformational change to reach consensus. (Newton & Fisher, 2009)[9]

For this case study school, the layout, furniture, fixtures and fittings were resolved over many months after the actual building itself had been resolved. The educational planner and interior architect used prefabricated classrooms as prototype spaces to explore layout and teaching options with fifty Year 7 students:

> Design of the physical environments for the new building could then evolve from the 'inside-out', a term also used by the education consultant Julia Atkin, to describe the process of building a learning culture and school ethos based on shared values and beliefs. (Featherston, in press, p. 118)[10]

Another unsettling moment at another case study school is useful to describe. Teachers had recently moved into a renovated, more open plan space and were working with their students using the furniture from the old spaces. A teacher rang our PhD student to ask for help. The principal had given the teachers a range of catalogues and asked him to select furniture so an order could be placed within a few days. We met with the teacher the next day in a quickly conceived workshop with some Year 5 and 6 students. Within a couple of hours, after talking about all the kinds of activities they might like to do in the spaces, there was some understanding of how the space might be used. The difficulty came with selecting the furniture. We felt the teacher did not have the necessary time and information required to make this major decision on furniture. Our concerns were that:

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[9] Newton, C. & Fisher, K. (Eds) (2009 – in publication), *TAKE 8 Learning Spaces,* AIA, Australia. Interview with Richard Leonard, Hayball, architect of Dandenong High School.

[10] Featherston, M. (2009 – in publication), 'Learning Environment Design – Dandenong High School', in Newton, C. & Fisher, K. (Eds), *TAKE 8*

- The catalogue range was limited;
- Some learning would be better supported with furniture outside the traditional school's ranges, such as office furniture and domestic furniture;
- Without developing an accurate, scaled drawing it was impossible to confidently predict what furniture would fit;
- Staff needed time to layout and test how the furniture would work with their students across a day and across a week;
- The furniture range did not offer enough opportunities to define and differentiate space;
- A good range of seating and desks was available but little for display and storage.

Fortunately the teacher was able to negotiate for more time and was able to source design help from one of the school parents who was an architect and drew up options including a raised platform to differentiate one area.

Much can be done to improve all learning spaces with careful selection of furniture and fittings. Designers can help with furniture layouts by working through options with teachers and students. Too often, furniture selection is an afterthought done in isolation from the design process. Furniture ranges need to be extended to respond to diverse learning modes and more portable ICT. This field should be the topic of useful professional development between teachers and designers. One tool to be considered is software currently being developed in the United Kingdom that will enable teachers and students to play with layouts in an immersive digital environment.[11]

Research about educational spaces

As I write this paper, I have been in the United States attending a conference on educational facilities.[12] In an informal conversation with two facilities managers from different US state education departments, I was confidently told that their schools were designed based on the best

[11] Called LEVROS (Learning Environments Virtual Reality Online Simulator), this tool builds on game technology to develop an immersive environment in which furniture layouts can be explored.

[12] Council for Educational Facilities Planning International, World Conference, Washington, September 2009.

available evidence. The evidence they spoke of was focused on issues such as indoor air quality, age of the building, acoustics, moisture levels, thermal comfort, daylight, cleaning methods etc. Indeed, US-based research into the effect of learning spaces has tended to focus on quantifiable issues and their possible effect on test outcomes. For example, research has suggested that spaces kept at 74 degrees Fahrenheit help improve student test scores. This means that spaces are air-conditioned and this tends to restrict good connections between inside and outside as well as learning opportunities through the use of more environmentally sustainable spaces. The positive outcome of the US-based research into physical environments is the focus on learning impact from physical design:

> A study of working conditions in urban schools concluded that physical conditions do have direct positive and negative effects on teacher morale, a sense of personal safety, feelings of effectiveness in the classroom and on the general learning environment. Building renovations in one district led teachers to feel a renewed sense of hope, of commitment, and a belief that district officials cared about what went on in that building. An improved physical environment had a positive effect on learning. (Tennessee Advisory Commission on Intergovernmental Relations, 2003, p. 4)[13]

An update on US research into the impact of learning spaces on learning was presented at the conference. The researchers drew on meta-analyses of research done elsewhere in the US as an update to Schneider's overview called 'Does Space Matter?'.[14] It was noted that the research being undertaken in the US was still largely focused on direct relationships between one physical aspect and its impact on test results rather than more complex interrelationships. Missing from the research were questions

[13] Tennessee Advisory Commission on Intergovernmental Relations (2003), *Do K-12 School Facilities Affect Education Outcomes?*, Tennessee Advisory Commission on Intergovernmental Relations, Tennessee, p. 4.
[14] Schneider, M. (2002). *Do School Facilities Affect Academic Outcomes?*, National Clearinghouse for Educational Facilities, http://www.edfacilities.org/pubs/outcomes.pdf, accessed September 20, 2009.

about how the individual factors multiply or impact on different types of students.

Factors supporting innovation

Submissions into the school awards exhibition at the conference largely repeated the standard school model of air-conditioned classrooms off central corridors with some focus on collaborative social spaces but little on exterior learning spaces. Submissions to the equivalent award system in Australia include a greater diversity of school designs.

If both the US and Australia are calling for research-based decision making, why are school designs in Australia showing more diversity than the US? Australia has been following the UK in terms of government funding initiatives designed to reinvigorate all schools. Some state-based education departments in Australia have established programs which are supporting innovation in school design based on research into effective learning rather than the more limited research available on effective learning environments. The manager of the Leading Practice and Design section of DEECD (Victoria) described key principles which guided the Leading Schools Fund and some are listed below:

- School implementation and reform occurs from the inside out and depends upon teacher effectiveness and school effectiveness;
- In order to improve student outcomes, they must be clearly defined, measured and base lined/benchmarked, then linked to individual teacher's beliefs, values, skills and behaviours;
- School improvement requires research and evidence-based change. This involves constant collection and analysis of data to track progress and to measure improvement;
- Changes in teacher effectiveness can only occur with the support of world class professional learning and a focused commitment over a number of years;
- Leadership capacity in schools is a key factor in improved school effectiveness;

- A key lever for success is gaining the enthusiasm and the commitment of schools that school improvement comes first...[15]

Space is one factor supporting effective learning.[16] The paper in this journal titled 'Spaces for Learning: A Teacher's Perspective' suggests that space does 'enable' new ways of teaching rather than act as a backdrop. New spaces may match innovative teaching, or may prompt teachers to reassess the ways they teach. As the principles listed above suggest, teaching transformation to suit new spaces requires more than just different accommodation. Leadership, professional development and advocacy are required for new teams and methods to be developed and avoid the risk of classroom walls being 'rebuilt' by teachers.[17]

The design of learning spaces requires a marriage of educators and designers to conceive how space might support new types of learning. A DfES (UK) report concluded that:

> Putting the user's experience at the heart of all we do...will be critical to the success in delivering on our priorities... Failing to understand users in the way we design and deliver services means that we are less likely to deliver aggregate improvements in outcomes across the system because we are less likely to be meeting the needs of individual service users. (Department for Education and Skills, 2004, pp. 33-36)[18]

ICT supporting learning

As computer technology becomes more portable, there is an opportunity to shift away from the banks of computer tables and projection screens to a more seamless digitally-connected environment. There are learning opportunities

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[15] Newton, C. & Fisher, K. (Eds) (2009 – in publication), *TAKE 8 Learning Spaces*, AIA, Australia. Interview with Lynne Sutton, Manager, Leading Practice and Design, DEECD (Victoria), August 11, 2009, p. 13.

[16] Hattie, J. (2008), *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement*, Routledge, United Kingdom.

[17] In one school where open plan spaces had been developed for learning communities, the teachers had rebuilt the classrooms using bookshelves and furniture.

[18] Department for Education and Skills (2004), *Five year strategy for children and learners*, DfES, London, pp. 33-36.

available with Web 2.0 technology and Cloud Computing as students can stay connected within and outside the classroom to each other, adjacent communities and even global communities. Social networks may be multi-national as well as linked into the local community and formal learning activities may more easily extend into the home environment beyond the normal school hours. Likewise, effective learning may increasingly occur in informal ways through learning games and collaborative partnerships. Students may increasingly attend schools and universities, not just to learn but to talk about what they have been learning in a range of informal environments and non-classroom based environments.

As information becomes available from many locations, libraries will shift from being containers of resources, and library walls will break open to ensure useful resources are available to students and educators in both physical and digital formats. For classroom-based teachers, a useful starting point is to think about what use could be made of the hallways outside the classroom if they were designed with nooks for tiny meetings or individual work, tables for eating and learning, readily available resources through WiFi or physical resources etc.

Just 21 years ago, the Internet existed as just 60,000 interlinked computers. Since that time, computers have invaded learning spaces turning some classrooms into computer labs while filling the walls of other classrooms with heavy hardware. We are at another tipping point as digital technology becomes more seamless and, in some ways, more invisible. Hand-held computers loaded with Kindle Books and location-specific information using GPS will become increasingly powerful learning tools.

The increased portability of ICT requires us to ask whether the physical environment of the school will continue to remain important. Physical space and proximity communicates community values about education and creates possibilities through associations. We will no longer have to perceive space as simply a container for activity but rather a lever that helps students work in ways that digital environments do not support. Designing spaces, therefore, can be considered to be a process of designing experiences. This shift in thinking should enable teachers to realise they are key to the design process. If space is about the design of

experiences, that is also the role of teachers. Schools no longer need to be a suite of containers for learning but become journeys and systems where objects, students, expertise, visual information and digital information come together. Places of intersecting paths between teachers, learners and the community become particularly interesting for learning opportunities. In this new environment for learning, the focus will be less on flexibility to adjust space but more on a range of specialised spaces which students and educators can move between.

Is a great school always a great school?

This paper has attempted to outline, through unsettling moments, some of the difficulties and complexities around the provision of space (both traditional and innovative) to support learning and learners. The following final 'moment' is a personal anecdote which raises a dilemma about the provision of space for different learners. Does each pedagogical and spatial decision, by necessity, favour particular types of learners?

As a parent of three high school students, I am interested in understanding how education helps equip students to live effectively in a twenty-first century world. Living near a newly opened high school, we were attracted to their learner-centred approach to education. At this school, students agree on 'personal learning plans' within 'three-way conferences' between educator, student and parents. Also, learning at the school is not structured into fifty minute subjects. Instead, students work on interdisciplinary projects of their own choosing over an extended time. There is no textbook list to be purchased. The teachers team teach and classroom walls are opened up. Students are encouraged to have USB drives instead of transporting laptops from home to school each day. They use the resources both within the school and from a range of virtual and community sources. My Year 7 daughter came home the other day enthusing how much she loved the school, her teachers and her friends. This style of education did not suit our son as well. After two years, he chose to go to a more conservative, subject-based, select entry school.

For others, this scenario may hold no unsettling content. As an education outsider, I am unsettled by a dawning recognition that even the best learner-centred

approach may not suit all students. Can schools be designed both physically and pedagogically to allow enough learning variations and settings to suit all students? What are the implications for school designers? Ideally, the school design needs to accommodate the pedagogy rather than visa versa. A school designed for a largely didactic pedagogy may thrive best in a traditional classroom, whereas a school for project-based team teaching may include a range of interlinked open-plan spaces where students can move between activity areas.

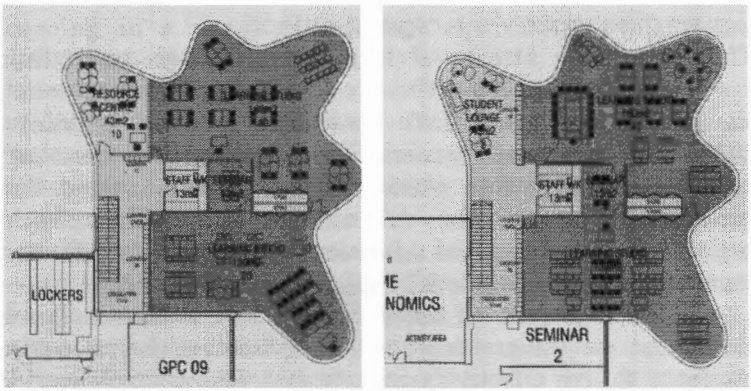

Figure 3: Fitzroy High School – layout option for the senior school (MCR Architects, 2007)

In conclusion, does space 'enable' learning?

Using a series of unsettling moments, this paper attempted to provoke educators to consider the complex relationships between space and learning and to challenge designers to reflect on the impact of their design decisions. Because educational knowledge is part of a distinctly different discourse to architecture, particular care is needed by both educators and designers to ensure effective communication. As the impact of space is not commonly included in education discourse, the potential of space to support (and hinder) learning tends to be overlooked and assumptions made that the classroom model will always be the most effective learning environment. To show that the classroom is just a construct, its precursor in early template designs as a large school room was illustrated. Some successful and less successful case studies were presented to show that space does impact on learning. The particular importance of the furniture, fitout and equipment was described. Some of the

issues to do with research-led decision making were included with snapshots of current research and support for innovative learning spaces in the United States and Australia. Finally, this paper focused on the need for teaching and learning transformation if innovative spaces are to be effective. New spaces need to support the range of today's learners while predicting the possibilities that will arise for future learners.

As we enter a time of more portable and more ubiquitous ICT, the design of learning environments need no longer be about designing containers for teaching but rather about the design of learning experiences. If we think about design of schools in this way, it is useful to understand that educators, as designers of learning experiences, will increasingly need to be the key instigators of future designs. New technology and new understanding about learning are likely to require transformation away from the classroom environment to environments which provide a larger range of learning experiences that promote the best learning outcomes. At that point, it should be educators who are demanding changes in the school environment with support from a range of design professionals and ICT experts

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References

Council for Educational Facilities Planning International, World Conference, Washington, September 2009.

Delpit, L.D. (1988), 'The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children' in *Harvard Educational Review*, vol. 58, pp. 280–298.

Department for Education and Skills (2004), *Five year strategy for children and learners,* DfES, London, pp. 33-36.

Department of Education and Early Childhood Development (2008), *Research Priority Areas of Interest 2008-11,* Department of Education and Early Childhood Development, Victoria.

Featherston, M. (2009 – in publication), 'Learning Environment Design – Dandenong High School', in Newton, C. & Fisher, K. (Eds), *TAKE 8 Learning Spaces,* AIA, Australia, p. 118.

Fisher, K. (2002), *Schools as 'prisons of learning': A manifesto for a critical psychosocial spatiality of learning,* PhD Dissertation submitted to the School of Education, Flinders University of South Australia

Hattie, J. (2008), *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement,* Routledge, United Kingdom.

Kuhn, T. (1962), *The Structure of Scientific Revolutions*, Chicago University Press, Chicago.

Markus, T.A (1993), *Buildings and Power: Freedom and control in the origin of modern building types,* Routledge, London.

Newton, C. & Fisher, K. (Eds) (2009 – in publication), *TAKE 8 Learning Spaces,* AIA, Australia.

Schneider, M. (2002), *Do School Facilities Affect Academic Outcomes?* National Clearinghouse for Educational *Facilities,* http://www.edfacilities.org/pubs/outcomes.pdf, *accessed September 20, 2009.*

Tennessee Advisory Commission on Intergovernmental Relations (2003), *Do K-12 School Facilities Affect Education Outcomes?* Tennessee Advisory Commission on Intergovernmental Relations, Tennessee, p. 4.

Wilks, S. (2009 – in publication), 'Building Leading Pedagogy' in C. Newton & K. Fisher (Eds), *TAKE 8 Learning Spaces,* AIA, Australia, p. 24.

Observing the Transformation of Pedagogies and Spaces

Susan Wilks (Faculty of Architecture, Building and Planning, University of Melbourne, Senior Research Fellow, the Smart Green Schools project team)

> Teachers who look to the future, and to re-inventing a pedagogy so that it is inclusive of all students' needs whilst it also challenges ways of thinking with/in any field, must choose to construct and offer their students a re/vision of the pedagogic contract – a new way of operating in their classrooms.
> (Hildebrand, 1999)

Introduction

In Australia during 2009/10, billions of federal and state dollars will be invested in school infrastructure under the Building the Education Revolution (BER) and other stimulus packages. It has been suggested that a significant impediment to educators achieving the pedagogical reforms required by this influx of infrastructure is what Fisher (2004) described as a 'deep spatial silence', or 'unconsciousness', regarding the power of space and the influence that it has over school organisational structures and learning.

For teachers predominantly using teacher-centred transmission models of education, moving into new spaces will entail having to change everyday pedagogical practices, as neither the new pedagogies, nor the re-configured spaces, encourage these approaches. Teachers need to be convinced that the flexible new spaces, environmentally much healthier, are beneficial for teaching and learning and worth expending the effort to occupy them effectively.

Research methodology

At the University of Melbourne, researchers in the Smart Green Schools project wished to investigate the impact of new buildings on teaching and learning cultures –

particularly in middle years' classes. An interdisciplinary perspective that encompassed the domains of education and architecture was required. A case study methodology (Yin, 2003; Brown, 1992) was selected to allow the investigation of the highly complex influences of learning environments on teaching and learning. A critical social theoretical perspective (Habermas, 1971; 1974; 1989; Leonardo, 2004; Barab et al., 2004) was taken in an attempt to understand school settings and the connections between pedagogy and space. An ethnographic methodology was used to investigate middle school settings. Observation and 'thick description', which enable judgements about making comparisons with, or the possible transferability of findings to, other settings (Bryman, 2004) were used (Cleveland, 2009).

We were interested in investigating how space and other organisational structures influenced a school's socio-pedagogical culture, and how space and pedagogical practices influenced student engagement in learning. Our methodology was influenced by Fisher's (2002) methodology, and theories, practices and concepts from the fields of architecture and education.

Pedagogical practices

For centuries, the dominant teaching and learning model rested on teacher transmission and student acquisition, and only relatively recently has active student participation in their learning been promoted by education theorists. Why do some teachers still resist the new models? In the foreword to Fullan and colleagues' *Breakthrough*, Richard Elmore colourfully expressed what happens when schools attempt to change 'normal' practices:

> The default culture [of schools] stretches, seemingly to a breaking (tipping) point, and then it snaps back to where it was. The best ideas of reformers have, as yet, proven no match for the inertia of a powerful resident culture. (Fullan, Hill & Crevola, 2007, p. xi)

This reversal can occur, even after substantial professional development sessions, if the teachers do not absorb the theory behind new pedagogical models of teaching and learning into their existing beliefs and practices or see the benefits for their students.

Our team has observed several Case Study schools over 18 months as they prepare to inhabit new buildings or refurbishments. Following extensive consultation with the school community, an exemplary professional development program was conducted by School A, a P-12 government school. Led by the school leadership team, an education consultant, the architects and interior spatial designers, the teachers were led through a collegial process of writing a vision in preparation for effectively occupying the new spaces. Some staff members (some with their students) planned curricula, team-taught, and worked in trial spaces resembling the soon-to-be-built spaces. The principal made it clear to staff that they were expected to adopt appropriate pedagogies in preparation for the occupation of the new spaces.

A photograph included in an article about the school soon after the staff moved into the newly designed spaces showed a largish space with two sets of desks in rows and teachers at each end of the space teaching in a didactic manner. For the school leaders this image must have been a great disappointment. The photo accompanied a lengthy article about the exciting, innovative spaces and the new ways of teaching and learning they encourage. What would the readers make of the image? It looked like two traditional classrooms with a dividing wall removed. That the photograph described above was even possible was disappointing to the change agents: the principal, curriculum director, education consultant, interior designer, architect and staff who were early adopters of the new pedagogies. Perhaps the photographer looked for an image that said 'classroom', saw something like a traditional space, and snapped. Other photos would have featured the purpose-built withdrawal nooks, the accessible wet areas, and/or the tiered multi-use spaces with groups of students engaged in activities.

How was this image possible? Why do some teachers resist changing their practice even when faced with new pedagogical models over many years? Hildebrand (1999) offered a plausible explanation, claiming that it was because the new models of learning were located at the active end of the student participation model. She also believed that a high level of consistency in the pedagogical practices used by

teachers over time had created a sense of what is 'normal' and what is 'other' in classrooms. She explained it thus:

> The pre-existing *pedagogic contract* has been generated by the collective approaches used by teachers in the past: and the particular set of pedagogical practices that has become so established that they form hegemonic pedagogy. (Hildebrand, 1999, n.p.)

Hildebrand believed that the daily lived experience of pedagogy in classrooms incorporated clear expectations of how the 'pedagogic contract' would operate within the context of a classroom or school culture and could be shared by teachers and students. Larkin and Wellington (1994) stated that students have a certain expectation of a lesson when they walk into an education space. They quoted a science teacher:

> They don't expect reading and discussion or drama and role-play – they expect bunsen burners and practical work. They do not want to learn that science is not a set of facts, that theories change and that science does not have all the answers – they want the security of a collection of truths which are indisputable. (Larkin & Wellington, 1994, p. 187, in Hildebrand, 1999)

Teachers with whom I have worked have made similar statements about their space – paraphrased: 'In the art room students don't want to spend their time engaged in dialogue, they expect to make art'. I think this is because of the operating pedagogic contract. But for the students it is because of the way their teachers teach, how spaces are configured, and where, for example, sinks, taps and computers are placed. To retain comfort levels, teachers defend the way things are, rather than venturing to make changes. They often use the students' expectations as an excuse for not changing their practice.

Hildebrand lists other factors operating within the 'contract'. They include: whether students are expected to talk or listen, if problem posing and solving exists, whether students are expected to produce or reproduce knowledge, if there is negotiation around what and how the subject is taught, if there is support for diversity among students, and

whether new forms of learning activities and assessment are accepted by the teacher (1999). So, when a teacher breaks the conventions, the students may resist because they see it implicitly as a break in the pedagogic contract.

However, this has not been borne out by our observations. While there is a difficult and lengthy process behind, and resistance to, changing teachers' pedagogies, we have watched students quickly adjust to new ways of working with their teachers and peers in both the new pedagogical models and new spaces they encounter. They love the varied spaces that may even look more like home than school – the nooks, the comfy chairs, the ready access to wet areas when needed, the moveable furniture, and lounging around on steps. They move chairs away from in front of computers and squeeze together on 'ottomans' working on various tasks and enjoy seeing their teachers team-teach. They are gaining the benefits of shared and discrete teacher knowledge, skills and styles, and enjoying being engaged in activities that cater for their diverse learning styles. Previous behavioural issues appear to dissolve. In turn, the teachers are buoyed by the experience.

What are the new pedagogies?

Caldwell (former Dean of Education, Melbourne University), speaking at a steering committee meeting at School B prior to the commencement of the building of a new purpose-built middle years' facility (27/3/2009) said that the new pedagogies entailed neither 'hands-off', nor 'discovery' models, and did not require micro-management. He said that, given that most of today's students are already producing their own e-products via the technologies available in their homes, curriculum activities needed to be challenging, offer trial and error opportunities and global and local community content and multi-disciplinary approaches. He saw students working in learning teams on constructive and meaningful programs in a variety of locations – virtual and real – as the future. Caldwell referred to another prominent UK educator, Ken Robinson (2009) who believes that building creative capacity will be the core business of 21st Century schooling. A recognised leader in the development of creativity, innovation and human resources, Robinson's ABC television appearances in mid-

2009 ignited Australian educators' imaginations through his promotion of the power of progressive pedagogies.

New ways of teaching and learning

In 1999 Hildebrand cited extensive research that claimed that, for fifteen years, the constructivist model of learning had been the dominant paradigm that informed research into science education[1], even if it was rarely seen in classroom practice. Now, ten years later, constructivist approaches are still viewed by many as 'new' pedagogies.

Most teachers who use constructivist approaches prefer 'community' models, where collaboration and co-operation are the modes of operation, to 'conflict' models (as in cognitive conflict, Adey & Shayer, 2000). The favoured models include the philosophical inquiry model with its community of inquiry (Lipman, 1988) and Lave and Wenger's (1991) concept of communities of situated learning. These models are underpinned by Vygotsky's belief (1986) that meaningful knowledge is constructed within socio-cultural contexts where shared understandings develop through interacting with others and where the teacher supports or 'scaffolds' the students' learning.

In teacher education today, the linking of ages with stages is (reasonably) viewed as outmoded. This does not mean the content of Piaget's stages should be forgotten. It is important for teachers to understand that, by engaging students in activities that test their cognitive boundaries, they will progress through to the higher levels of cognitive and affective learning. Taxonomies (Bloom, Krathwohl et al., 1956; Anderson, 2001, etc) provide checklists for teachers to use when attempting to identify the presence of higher order thinking skills in both teaching and learning.

According to Hildebrand (1999), even models that encourage students to participate in discussions, undertake original investigations, or design original artefacts can be considered as low-level participation unless there is an expectation that the students will challenge or critique existing practice – a model of learning that Hildebrand described as 'critical activism'. In this learning model, students learn to be actively critical with/in a community. It is this model that the new pedagogies foster.

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[1] Hildebrand's frame of reference was science education, but she claimed (and I agree) that the model was transferable across fields.

Teachers reveal their beliefs about teaching and learning through pedagogical practices that are observable. Hildebrand (1999) simplified practice in a helpful way:

1. If teachers 'tell', they are using a transmission model.
2. If they provide students with opportunities to reflect on their views, challenge them and support active rethinking of their positions, then constructivism is the model.
3. If they use modelling and experiential learning, then situated cognition (critical activism) is the model.

The third model is regarded by many practitioners as innovative, but, in some cases, even the second model is not practised. Because two and three break with the common transmission and participatory models, they are often met with resistance unless the teachers see the need to change. This requires immersion in educational theories that make sense to them, together with modelled classroom practice.

The researchers, education consultants, and designers in our project are reporting that those teachers not adopting the new pedagogies appear to lack depth of knowledge or understanding of learning theories in association with their practice. They have found some teachers cannot articulate whether their practice belongs to category 1, 2 or 3 above.

Teacher education, departments of education, schools and teachers themselves share the responsibility for this state of affairs for the following reasons:

- If insufficient time is allotted in teacher education courses for immersion in theories of learning, then existing beliefs about practices, usually based on their experience as school students, prevails. Raymond (1997, in Ab Kadir, 2009) found that teachers' experiences as school students is as likely as any other factor to influence their beliefs about teaching content.
- Trainee teachers only receive brief introductions to the theories of, for example, Vygotsky, Paul and Friere – perhaps in a single session. Walker (2009)

believed this was partly due to the influence of the relativist social psychology research and postmodernism of the 1980s when these models began to dominate teacher education at the expense of immersion in the philosophical underpinnings of learning theories.

- Often trainee teachers might not see new pedagogical practices in schools they visit for their practicum. They are virtually powerless to try innovative models when under the supervision of some teachers. The cultures of the schools they train in and enter on completion of their course have a profound influence on their practice.
- Specialised courses, mainly at the Masters or Doctoral levels, explore the work of particular theorists, but enrolment in such courses remains low because departments of education offer teachers no career incentives for gaining further qualifications. Departments of education tend to prefer in-house professional development based on recent curriculum documents (and/or fads!) and research into their practice (with no formal qualification awarded).
- Practising teachers undertake little professional reading, claiming they are overwhelmed by ever-increasing responsibilities and accountability requirements.
- Emphasis on narrowly applied concepts of literacy and numeracy distracts practitioners from evaluating classroom practice and experimentation.
- Traditional classroom spatial configurations do not encourage varied pedagogical activities.

As well as the complexities of today's classrooms and the competing priorities impacting on teachers' time, other obstacles that can hinder teachers from employing the practices that reflect their beliefs range from clashes with school priorities and philosophies and lack of expertise, to restrictive physical spaces and timetables.

The factors outlined above help to explain why, for some teachers, the 'pedagogic contract' hardly changes, and/or why new practice 'snaps back' to where it has been (Elmore, in Fullan, 2007). Unless there is an underlying

theory behind practice and sufficient time to adjust to new ways of working, the practitioner reverts to the familiar.

New spaces and 'new' pedagogies?

As observers, we had hovered around the edges of staff discussions during School A's professional development sessions. It was obvious that, despite best intentions, absorption of the processes and thinking about the new teaching methods and models that would be needed was minimal. In one session, group presentations demonstrated they were trying to grapple with too much information. Staff presented on issues like Cultural Development, Ownership, Resources, and Visions of the Learning Culture. Each of these, and there were others, covered educational and strategic issues that were enormous in scope with sufficient material for a session on each – there was just too much to think about.

Significantly, there were no plans or models of the new spaces anywhere to be seen while the teachers were discussing the move to the new spaces. This disconnection was unfortunate, given the questions that arose, some being:

- What sort of technical assistance will be available?
- Will each mini-school have its own wet areas?
- Are there any social meeting areas or teacher common rooms?

These questions indicated that if the teachers had seen plans of their new spaces, they had not been able to read or digest the spatial changes they represented. It seemed clear they needed to be provided with representations of the spaces that they could understand e.g. orthographic drawings or a model of what was being proposed (and currently being erected 100 metres from where they were meeting) so they could fully understand the spaces, scale and furnishings.

The groups' presentations were based on existing knowledge and ways of operating. We would have liked to see them considering their desired outcomes for occupation of the new school, and how they might achieve them given the new spaces i.e. start putting themselves in the picture. There was little reference to space other than storage and offices, and the teachers did not seem able to picture

themselves working in the new classrooms. Talk about learning spaces was not on most of the teachers' radars. Previously in their teaching careers none had any reason to think about teaching spaces other than to move chairs and tables for group work, and none had been involved in the building of new facilities. Supervising repairs, or having new buildings allotted with virtually no staff input, was the most anyone had experienced.

If initial teacher education or subsequent experiences have not provided a philosophical base for practice, if professional development sessions have not resulted in the use of pedagogies centred around engaging students, then perhaps exciting, reconfigured physical surrounds might be just the catalyst needed to bring about a re-thinking of practice. If spaces offer flexible settings, if they look like the examples provided below (Figure 1), if there is no discernable 'front', would teachers be prompted to think about their teaching practice? Could they continue to use the transmission model in the spaces below?

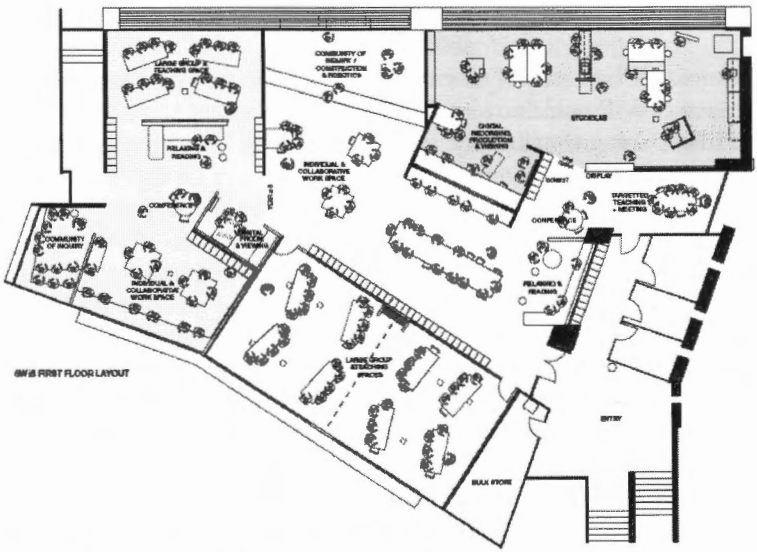

Figure 1: First story floor plan – Case Study Middle School A

It seems the answer is that, unless their beliefs and theories of learning and practice are altered, teachers tend to reorganise any space to resemble the layout of a traditional rectangular classroom.

At School A, the leadership team, because of their enthusiasm, their lengthy consultation with staff and ongoing professional development sessions, hoped that all staff members were on board. It became evident that it was only the staff who had used the new pedagogies prior to the move into the new spaces, and/or those that had the opportunity to practise teaching the new models in the 'facsimiles' of the new spaces, who were using the spaces appropriately. In a few cases, the lengthy professional development coupled with occupation of the new spaces had brought about changes to pedagogical practices. All the above-named groups were team teaching, using interdisciplinary approaches and centring their content on student-based activities.

Resistance to the new spaces

Will the new spaces most schools receive as a result of the BER money be the impetus that brings change? 'Chris of Hurstbridge's' letter to the editor (*The Australian*, June 24, 2009) reflected the strength of resistance we have heard elsewhere. Responding to an article that claimed that the 'new' BER school designs were outdated (*The Australian*, June 23, 2009) she/he wrote 'Experienced teachers know that behind the edu-babble slogans of "collaborative learning centres" and "flexible spatial arrangements"...lurks the failed 1970s fad of the open classroom'. Then followed the usual arguments against the new spaces:

> ...proposed by 'hippies of the 1970s' now running education departments and architectural firms: subject expertise is discounted, conscripted teachers supervise as many as 200 students in one learning space, students aren't being taught, the mode was abandoned 30 [40!] years ago.

Mark H. of Queens Park NSW, in the same column, added another common claim, paraphrased: we were educated in a class of 100 (later 40), our teachers did not need electronic whiteboards or covered outdoor learning areas and we all attended universities or were successful elsewhere. Mark finished with 'the government's education revolution could just be a huge waste of public funds for no genuine reform'.

Sadly, both the letter writers could still be proved right if the building and occupation of the spaces is not handled well. But neither Chris nor Mark H. had read the newspaper article properly. Mark Kelly, Head of Woods Baggott, an international architectural firm that had been involved in school designs for decades, said the new BER template classrooms were based on the traditional top-down teaching system, with the teacher lecturing to a seated class. He reported that the more innovative designs featured circular tables or more flexible spatial arrangements that allowed children to interact and learn by participation. Kelly may have been talking about the templates of other states because some of the Victorian templates that have evolved over the past few years contain innovative and effective learning spaces similar to those we observed at School A.

Critics seem to assume that the school buildings of the 60s and 70s were not based on solid educational foundations. However, in the introduction to his text, Morriseau (1972) lists the ways the learning spaces were a direct outgrowth of education reform. The list is remarkably similar to the factors behind today's spatial reforms. It shows that Open Spaces were not just designer imposed. Some of the factors behind the 60s' designs were:

- The curriculum was upgraded.
- Team teaching and other innovative strategies were emerging.
- Non-graded continuous progress programs for individuals were designed.
- Students were made more responsible for their learning.
- New technologies were changing practice.

The architectural responses to, and challenges posed by, the new pedagogies and practices in the 60s and 70s resembled those faced by today's designers of educational spaces. A building designed around team teaching required spaces for groups (large and small), seminar rooms, some traditional spaces and spaces for independent study. However, Morriseau believed that many of the new spaces were as rigid and inflexible as their 'egg-crate' predecessors (and successors!) and would not be able to adapt to newer/later educational reforms. He reported that operable

walls were often left permanently open or closed. Open, they often prevented acoustical effectiveness and their lack of ease of operation meant that internal structural supports were needed. Members of our team have observed similar situations in new schools visited in 2009. 'Schools-without-walls' is the 60s and 70s model best-remembered and most maligned by those who use this model as the reason to oppose all the new educational spaces. In this version of open planning, there were no fixed walls or partitions, and moveable partitions and screens provided visual privacy. In theory, acoustic protection was to be provided by carpeted floors, sound-absorbent ceiling tiles and adequate physical separation of class groups. Educators and designers who supported the open plan buildings of the 60s believed these open spaces were adaptable to any educational teaching approach.

Preparing for new learning spaces

In terms of teacher preparation for inhabiting new spaces, none of the teachers we have observed in our study had concepts of physical learning spaces or architectural terms mentioned during their teacher education. In order to address this absence, systematic inclusion of spatial awareness to expand the teachers' content and pedagogical knowledge base is required for both practising teachers and during initial teacher education. Fisher is currently preparing a *Teacher's Change Management Toolkit* to assist schools to prepare for and inhabit new infrastructure. Teachers build their knowledge with experience, but it must be based on a solid theoretical foundation and accompanied by concrete classroom application, practice not description, and collegiate support or collaborative, shared learning. Theoretical aspects of space must be contextualised in the light of classroom experiences and have explicit, meaningful application to classroom practices. This is referred to as situated learning or pedagogical content knowledge grounded in classroom practice (Nilsson, 2008).

The relationship between changing pedagogies and the occupation of spaces

In School B, a P-12 private school we are observing, the principal's strength of vision and determination to bring about wholesale change to teaching and learning practices

was forcefully stated at the beginning of a lengthy process leading to the occupation of a middle years' learning space under construction:

> The silo model currently operating in the junior school is no longer an appropriate model. Neither is secondary teachers using 'teacher control' and isolated subject content. Learning is too complex to be encased this way. Research is showing that puberty is occurring earlier and current learning theories reveal that students learn in a variety of ways in a range of settings. A new language of learning is required. Good leaders are required for the 21st Century – people who are able to think creatively. Our current model of teacher control, 'busy work' and summative testing model inhibits creativity.

The principal believed it was important for her staff to speak up about their concerns regarding the process of adopting new pedagogies and inhabiting new spaces, and to admit it if they did not understand theories and/or jargon. She understood that some staff members would need 'hand-holding' as they undertook change, professional development as required, and the opportunity to investigate pedagogical and built models outside the school and find evidence of improvement in outcomes. This process is occurring at Schools A and D.

At the same session, the deputy principal described the traditional practices still observable in the lower secondary school. The Year 7 curriculum was described as the 'Know Zone' delivered via 11 teachers through 11 subjects. The Year 8 program comprised 6 x 50 minute sessions per day on a 10-day cycle. Improving the current uses of existing buildings, leadership structures, timetabling and pedagogies was to be undertaken. The principal added: 'As I walk around the school, I am not seeing de-constructed physical spaces or team teaching'. She believed the Middle Years' Learning Centre could act as a research hub that generated the evidence that the new spaces would aid the adoption of new pedagogies. The key requirements were the same as for any stage of schooling, but with an emphasis on adolescence.

Raising the profile of the role of learning spaces in learning

Ritchhart, a member of Harvard's Project Zero and extremely influential in teacher education today, named the environment as one of eight cultural forces that complement the criteria for classroom thoughtfulness. In his study that sought evidence of these forces, number eight was 'The physical: environment and artefacts present in the room' (2002, pp. 146-147). He mentioned the classroom environment when he spoke at Melbourne University (27/5/09), saying that 62% of teachers surveyed for his study referred to changes in their classroom environment but gave no detail. When asked for clarification, expecting (or rather, hoping) that this international leader in the education field was referring to education spaces, Ritchhart replied:

> I don't have anything written on environment. This data I was referring to was from an analysis of teacher reflections on the changes in their classrooms and instruction. When it comes to the environment, most of the comments related to documentation of students' thinking. (Personal communication, 9/6/09)

He attached the results to his email, and examples like #3A 'Materials are displayed neatly in clear storage containers so students may be inspired by their color, form, shape, texture etc' probably did not refer to classroom space. However, the next section, 'Environment: classroom set-up', contained quotes from teachers that could only be thought of as spaces specifically set up to accommodate the new pedagogies advocated by Ritchhart and the other Project Zero leaders (i.e. David Perkins and Howard Gardner):

> (#2A) My classroom: placement of chairs at table groups to maximize ease of small group to whole group discussion.
> (#27A) The first thing an outsider notices is that my classroom is set up for discussion between my students. In years past (long past) my set up focus was to present discussion.
> (#35B) Change in physical environment of classrooms.
> (#39A) Physically my room is set up in small group areas. I now have a gathering space where

> we can share our ideas and make them visible in writing.

Ritchhart does not appear to regard classroom physical and spatial elements as environments and important as separate entities. Given his influence in teacher education, this represents a lost opportunity.

If we accept that cognitive, physical and affective intellectual development rely on interactive, dynamic and creative processes, and if we accept that people have preferred thinking and learning modes (e.g. visual, kinaesthetic, aural, scientific etc), then it is reasonable to believe that learning spaces should provide the environment to foster this development. The curriculum and research leader at School B (interview, 15/5/09), although acknowledging that spaces played an important role, believed that good teachers could operate in any space, and therefore her emphasis would be on establishing the new pedagogies prior to occupation of the new space. Educators and designers at School A had a different point of view. Establishing the new ways of teaching and learning were regarded as integral to the built environment being created, but the education spaces were seen as paramount. Featherston, the interior designer who had been part of the PD process almost from inception, believed the elements of spatial visual transparency as well as acoustic containment were a vital component of education (interview, 21/5/09). As well, she said that the students who will be:

> ...on one floor plate should feel part of a community. This helps build a relationship of respect and trust. The transparency of spaces (i.e. lack of barriers) means they can learn about, and from others. This helps them build a sense of identity in relation to others. All of this leads to rich learning experiences and opportunities to learn from closer personal relationships.

In new and more open spaces (but not those as open as the model from the 60s and 70s) teaching activities will still need to be adjusted according to the spaces. For example, it would be difficult to have a community of inquiry discussion adjacent to the lounge area because the noise would impact. Featherston believed that there was a quality

of experience tied to the richness of the varied spaces. Activities could progress from playful, to experimenting, to sustained inquiry, with resources available nearby, as and when needed. Traditional classrooms cannot offer this flexibility. School A's education consultant believed that once the buildings were there, the teachers would have to review their principles and values.

A major advantage believed to be provided by the flexible spaces at School A was that the staff members could form close relationships as a result of team building and collaborative teaching models that both they and their students enjoyed. On occupation of the new spaces, discipline problems had virtually disappeared. It was believed that this was because the students felt privileged to belong to specially designed 'home' spaces and were engaged by the new activities. Attendance rates had rapidly improved.

Unfortunately, having new spaces does not automatically equate with engagement of students. At School C, another Year 7-12 government school, we observed teachers with minimal preparation to inhabit and operate in newly configured spaces (Fisher, personal communication, 12/12/2008) trying to operate as individuals using traditional teaching methods (to the extent that this was possible) and not engaging the students. 'Nooks' merely offered opportunities for students to be off task and unobserved, one group of boys spent an hour in the toilets, and the teachers spent much of their time disciplining other students trying to keep them occupied.

Bunting, an architect (also at the School B planning session, 27/03/2009), believed that schools today should be providing for personalised learning and using community resources as an open classroom e.g. the local racecourse or the nearby university campus. Other essentials were that the scale and size of buildings and landscape had to be right, and third spaces i.e. spaces not committed to anything, but where students could hang out. He asked, 'Can we follow, in school design, the changes for the better that have occurred in home design?' This seemed like an excellent starting point for discussions about the design of educational spaces.

'I can't visualise the space until it rises out of the ground': school leaders think about the construction process

Hedley Beare, the respected Australian educator and writer (speaking at School B, 27/3/2009), stressed that a narrative that summed up what a school wants to achieve must remain the essential driver of all phases of the construction process. He believed it was vital for school communities to envision how staff and students would fit into new facilities and ensure that teachers, parents and students were involved from the beginning and that pedagogical approaches and the provision of ICT fitted their vision. The speed associated with the BER was not allowing any of the above.

'Transforming Pedagogy and Space' was the name given to a hastily called assemblage (12/3/2009) of school leaders from Melbourne's southern metropolitan region. The need for haste resulted from the federal government's BER grant (billions of dollars) for new buildings and refurbishments that had an unreasonably short timeline attached. The speakers included Fisher and Goddard, education spaces expert consultants with knowledge of the international scene.

An 'aha' moment for those in the room occurred with the realisation that over the past forty years, these school leaders had barely needed to think about their schools' built environments other than for maintenance issues or to occupy a pre-designed, allotted space. They were used to holding school community barbecues to raise money to repair leaking roofs, having working bees where parents painted walls, and making-do with their buildings and grounds. Space had not been considered alongside pedagogy, except perhaps when moving classroom furniture aside or using corridors for discussions, gym or group work.

The school leaders at the seminar were unsure about how many details the community would need to provide if an architect, draughtsman and/or facilities planner was assigned or briefed. During this discussion, terminology became an issue as 'foreign' terms arose e.g. building footprint, egress etc. This led to the realisation that, for communication between designers and educators, architectural language would need to be in layman's terms or explained. The educators realised they would have to learn to read plans and develop knowledge of technical

specifications and building codes. Other items to be attended to would include security, maintenance and access issues e.g. changing globes in high ceilings, energy ratings considerations, how spaces would function on wet days, traffic management issues, and the involvement of local authorities in aspects of the new build. The installation of new technologies (always changing) would require appropriate power and cabling infrastructure and teacher development associated with the new technologies, and this involved financial implications and extra technical staff.

Some of the school leaders had experienced the 'schools-without-walls' design of the 60s and 70s noted for their poor acoustics, lack of storage, little opportunity to display or store projects, and accompanied by a general lack of teacher acceptance of the flexibility they provided. They recognised that the size and function of spaces, including circulation issues and catering for different groups' needs, would have to be carefully considered and catered for. Also, the brief would have to be properly developed so it was clear how the spaces would be used. Details of placement of furniture and positioning of power points to ensure that lockers did not cover vents would also be required. The inclusion of environmentally sustainable design features and functionalities was seen as essential.

They foresaw that meeting budgetary constraints without affecting the integrity of the design would be a challenge. There would be a need to first set the budget, get an elemental cost plan and investigate the impact the desired finishes would have on the cost plan. They wondered whether they could prevent the landscaping and acoustic features from being the first elements to be taken out of the brief due to a budget blow out. They knew that risk management for the project (trip over cables, trolleys etc) and an ESD plan would be other factors to consider.

The thought of new spaces exposed the need to change existing traditional pedagogies and practice to the collaborative, inter-disciplinary (or multi-disciplinary) models encouraged by the new spatial concepts. Ongoing professional development for staff, from the planning phase to occupation, was seen as a vital component of the move into new spaces, but was there support or funding for this? There was nothing obvious in the BER announcements. The BER seemed to be more interested in supporting the

building industry. Lengthy PD and the opportunity to look at other schools' layouts and plans and visits at pre- and post-occupation stages were seen as important factors in the preparation to build. (In August 2009 Victoria's education department announced there would be assistance for schools undertaking building projects.)

In secondary schools, the transition program for students moving from primary level to Year 7 would need to include positive information about, or experiences in, the new spaces, as they would not fit primary school students' stereotypical vision of what being in a secondary school was like i.e. ten subjects, teachers, rooms etc.

It was recognised by the school leaders at the seminar that during both the design and build stages, decisions would have to be made about who the members of the school leadership group would be e.g. principal, ICT expert, curriculum coordinator and council representative. Other roles would include individuals involved in pre- and post-build. For example, who would meet with the tradespeople, select and order furniture, hire maintenance staff and decide on the siting and configuration of ESD factors (e.g. acoustics, lighting, ventilation etc), and who would be responsible for training and operating monitoring equipment? Other factors to consider would be: coping during down-time in administrative staff areas, covering teachers needing student-free time while occupied in business associated with new buildings, finding out about electrical and plumbing certification, establishing checklists for defects, liability, warranties, deciding where to store the new furniture and equipment as it arrives, and determining who would decide what equipment would be re-used and move it.

It was obvious to all present that the plans for their new facilities should follow decisions about visions for the future school, and whether to use the existing BER templates – rather than adopting, or even adapting them. They felt there was no time to undertake this process adequately.

One major question remained: could the teachers visualise the spaces they were about to plan and then occupy? It was agreed that not many teachers, including those at the seminar, had these skills or the ability to read plans. Who and what could help them?

The role of the designers

It seems obvious that designers will benefit from knowledge of current educational pedagogies. However, if there is an inconsistency in the way that organisations are moving ahead, for example, some staff members are adapting while others remain resistant, it places the architects who are responding to the key contact personnel, in a difficult place. They are acting in good faith and responding to a brief – usually from school leaders plus selected others. But unless they have contact with the inner workings of their client schools, they will not know whether the project is being conducted in a cohesive manner within the organisation. Following their initial briefings, architects probably assume that schools are presenting a united picture of the school's aims. They need to maintain contact with the whole staff on an ongoing basis.

Models for this practice exist elsewhere. As part of the building process of the National Australia Bank's Docklands centre in Melbourne, the architects were trained in change management. Teams spoke to groups of future users of the new spaces who were able to express their different needs and understandings. It was these workshops that generated the design brief.

In the case of new schools, space can be the driver of pedagogy, but the occupiers must be able to understand and manipulate spaces to support their educational vision. As well, the demands of the clients can create a new world of design use and management (Thomson, in Worthington, 1997) so a two-way learning process can occur. Prior to the build, DEGW sends questionnaires to all staff asking for their current uses of space and changes they feel would assist their teaching approaches. Of course, this requires teachers to be able to think spatially i.e. about current spaces and how they might be improved. We are hearing from designers that teachers find this very difficult. It is similarly important for the designers to gain knowledge and understanding of current and innovative practices and pedagogies in order to be able to assess the spatial effectiveness of the current situation. This data can be used to model different scenarios that modify key elements, for example, new technologies will require modified storage spaces.

Thomson (1997, p. 120) suggested that design-related presentations to key leaders and staff should include the major issues arising from the analysis of questionnaires and staff focus groups, understanding of major facility management issues, and a range of concept options and their impact on the future. He believed that concept development should include:

- Plans showing how spaces might be used;
- Budgets detailing all spaces;
- Descriptions of work settings and technological requirements;
- An indication of the new management policies that the new spaces will require.

In schools, a post-occupancy phase for the designers would involve: asking teachers about their experience of the spaces, ongoing discussions of the designers' aims and concepts of the spaces, and a revisiting of the data gathered from initial questionnaires. This would keep both the designers and teachers involved in ownership of the spaces, provide valuable insights for the designers, and hopefully assist the occupier's sense of purpose. Providing sufficient time for helping the occupiers to adapt to new spaces is vital, because in most instances their pedagogies will be changing. Thomson (p. 122) saw appropriate occupier training as a vital component of the change process. He stated that no project should be regarded as a 'normal' fit-out because of the human element. Any actions that affect spatiality will be complex because it entails all the conditions and practices of individuals and groups in relation to their environments.

Formal preparation of staff

As stated previously, initial teacher education and in-service PD are vital components of teacher knowledge. In the case of major change, whole school ongoing PD is paramount. Teacher education institutions should take responsibility for their role in systemic change. It is vital for teacher training institutions to look for opportunities to inject built space awareness into their courses. For example, members of the Council of Educational Facilities Planners International (CEFPI) visited trainee teachers at Melbourne University (13/5/2009) to introduce the link between educational spaces

and pedagogies. The university staff followed this with activities that immersed the students in thinking about physical spaces and places for learning (beyond dividing children into groups, moving chairs etc). Groups of teacher trainees were given photos of traditional and innovative primary school classrooms and asked to consider the following questions about space and the learning environment:

- What do the classrooms tell you about the learning environment?
- Describe how the physical layout of a classroom can affect the learning environment, enhance learning and minimise disruption.
- What are the messages about learning and thinking inherent in the spaces?
- Does the physical environment depicted respect the inhabitants of the space?
- How is the space organised? (Think of interest areas/activity centres and personal territories.)
- How are the physical layouts inclusive of all students? (e.g. child with a learning difficulty, child with hearing loss or visual impairment, child who is easily distracted.)
- What are the advantages and disadvantages of the physical layout of the classroom? (Think about movement from one activity to the next.)
- How would you improve these learning environments spatially?

Engaging trainee teachers to think about spaces is valuable preparation for their future occupation of spaces whether new or traditional. Universities in Australia are starting to provide innovative spaces in which trainee teachers can practise teaching the new pedagogical approaches within appropriate spatial environments. In some instances the furniture and 'fittings' are not fixed and can be manoeuvred to suit session requirements.

In schools, a shared understanding of values, vision and structure will be required before starting the building process and this will need to be re-visited as new spaces are occupied. It will be important to think long term about new spaces that will be occupied by teachers and students for

many years to come. Both envisioning and visualising spaces are skills that are very difficult for students and teachers. It has not been part of their education. So graphical representations (e.g. orthogonal diagrams) of the new spaces should be produced, and teachers, students and parents should be given the opportunity to accept and reject features. As well:

- Set up opportunities for teachers to visit other schools with innovative spaces;
- Establish trial spaces to familiarise staff with approximations of the new spaces;
- Engage teachers in co-teaching activities and planning;
- Assure the teachers that it is okay for it to seem like a mystery to begin with.

It is important to ensure the new school spaces will be understood by the user-community by inviting teacher, parent and student voices. In the UK *Joinedupdesign* model, the local council supervising the design and build of new schools brings together a whole school community and the designers. Ty Goddard (Head, British Council for School Environments, 2009) reminded school representatives (Wesley College, Elsternwick Campus, 11/3/2009) to ensure they get a 'welcome' to students into the design because of the need to establish ownership (Kidder, 1991).

The creation of new spaces has been driven primarily by constructivist philosophies with student engagement as the desired outcome. Their effectiveness will be measured by the extent to which the teachers are satisfied with both the pedagogical practices and the learning outcomes occurring as a result of occupying these spaces.

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References

Ab Kadir (2009) *Rethinking Thinking Schools, Learning Nation: A Case Study of Teachers' Knowledge and Students' Perceptions of Critical Thinking in the Singaporean Curriculum*, PhD penultimate draft, Melbourne Graduate School of Education, The University of Melbourne.

Adey, P. & Shayer, M. (2000) 'Cognitive development in a secondary science setting', in *Research in Science Education*, Vol. 30, No. 4, Netherlands: Springer.

Anderson, L.W., David, R., Krathwohl, D.R., et al. (Eds). (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Allyn & Bacon, Boston, MA (Pearson Education Group).

Atkin, J. (2009) 'School vision and curriculum planning document'. Handout at teachers' PD session at Dandenong High School, 22 July.

Barab, S.A., Thomas, M.K., Dodge, T., Squire, K. & Newell, M. (2004) 'Critical Design Ethnography: Designing for Change', *Anthropology and Education Quarterly*, Vol. 35, Issue 2, pp. 254–255.

Barker, R. G. (1968) *Ecological psychology*, Stanford, CA: Stanford University Press.

Beare, H. (2000) *Creating the future school*, London: Routledge Falmer.

Block, J.H. & Hazelip, K. (1995) 'Teachers' beliefs and belief systems', in L.W. Anderson (ed.), *International Encyclopaedia of Teaching and Teacher Education*, 2nd edn., New York: Pergamon Press, pp. 25 – 28.

Bloom, B.S., Englehart, M.D., Furst, E.J., Hill, W.H, & Krathwohl, D.R. (1956) *Taxonomy of educational objectives: Handbook 1 – cognitive domain.*

Handbook II – affective domain. New York: David McKay.

Brown, A.L. (1992) 'Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings', *The Journal of the Learning Sciences*, 2(2), pp. 141-178.

Brown, R. (1993) *Schools of Thought*, San Francisco: Jossey Bass.

Bryman, A. (2004) *Social Research Methods*, Oxford: Oxford University Press (2nd edition).

Clark, C.M. & Peterson, P.L. (1986) 'Teachers' thought processes' in M.C. Wittrock, *Second handbook of research on teaching*, New York: Macmillan, pp. 255-296.

Cleveland, B. (2009) 'Engaging spaces: an investigation into middle school educational opportunities provided by innovative built environments', Conference Paper – 16th International Conference on Learning, 1-4 July 2009, University of Barcelona, Spain.

Dewey, J. (1966) *Experience and education.* New York: Collier Books.

Elmore, R.F. (1996) 'Getting to scale with good educational practice', *Harvard Educational Review*, 66(1), pp. 1-26.

Fielding, S. (2000) 'Walk on the left! Children's geographies and the primary school', in Holloway, S.L. & Valentine, G. (Ed.), *Children's geographies, playing, living, learning*, London: Routledge.

Fisher, K. (2002). 'Schools as "prisons of learning" or, as a "pedagogy of architectural encounters": A manifesto for a critical psychosocial spatiality of learning', PhD thesis, Flinders University of South Australia. South Australia.

Fisher, K. (2004) 'Revoicing classrooms: a spatial manifesto', *Forum*, 46(1), pp. 36-38.

Foucault, M. (1975) *Discipline and punish: the birth of the prison*, New York: Random House.

Friere, P. (1970) *Pedagogy of the oppressed*, New York: Herder and Herder.

Fullan, M., Hill, P. & Crevola, C. (2007) *Breakthrough*, Heatherton, Victoria: Hawker Brownlow Education.

Gardner, H. (1993) *Multiple intelligences: The theory in practice*, New York: Harper Collins.

Giroux, H.A. (1985) 'Critical pedagogy, cultural politics and the discourse of experience', *Journal of Education*, 167(2), pp. 22-41.

Goddard, Ty. Head of the British Council for School Environments visitor to SGS, 2009.

Gump, P. (1980) 'The school as a social situation', *Annual Review of Psychology*, 31, pp. 553-582.

Habermas, J. (1971) *Towards a rational society*, London: Heinemann.

Habermas, J. (1974) *Theory and practice*, London: Heinemann.

Habermas, J. (1989) *The structural transformation of the public sphere*, Cambridge, MA: The MIT Press.

Hildebrand, G. (1999) 'Con/testing Learning Models', Paper presented at the AARE and NZARE conference, December, Melbourne.

Hill, P. & Russell, J. (1999) 'Systemic, whole-school reform of the middle years of schooling', *National Middle Years of Schooling Conference, March 1999*, Centre for Applied Educational Research, University of Melbourne.

Kidder, T. (1991) *Among school children*, Mass: Holyoke.

Lackney, J.A. (1999) *Assessing school facilities for learning/assessing the impact of the physical environment on the educational process*, Mississippi State, Mississippi: Educational Design Institute.

Lave, J. & Wenger, E. (1991) *Situated learning: Legitimate peripheral participation*, Cambridge: Cambridge University Press.

Leach, N. (1997) *Rethinking architecture: A reader in cultural theory*, New York: Routledge.

Lefebvre, H. (1991) *The Production of Space*, Oxford: Blackwell.

Leonardo, Z. (2004) 'Critical Social Theory and Transformative Knowledge: The Functions of Criticism in Quality Education', *Educational Researcher*, 33(6), pp. 11-18.

Lipman, M. (2003) *Thinking in Education*, 2nd edn., UK: Cambridge University Press.

Lippman, P.C. (2007) 'Developing a theoretical approach for the design of learning environments', *Connected: International Conference of Design Education*, Sydney.

Lortie, D.C. (1975) *Schoolteacher*, Chicago: University of Chicago Press.

McLaren, P. (2007) *Life in schools: an introduction to critical pedagogy in the foundations of education*, London: Pearson Education.

Matthews, M.H. (1992) *Making sense of place: Children's understanding of large-scale environments*, Hemel Hempstead: Harvester Wheatsheaf.

Morriseau, J.J. (1972) *The New Schools*, New York: Van Nostrand, Reinhold.

Newmann, F. (1992) 'Higher-order thinking and prospects for classroom thoughtfulness', in F. Newmann (Ed.) *Student engagement and achievement in American secondary schools*, New York: Teachers College Press, pp. 62-91.

Nilsson, O. (2008) 'The Parent-Teacher Meeting: an e-service for participation and inclusion', *International Journal of Social and Humanistic Computing*, 1(1).

Paul, R. (1995) *Critical Thinking*, Melbourne: Hawker Brownlow.

Piaget, J. (1928) *Judgment and Reasoning in the Child*, Reprinted 1976 New Jersey: Littleford, Adams.

Ritchhart, R. & Perkins, D. (2008) 'Making Thinking Visible' in *Educational Leadership*, Vol. 65, No. 5, pp. 57-61.

Robinson, K. & Aronica, L. (2009) *The Element: How Finding Your Passion Changes Everything*. UK: Viking.

Rodrigues, S. (2001) in *Perspectives on Practice and Meaning in Mathematics and Science Classrooms*, Clark, D. (ed), Netherlands: Springer.

Schon, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*, London: Temple Smith.

Soja, E.W. (1989) *Postmodern geographies: The reassertion of space in critical social theory*. London: Verso.

Thomson, T. (1997) in *Reinventing the Workplace*, Worthington, J. (ed), The University of York: Architectural Press.

Vygotsky, L. (1986) *Thought and language*, Cambridge, Mass.: MIT Press.

Walker, R. (2009) ABC radio broadcast – Background briefing, July 19, 'Who stopped the music?'.

Yin, R.K. (2003) *Case study research: Design and methods*, London: Sage Publications.

Equitable Pedagogical Spaces: Teaching and Learning Environments that Support Personalisation of the Learning Experience

Ben Cleveland (University of Melbourne)

Abstract

This paper introduces the concept of equitable pedagogical spaces and discusses the potential educational gains that may result from the creation of physical learning environments that are designed to facilitate equity of instruction. Incorporating Monahan's concept of 'built pedagogy', and informed by work in constructivist educational theory by Dewey, Gardner, Vygotsky, Friere and Bruner, the paper explores the potential for 'space' to play a significant role in supporting the authentic personalisation of student learning in schools.

Figure 1: Group work and collaborative research activity settings

Introduction

The term 'equity' is frequently associated with discussions regarding education and schooling. Such discussions often focus on the provision of schooling that is non-discriminatory and inclusive of people of diverse ethnicity, religious following and socio-economic circumstance (Singh & Taylor, 2007). Sometimes 'equity' enters discourse concerning the quality of facilities that schools are able to offer their clients – the students. Rarely is 'equity' associated with the diverse instructional needs of individuals.

This paper explores the ways schools may better cater for the individual needs of learners. In addition, it seeks to extend educational discourse regarding issues of social justice by considering the concept of equity through a lens that views space as a powerful tool that may be harnessed to improve students' learning experiences.

The paper examines whether the quality of learning experiences in schools can be improved through the creation of learning environments that are intended to facilitate equity of instruction at the micro level of the 'learning situation'. It is suggested here that the re-organisation of physical spaces in schools may facilitate a dramatic shift in the ability of schools to authentically personalise student learning.

Background: instruction, the learning environment and built pedagogy

The Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008) states, 'Goal 1: Australian schooling promotes equity and excellence'. When elaborating on this goal, the Declaration advances the position that schools must 'promote personalised learning that aims to fulfil the diverse capabilities of each young Australian'. 'Personalisation' and 'catering to individual differences' have become buzz words in schools over recent years, but can schools provide a personalised learning experience for students within a system that is historically-based on 'equality'?

Equality of both instruction and learning environment has been one of the fundamental tenets of schooling and school building design since the 'classroom' emerged during the Industrial Revolution (Lackney, 1998). For more than 200 years the factory production-line

metaphor has informed not only the design of school curricula, pedagogies and assessment practices, but also the design of the school buildings that have supported these education models. As Western societies and economies continue to evolve from centres of manufacturing to become dominated by information services, the vast majority of schools appear to have maintained the Henry Ford production-line approach.

Changing perspectives on educational provision, influenced by globalisation, technological advancements and the exponential rate of information production, has meant that the requirements of school facilities are being reviewed. Stephenson, in a publication entitled 'Educational Trends Shaping School Planning and Design: 2007' (p.1), believed that:

> Growing numbers of educators and policymakers have begun to realise that 'identical' school facilities do not translate into 'equal opportunity' for students. While some students function measurably better in one kind of environment, others perform more effectively in another; the differences depend on student talents, abilities, and needs.

Only a few people within the education community are engaged in discourse regarding the impact of physical space on the learning experiences of students. Broader consideration of school spatial settings and spatiality – space created through the interaction of the physical and the social (McGregor, 2004) – may advance the capacity of schools to meet the individual needs of students. The influence of space in schools needs to be considered alongside the standard educational mechanisms of curriculum, pedagogy and assessment.

Monahan's (2002) concept of 'built pedagogy' provides a window through which to view the influence of space on educational practices. He defined built pedagogy as the 'architectural embodiments of educational philosophies' and described how the creation of school spaces was intrinsically tied to the pedagogical philosophies that informed educational practices:

> Built pedagogies operate along a continuum between discipline and autonomy. On the disciplinary side, they can restrict learning possibilities by not allowing for certain movements or flows. For example, desks bolted to the ground make flexible interpretations of spatial use extremely difficult, and they impose directions for how space should be used. In the middle of the discipline/autonomy spectrum, there are built pedagogies that enable but do not require flexible behaviors: movable partitions and desks illustrate space left open to interpretative use. Finally, on the autonomy end, open classrooms invite and almost demand that individuals appropriate space to their perceived needs. (Monahan, 2002, p. web)

In the discussion of equitable pedagogical spaces below, you will see that these environments provide a range of purposeful spaces that enable individuals to flow between activity settings where they may pursue personalised learning tasks. Subsequently, learners may appropriate smaller spaces within each activity setting through the movement of non-fixed furnishings.

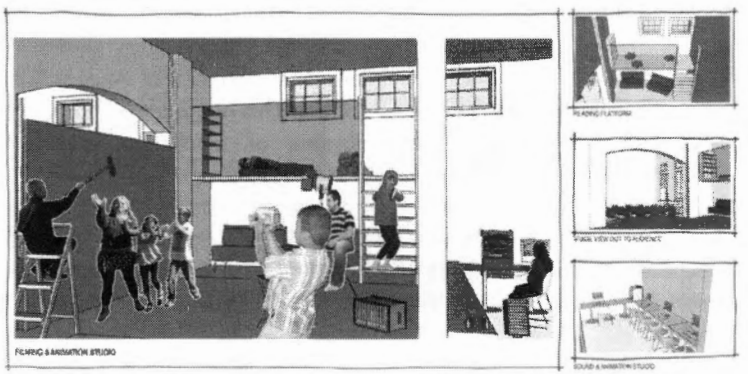

Figure 2: Filming and animation studio activity settings

A very short history of spatial innovation in schools

Over time there have been small pockets within mainstream education systems that have resisted traditional practices and spaces. These groups have created a range of alternative environments in which to conduct activities of teaching and learning. Innovations in school spatial design, however, have so far been no match for the widespread acceptance of the 'classroom' as a suitable environment for educating students.

The development of the open plan classroom was one significant attempt to try something different. This design concept was informed by the open learning movement of the late 1960s and early 1970s. Popularised by the Educational Facilities Laboratories in the United States (Marks, 2009), the open plan classroom 'experiment' crossed international borders and, for a time, was widely accepted as best practice design in some areas of Australia, Britain, Canada, the USA (Beck, 1980; Rodwell, 1998) and Israel (Klein & Eshel, 1980). The movement's influence faded during the late 1970s and the early 1980s and the production-line concept of the 'cells and bells classroom' came back into vogue.

Although perhaps not considered mainstream, schools aligned with the Reggio Emilia education movement continue to innovate with regard to the design of learning environments. The evolution of the spaces in these schools has come about following careful consideration of early childhood education approaches and the development of an educational philosophy that is strongly allied with the idea of learner-centred education. The designs of these schools are founded on the notion that students should have a significant influence on the types of activities in which they engage. This has resulted in learning environments that are composed of diverse activity settings, rather than uniform classrooms. Significantly, the students are able to move between different settings – often as required – to engage in a wide variety of learning activities; from reading and writing, to painting, digital design, play making, music composition, group discussion and so on.

Spatiality in schools

Spatiality is defined as 'space created through the interaction of the physical and the social' (McGregor, 2004) or as 'the social production of space' (Soja, 1989). Studies by human geographers Fielding (2000) and Jacobs and Jacobs (1980) give us insight into the role that spatiality can play in creating productive learning situations for students.

Based on research into students' geographic experiences in primary schools in the United Kingdom, Fielding suggested that the role of space in schools should be more closely considered and that understanding the dynamics of children's geographies may lead to significant improvements in pedagogic practices. Fielding identified

schools as 'hot beds' of moral geographies and suggested that schools are places were moral codes dictate 'how and where children ought to learn and behave' (Fielding, 2000, p. 231). He concluded that the playing out of these codes has a significant influence over children's geographies, thus affecting their use of space and their learning experiences.

Fielding described unequal institutional power relations as having moulded the behaviour of school children for many years. He described the degree to which children are included as active participants in the use of space as being largely dependent upon the structuring of the teaching, learning and management within a school. Jacobs and Jacobs (1980) considered similar issues and contended that the inclusion of students as managers of school spaces should become part of the school curriculum so that children's spatial literacy may be developed, along with their ability to exert control over their environment.

Equitable pedagogical spaces

What might constitute an equitable pedagogical space? In other words, what might a teaching and learning environment that supports a personalised learning experience for students look like and how might it be used?

The architectural drawings shown throughout this paper, including the plan diagram below (Figure 3), provide a visual example of how an equitable pedagogical space might be interpreted spatially.

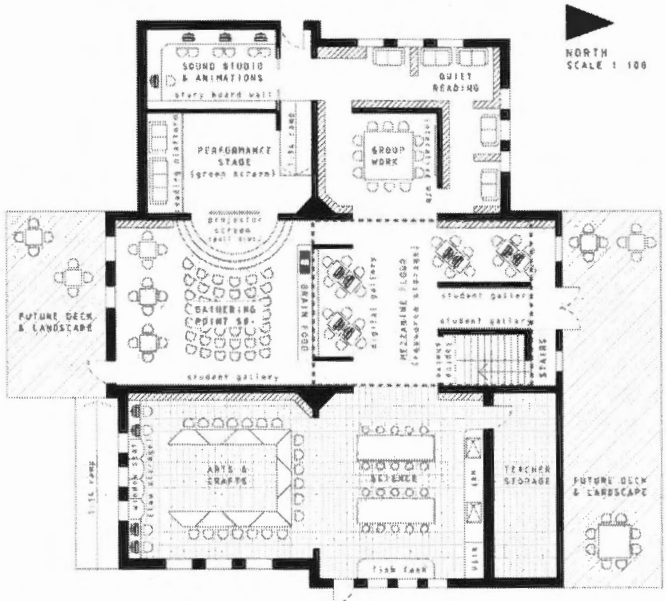

Figure 3: Ascot Vale Primary School Multi-Age Learning Centre (Prep-Year 6) – school refurbishment project (100 students)

Introducing 'equitable pedagogical spaces'

An 'equitable pedagogical space' is a learning environment in which students have the opportunity to pursue learning through the range of learning modalities that will best fulfil their educational needs. These environments physically demonstrate an acknowledgement that each student comes to school with different interests and talents, and therefore requires a different overall learning experience. Some students may require additional direction and support in some areas, while others may thrive when given the opportunity to be more self-directed. Equitable pedagogical spaces encourage and enable students to learn in ways that allow them to attain their personal academic and social potential.

Equity is achieved when the diversity of student needs across a cohort is being met and when each student has the opportunity to engage in learning that is appropriate to them. In addition, equitable pedagogical spaces play a role in breaking down divisions between learning at school and learning outside of school, so that students can make better connections between what they are learning and the relevance of that learning in a wider context.

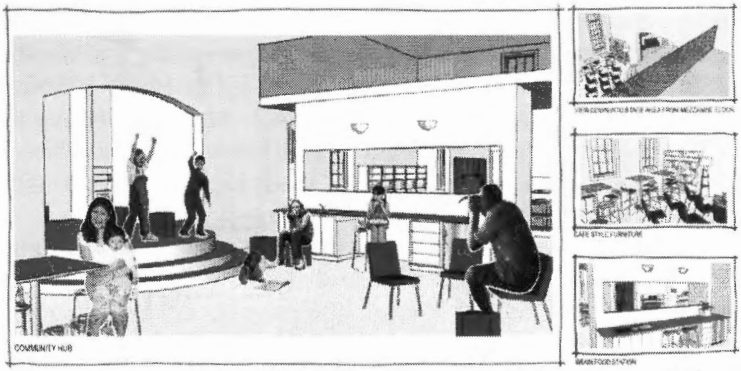

Figure 4: Community hub – school/wider community interface activity setting

Equitable pedagogical spaces support teachers in personalising the learning experience for each student. Personalisation may be supported by providing students with access to a range of activity settings in which they may engage in diverse learning experiences. These settings may be teacher or student led, depending on the immediate requirements of the students.

In equitable pedagogical spaces, the power relationships between students and teachers are such that students are commonly able to move between settings on an as-needed basis. In these environments, teachers play a number of different roles. They may act as instructors, guides, mentors and facilitators. Teachers are required to change roles depending on the needs of the students. Generally, equitable pedagogical spaces require teachers to work in teams so that they can respond to the diverse needs of the students.

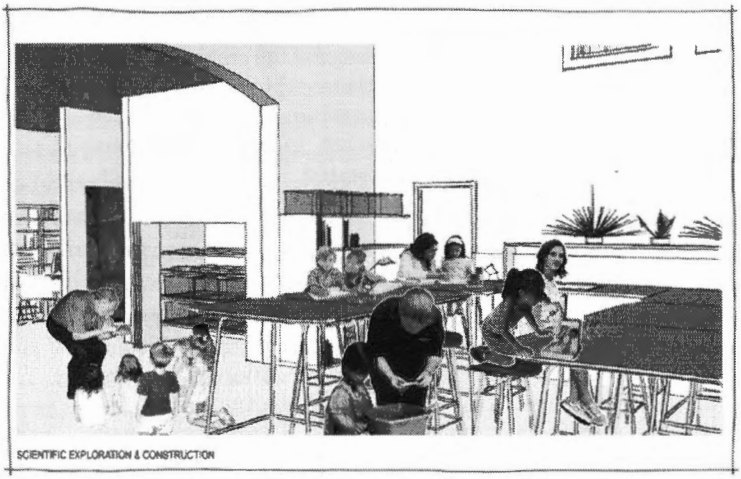

Figure 5: Scientific exploration and construction activity setting

In one example of how this may work, one teacher might oversee a large group of students working on projects or extended tasks within a particular setting. Concurrently, in interconnected spaces, a second teacher might provide instruction in a tutorial situation to a smaller group of students working on developing a particular skill, while a third teacher may sit with two or three students to discuss the way forward regarding a particular aspect of their work.

The tracking of student progress and achievement in equitable pedagogical spaces requires the development of individual learning plans and formative assessment practices. The creation of student portfolios may be one method of collecting evidence of the work that students do both as individuals and as members of groups.

Equitable pedagogical spaces and educational theory

A driving force behind reform in educational thinking during the past century has been the collective works of prominent figures such as Dewey, Gardner, Vygotsky, Friere and Bruner. Their philosophical and theoretical work has promoted approaches to education that may be described as constructivist. Constructivism calls for personalised or learner-centred educational frameworks that enable students to develop their own understandings, rather than require them to learn solely via teacher-led instruction. Strommen and Lincoln provide the following outline of the constructivist approach:

> A brief overview of constructivist ideas reveals their utility. One foundational premise is that children actively construct their knowledge. Rather than simply absorbing ideas spoken to them by teachers, or rather internalizing them through endless, repeated rote practice, constructivist theory posits that children actually invent their ideas. They assimilate new information to simple, pre-existing notions to modify their understanding in light of new data. In the process, their ideas gain in complexity and power; with appropriate support, children develop critical insight into how they think and what they know about the world as their understanding increases in depth and detail. Constructivism emphasises the careful study of the processes by which children create and develop their ideas. Its educational applications lie in creating curricula that match (but also challenge) children's understanding, fostering further growth and development of the mind. (Stommen & Lincoln, 1992, p. 468)

As contemporary educators increasingly adopt constructivist approaches to teaching and learning, equitable pedagogical spaces are required to facilitate learning that is in keeping with this philosophical approach – traditional homogeneous classrooms will not suffice.

Equitable pedagogical spaces can support learning that is aligned with Dewey's ideas of democratic education and experiential learning (1966; 1971). These environments support 'freedom and initiative' rather than 'guidance and control', and enable students to explore their interests. As Dewey noted, however, the students' interests are a starting point and are not ends in themselves:

> Interests in reality are but attitudes towards possible experiences; they are not achievements; their worth is in the leverage they afford, not in the accomplishment they represent... Continuous initiation, continuous starting of activities that do not arrive, is, for all practical purposes, as bad as the continual repression of initiative. (Dewey, 1971, pp. 15-16)

Equitable pedagogical spaces facilitate learning in Gardiner's Multiple Intelligences educational model (1999). To ensure students explore their strengths and weaknesses as learners, they can be encouraged to engage in verbal/linguistic, logical/mathematical, visual/spatial, body/kinaesthetic, musical/rhythmic, interpersonal, intrapersonal, and naturalistic learning modalities while working across the range of activity settings within the overall learning environment. The settings in equitable pedagogical spaces are interconnected so that students can see what others are doing, with the expectation that they will become excited by the activities of others and wish to pursue new experiences and engage in new learning opportunities.

Further to this, these environments are designed to support the dialogical character of learning by facilitating collaboration and dialogue between students and students, and students and teachers. The desire for language-based collaboration is informed by Vygotsky's concept of the 'zone of proximal development', or 'zo-ped', in which a student's 'empirically rich but disorganised spontaneous concepts "meet" the systematicity and logic of adult reasoning' (Vygotsky, 1986, p. xxxv). To this end, the creation of opportunities for dialogue is vital for the development of students' detailed understandings of new concepts and aspects of knowledge. As described below by Kozulin in the introduction to Vygotsky's *Thought and Language,* conversation between student and teacher is an important vehicle for learning:

> As a result of such a 'meeting', the weaknesses of spontaneous reasoning are compensated by the strengths of scientific logic... The final product of this child-adult cooperation is a solution, which being internalized, becomes an integral part of the child's own reasoning (Vygotsky, 1986, p. xxxv).

Friere (1970; 1973) advocated that learning for students should be integral with their daily lives, not founded on the perspectives of the dominant culture. He promoted democratic education, calling for a breakdown in the traditional didactic teacher-student relationship and the development of a reciprocal affiliation where all members of a learning community act as both teacher and learner.

Equitable pedagogical spaces make possible the social structures required to meet Friere's ideals. These environments make a statement that says that the knowledge and understandings that each member of the learning community brings to school is important and should be shared.

Ultimately the creation of equitable pedagogical spaces is driven by the wish to create learning cultures that can support the academic and social development of every student. Bruner's (1996) work on the impact of culture on learning supports this goal. He described how learning, or meaning making, involves situating experiences within cultural contexts. He suggested that the cultural situatedness of meanings enables them to be readily communicated with others, and that this ability to communicate meanings is what makes them useful to the learner. He expands on this idea below:

> It is culture that provides the tools for organising and understanding our worlds in communicable ways...learning and thinking are always situated in a cultural setting and always dependent upon the utilisation of cultural resources. Even individual variation in the nature and use of mind can be attributed to the varied opportunities that different cultural settings provide. (Bruner, 1996, pp. 3-4)

In a post-Fordist society, students need to be able to apply their knowledge, skills and conceptual understandings in a wide variety of settings. Thus, it is vital that the cultures in which students learn are in keeping with the broader cultures in which they live so that what they learn can be applied, and readily communicated, in diverse contexts. Learning that is applicable only to formal assessments is not particularly useful to the student if that learning has no greater purpose or does not provide knowledge, skills and conceptual understandings that are useful beyond school.

Equitable pedagogical spaces are intended to assist students to build independence as learners and to develop their meta-cognitive understandings of themselves as learners. The development of skills for life-long learning is essential in today's ever-changing world. Student

participation in social systems in which they are active members of learning communities and empowered participants within today's Knowledge Society can only enhance their future prospects in a world that is demanding agility and adaptability in the workplace and in daily life.

Instructional models suited to equitable pedagogical spaces

Equitable pedagogical spaces are well aligned with contemporary instructional models, including the Principles of Learning and Teaching (P-12) (PoLT) model (DEECD, 2009a) and the E5 model (DEECD, 2009b), both of which are endorsed by the Victorian Department of Education and Early Childhood Development.

Parallels between the philosophical positions underpinning equitable pedagogical spaces and PoLT can be seen in the six basic principles of PoLT listed below:

1. The learning environment is supportive and productive.
2. The learning environment promotes independence, interdependence and self-motivation.
3. Students' needs, backgrounds, perspectives and interests are reflected in the learning program.
4. Students are challenged and supported to develop deep levels of thinking and application.
5. Assessment practices are an integral part of teaching and learning.
6. Learning connects strongly with communities and practice beyond the classroom.

Like PoLT, the E5 instructional model advocates constructivist approaches to education. The basic E5 framework is set out below:

1. Engage
2. Explore
3. Explain
4. Elaborate
5. Evaluate

The implementation of constructivist instructional models such as PoLT and E5 is required in order to make the most of equitable pedagogical spaces. Disjunctions between physical learning environments and pedagogical practices are likely to occur if teacher-led pedagogies are consistently employed in these spaces. Such disjunctions may lead to frustration on the part of teachers and students alike and a breakdown in the quality of education provided to students.

Equitable pedagogical spaces demand a greater complexity of use than traditional classrooms. When shifting from traditional approaches to teaching and learning, curriculum, pedagogy and assessment practices all require careful restructuring if authentic personalisation of student learning is to be achieved. Teachers require time and professional learning in order to make these transitions.

Exploring the designs of equitable pedagogical spaces

When designing equitable pedagogical spaces it is important to ensure that spatial designs are created in unity with educational theory and the anticipated teaching practices that will occur in these environments. Schools need to ensure that teachers are well supported with professional learning opportunities so that they may quickly come to understand their role as leaders of education in these environments and can manage the complexities surrounding the use of these spaces as sites of constructivist learning.

Many schools will not have the room or budget to create learning environments like those presented in the images shown in this article. With some modification, however, existing classrooms can be joined or reconfigured to create new contexts for learning that are aligned with the equitable pedagogical spaces concept.

The creation of large open spaces will not suffice. As demonstrated by the open plan classroom experience of the 1970s, a lack of spatial differentiation leads to a breakdown in the quality of the learning experience due to a lack of spatial context and misunderstandings regarding how spaces should be used (Rodwell, 1998).

Although the equitable pedagogical spaces concept is most readily applicable to primary schools, as shown in the images in this paper, it can also be applied to secondary schools. Implementing equitable pedagogical spaces into

secondary schools that operate on a program of subject specificity would involve significant modification to the schools' organisational structures, but with the implementation of an integrated approach to learning, such spaces are suitable.

Beare (2000a) commented that education based on year groups, subjects, specialist teachers, hierarchies, linear progression, and graded criteria is already passing. In designing schools for the new century, he suggested that it might be quite inappropriate and socially dysfunctional to let obsolete ideas about learning that are based on outdated concepts continue unchallenged. In the 21st Century, Beare envisages learning becoming increasingly modularised, rather than organised into discrete subjects:

> Educators as a group will find themselves responsible for mentoring a group of learners, directing them sequentially into projects or modules of activities, and keeping track of progress and outcomes. It is obvious that a project about volcanoes, for example, can simultaneously result in deepening reading skills, learning some physics or mathematics, and acquiring some knowledge about geography and geology. It is probably silly, if not impossible, to label such a project Language or Science, Maths or Geography. (Beare, 2000b, p. web)

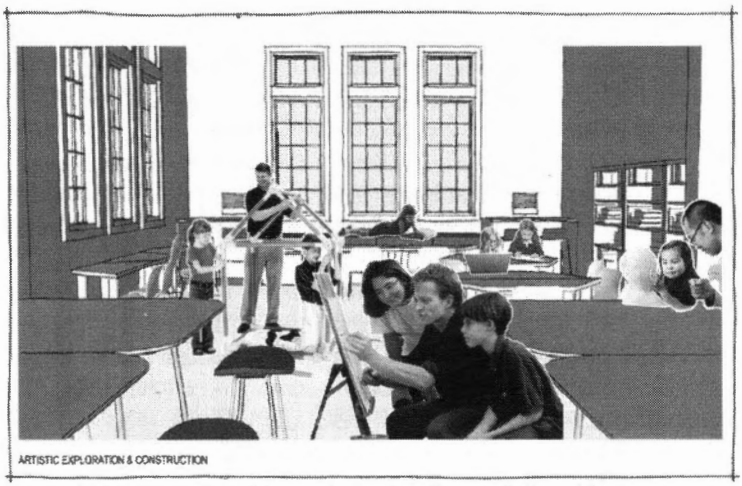

Figure 6: Artistic exploration and construction activity setting

Conclusion

As schools seek to better align their educational approaches with current and future societal circumstances, the environments in which students learn should be configured in ways that reflect broader societal cultures and contexts. If schools are to support students to become life-long learners who are capable of exhibiting agility and adaptability in the workplace and in their everyday lives, then students need to be educated in environments that are consistent with the wider cultures in which they reside.

Aligning the concept of built pedagogy (Monahan, 2002) with contemporarily accepted educational theory for the creation of modern learning environments can support young people to become better-prepared for the ever-changing global society of the 21st Century. Further aligning these spaces with new forms of spatiality will enhance the likelihood that students will become more engaged as active participants in their own learning and that learning for each student can become more authentically personalised and equitable.

By making the time to engage in discourse about the spaces in which students learn, and working towards the creation of equitable pedagogical spaces, schools may better equip themselves to cater for the diverse interests and capabilities of the students in their care.

Acknowledgements

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References

Beare, H. (2000a). *Creating the future school.* London: Routledge Falmer.

Beare, H. (2000b). The future? You're standing in it! A design and technology perspective on the future of schooling in the Information Age. *Australian Council of Education through Technology 2000 Conference, Downer, ACT.*

Beck, T.M. (1980). An Australian study of school environments. *Australian Journal of Education, 24*(1):1-12.

Bruner, J. (1996). *The culture of education.* Cambridge, Massachusetts: Harvard University Press.

DEECD (2009a). Principles of learning and teaching (P-12). *Department of Education and Early Childhood Development, Melbourne.* http://www.education.vic.gov.au/studentlearning/teachingprinciples/principles/default.htm, Access date: 12 September, 2009.

DEECD (2009b). E5 instructional model. *Department of Education and Early Childhood Development,* Melbourne.

Dewey, J. (1966). *Experience and education.* New York: Collier Books.

Dewey, J. (1971). *The child and the curriculum. The school and society.* 11th edn. Chicago: The University of Chicago Press.

Fielding, S. (2000). Walk on the left! Children's geographies and the primary school. In Holloway, S.L. & Valentine, G. (Ed.) *Children's geographies, playing, living, learning.* London: Routledge.

Gardner, H. (1999). *Intelligence reframed: multiple intelligences for the 21st century.* New York: Basic Books.

Jacobs, E. & Jacobs, P. (1980). Children as managers. *Ekistics, 282,* 135-137. In Matthews, M.H. (1992). *Making sense of place: Children's understanding of*

large scale environments. Hemel Hempstead: Harvester Wheatsheaf.

Klein, Z. & Y. Eshel, The Open Classroom in Cross-Cultural Perspective: A Research Note. *Sociology of Education,* 1980. 53, 114-121.

Lackney, J.A. (1998). Changing Patterns in Educational Facilities, *CEFPI Conference. Vancouver.*

McGregor, J. (2004). Space, power and the classroom. *Forum, 46*(1), 13-18.

Marks, J. (2009). *A history of Educational Facilities Laboratories (EFL).* Washington DC: National Clearinghouse for Educational Facilities.

Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2008). *Melbourne Declaration on Educational Goals for Young Australians*, Melbourne.

Monahan, T. (2002). Flexible Space and Built Pedagogy: Emerging IT Embodiments. *Inventio 4* (1).

Rodwell, G., Open-plan school architecture: a continuation of a tradition of bureaucratically imposed innovation in Australian state schools. *Education Research and Perspectives*, 1998. 25(2), 99-119.

Singh, P. & Taylor, S. (2007). A new equity deal for schools: a case study of policy making in Queensland. Australia. *British Journal of Sociology of Education, 28*(3), 301–315.

Soja, E.W. (1989). *Postmodern geographies: The reassertion of space in critical social theory.* London: Verso.

Stephenson, K.R. (2007). Educational trends shaping school planning and design: 2007. *National Clearinghouse for Educational Facilities.*

Stommen, E. & Lincoln, B. (1992). Constructivism, technology and the future of classroom learning. *Education and urban society 24*(4), 466-476.

Vygotsky, L.V. (1986). *Thought and language – Revised edition.* USA: Massachusetts Institute of Technology.

Wilks, S.E. (2005). *Designing a thinking curriculum.* Camberwell, Victoria: ACER.

'Once they have been there and have sat in it, they get it'

Dominique Hes (Lecturer in Sustainable Architecture, Melbourne University)

Introduction

Many recent school designs incorporate sustainability features. This paper reflects on several school building projects where the potential was present for these features to be brought into the teaching practice. Using a building as a 3-D textbook means it can be incorporated into the curriculum and aid teaching about heating and cooling, temperature transfer, sun angles, lighting and so forth. A building can embody its philosophy overtly, hanging its green credentials on its sleeve, by providing access to electricity meters, control mechanisms, data and sustainable features.

This research fits within a broader framework of the Smart Green Schools ARC linkage project and sits within its qualitative research methodology centred on case studies.[1] Case studies were chosen as they allowed the investigation of the highly complex influences of built educational environments and their effect on teaching and learning. Observation and 'thick description', which enable judgements about making comparisons with, or the possible transferability of findings to other settings[2], were used.[3]

The importance of real world, physical experiential case studies to support learning has been shown by others as crucial for developing tacit understanding (see for example

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[1] Yin, R.K. (2003) *Case study research, design and methods*, 3rd edn., Newbury Park: Sage Publications.

[2] Bryman, A. (2004) *Social research methods*, Oxford: Oxford University Press.

[3] Cleveland, B. (2009) 'Engaging spaces: an investigation into middle school educational opportunities provided by innovative built environments. A new approach to understanding the relationship between learning and space', Conference Paper, 16th International Conference on Learning, 1-4 July 2009, University of Barcelona, Spain.

Hes[4]). Our research hopes to illustrate how buildings could be used in learning about environmental sustainability within the middle years of schooling. The ultimate intention is to provide guidance on how schools can integrate buildings as effective 3-D textbooks to support their curricula.

This paper illustrates its arguments through the voices of three of the teachers at the case study schools and their experiences in using these buildings. This has inherent limitations in bias and attachment to their projects that need to be kept in mind when reading their reflections on using buildings as 3-D textbooks to teach environmental sustainability.

Environmental sustainability and schools

Environmental sustainability issues are related to schools in two ways: the impact of the school on the environment and the impact of the environment on schools. Schools can minimise their impact on the environment by incorporating strategies that are applied to green buildings in general; for example, energy, water and waste efficiency, materials selection, design for durability, flexibility and minimisation of ongoing maintenance. Within a green building in a temperate area (e.g. Melbourne and Sydney), it is possible to reduce the amount of energy consumed by 70% or more through good envelope and lighting design (see projects such as Council House 2 and 40 Albert Road in Melbourne's CBD, Australia). Water can be reduced by 80-90%[5] if efficiency is optimised, rainwater is collected and water reused. Waste in construction and renovation can be virtually eliminated[6], and waste in operation can be reduced by 60% or more. Materials that are renewable, reusable and recyclable – when combined with design for durability, flexibility and maintenance minimisation – can reduce their embodied environmental impact significantly. Spaces need to be

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[4] Hes, D. (2005) *Facilitating 'green' building: turning observation into practice*, PhD awarded June 2005, RMIT University, Melbourne.

[5] Chanan, V., White, S., Howe, C. & Jha, M. (2003), 'Sustainable Water Management in Commercial Office Buildings', Innovations in Water: Ozwater Convention and Exhibition, 6-10 April 2003, (Electronic Paper oz264).

[6] Hes, D. (2007) *ESD design guide for office and public buildings*, 3rd edn., Canberra: Department of the Environment, Water, Heritage and the Arts, http://www.environment.gov.au/settlements/publications/government/esd-design/index.html (accessed 1 October 2009).

designed to suit the local climate but can also support the wellbeing of occupants and their ability to teach and learn. Both the way the building has been designed and how it responds to its environment can be used in teaching. Shum Miller[7] described three schools in the United States where monitoring, technology and design of space were used, not only for educational purposes, but to engender responsibility and understanding for sustainability:

> The various elements of a sustainable school can be featured as part of the educational curriculum. For example, statistical data from the on-site photovoltaic system can be used for a mathematics exercise, or data about the sun movement can be incorporated into the science lesson. These bring home the message in a direct and effective manner.[8]

Case studies

Two schools, provided here as case studies, demonstrate that not only is environmentally responsible design important, but that engagement of the teacher and a tailored curriculum are also integral to making the most of the educational opportunity of the buildings. The two schools discussed below are Thornbury Secondary College and Woodleigh School in Victoria, Australia, both designed by Middleton, a Melbourne-based designer.

1. Woodleigh School

Woodleigh commenced operation in 1856 as a coeducational school. It was one of the earliest schools in the state of Victoria and the first on the Mornington Peninsula. Apart from preparing students for tertiary study, it prides itself on equipping students for other less academic aspects of life in the twenty first century. This is done through creating:

> ...opportunities for self-discovery...providing the challenges that stimulate learning and by striving to be responsive to the needs of each student.

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[7] Shum Miller, K. (2007) 'The A,B,C's of sustainable schools', SB08, International Sustainable Building Conference, 21-25 September, 2007, Convention Centre, Melbourne, pp. 913-920.

[8] Shum Miller, K. (2007) Op cit., p. 917.

Discipline at Woodleigh is based on three simple rules:

- Respect for self
- Respect for others
- Respect for the environment.[9]

The latter rule is taught through active participation in community events, clean up days, tree planting, active participation in the protection of the school's native vegetation and agricultural activities based on permaculture principles. More recently their buildings have been part of the teaching of Environmental Sustainability.

The building specifically looked at in this research is an agricultural teaching space. The design, led by Middleton, was driven by both the teachers and the students. The students had a significant input into the design, materials and construction of the space, adding their own ideas and even helping to construct the walls (Figure 1).

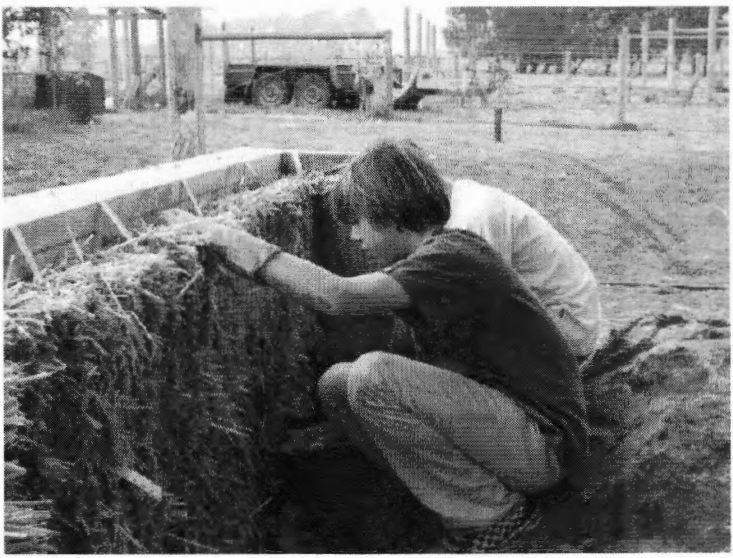

Figure 1: Woodleigh students constructing the straw bale walls (Source: Woodleigh School)

[9] Middleton, L. (2008) 'Project: Woodleigh Ag Hort Building', Building Design Award entry 2008, Building Designers Association of Victoria.

This project, involving the students from Years 8 to 11, showed significant use of scaffolding by the teachers. Teacher 2 gives an example of this process in the students' involvement in materials selection:

> ...the process of them doing this made them think about how sustainable solutions could be used in a building...but we made sure that we didn't give them the answers...*we gave them the groundwork*...concepts, tools, ideas, but they needed to put these together to *form their own solutions* for the building. So, for example, they helped make the decision about the fly ash content of the concrete [this lowers embodied energy and thus environmental impacts such as Climate Change] and this gave them the practical understanding that you don't just use 'concrete' – there are choices you can make. This carried over to decisions on timber use etc, and this led to the students questioning the materials chosen for the retaining wall and coming up with the used car tyre concept. So doing this with one material gave them the skills of questioning material use in other areas – it modelled a way of thinking about choosing more sustainable materials. [10]

In this same space, Teacher 2 suggested the use of a hand pump for the water collected in the rainwater tanks rather than an electric pump to create the tacit understanding of the energy required for pumping water (Figure 2).

[10] Friedlander, M. [teacher Woodleigh School] pers. comm., 6 October 2009.

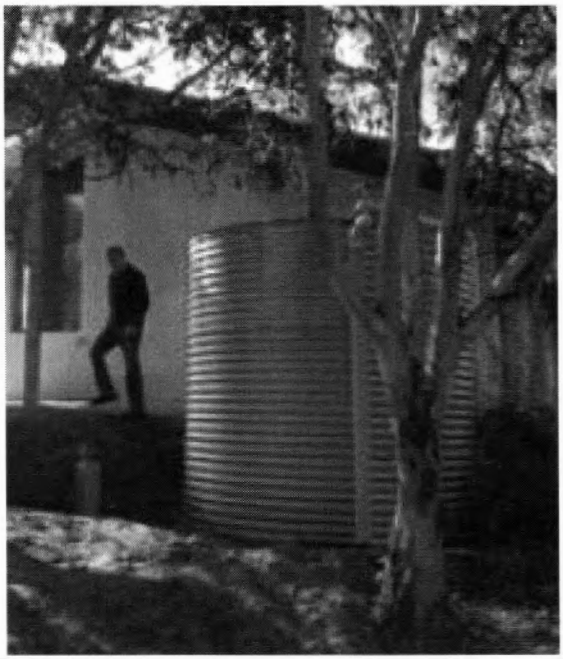

Figure 2: Rainwater tank, pump and recycled tyre retaining wall[11]

The building was built out of straw bales and the roof was supported by reclaimed ironbark poles with cypress timber on the northern façade cut in radially to use the timber efficiently. The concept of the roof allowed maximum indirect natural light into the space while facilitating cross and stack ventilation. The use of thick straw bale walls, insulation and concrete floors supported the passive design strategies of controlling infiltration, thermal mass and night purge. Internally, teaching space is light, airy and spacious (Figure 3).

[11] Middleton, L. (2008) 'Project: Woodleigh Ag Hort Building', Building Design Award entry 2008, Building Designers Association of Victoria.

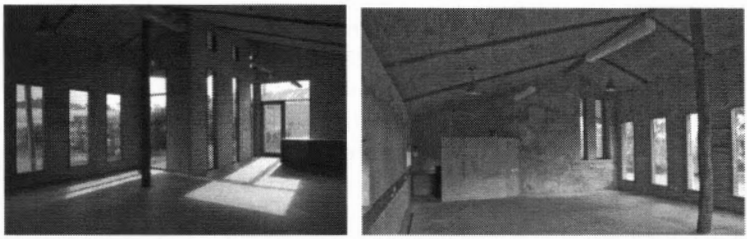

Figure 3: Woodleigh internal spaces entry and work area (03 and 04) and main teaching space and teachers' area (01 and 02)
(Photographer: Scott Haskins)

Figure 4 shows a designated space for the teacher for storage and preparation (01), a space for carrying out planting and other practical agricultural activities (03), with generous internal (02) and external (04) teaching areas.

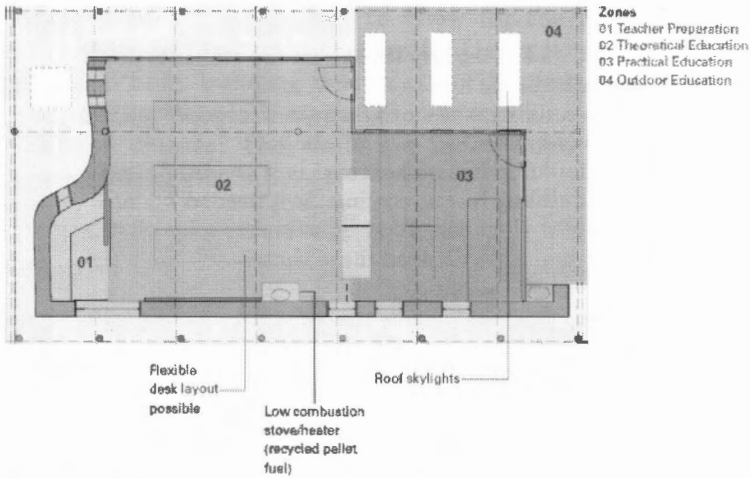

Figure 4: Woodleigh space program[12]

Teacher 1 who uses this building to teach agricultural studies said he feels that:

> ...it is a really pleasant building to be in, it is comfortable most of the time and has a natural feeling that fits into its setting and it is a working building perfect for teaching agriculture.[13]

[12] Middleton, M. (2008) 'Project: Woodleigh Ag Hort Building', Building Design Award entry 2008, Building Designers Association of Victoria.
[13] Clarke, C. [teacher Woodleigh School] pers. comm., 6 October 2009.

The policy of the school is very much to teach through experience and application. Teacher 1 reflected:

> ...the thing about being in the building is that we...can use it as a case study. We are in it! They can look up and see the louvres and understand the cross ventilations strategies. They can see and touch the eco-timer. You can talk all you like about concepts but they remain abstract until you experience them. You can see and experience that these are the features that make a sustainable building. [14]

Teacher 2 built on the importance of learning by sitting in and experiencing a sustainable building by showing how the students were then able to apply their learning to a broader context:

> At the end of the day we can sit the students down in the building and say:
> This building has no lights...is it needed? ...they can answer 'no!'
> This building has no heating...is it needed ? ...'no!'
> This building has no cooling...is it needed ? ...'no!'
> And now they can start questioning why all the other buildings do need these things...[15]

An example of using the building as a teaching tool after its construction was given by Teacher 2 where he takes students into the agriculture building to experience it for 10 minutes and then takes them to a fully air-conditioned building and gets them to compare what they 'felt':

> ...they think it is really comfortable and has a 'good' feel and are surprised that they can affect that... On a good day they can even feel the change from hot and stuffy to cool and fresh when they open the building up to ventilate. As one exercise on a hot day we take them to an air-conditioned building and make them sit there for 10 minutes recording what they feel and then go to the ag building. We then discuss the differences between the two in air quality, comfort etc.[16]

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[14] Clarke, C. ibid.
[15] Friedlander, M. [teacher Woodleigh School] pers. comm., 6 October 2009.
[16] Friedlander, M. Op cit.

2. Thornbury High School

The interesting aspect of this case study is that there are two very different buildings. The first is a double general purpose classroom (GPC) which was going to be a standard 'portable'. However, the design team was able to construct the GPC at a similar cost with a significant improvement in amenity, spatiality and performance; achieved with the constraints of the location and footprint of the planned portable. The second building was a purpose-built recording studio where more time and fewer constraints produced a very different outcome.

The major constraints on this design of the GPC were the budget, the timeline and location. From an environmental outcomes perspective, it was the fixed location and footprint that limited what could be achieved. A large building directly to the north meant that the roof needed to be extremely high to allow for the natural light and ventilation strategies (Figure 5). Using what Middleton called the 'Esky building design', the GPC is a lightweight, highly-insulated skin-supported structure using timber studs and trusses. The walls are independent of the roof, allowing future flexibility.

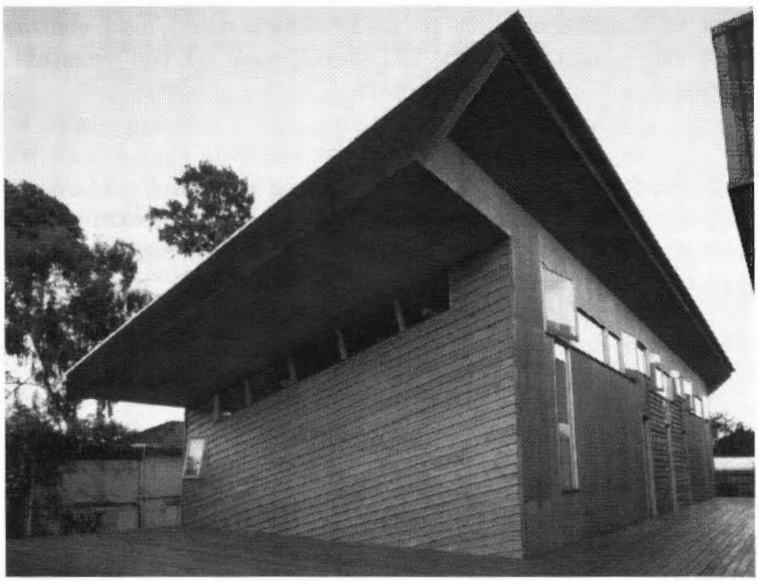

Figure 5: Thornbury High School general purpose classroom (Photographer: Scott Haskins)

Unfortunately the glass specified to improve thermal performance was not installed. Consequently, the building did not perform thermally as expected. As well, there was a need for the windows to be opened and closed at the correct times of day to help keep conditions comfortable, but this did not occur. The reasons were firstly due to security concerns; low-level windows were closed at night. Secondly, the users lacked a fundamental understanding of passive cooling and the need to open the windows for cross ventilation. Lastly, incorporating an air lock would have helped with the infiltration of unwanted hot or cold air.

The straw bale recording studio was designed from first principles working with the teachers and students. A workshop where the teachers were asked what they needed was conducted. Their first response was 'as big as we can get'. Middleton[17] worked with them to explain the consequences of this request in terms of materials, waste, energy use, cleaning, acoustic control and so forth. Further, by rationalising their needs and not choosing the biggest square box possible but instead going for a design that was a more spatially efficient, acoustically effective fan shape, external spaces for teaching and performance were created. This then led to thinking about using this external space as part of a sustainability pathway which could lead visitors past other sustainability initiatives such as the vegetable gardens, water tanks and potential future projects.

Students helped in the development of the design by making models, thinking about the site and its context, the sun, shade and climate. Students were also involved in some of the construction (Figure 6) and they helped communicate the design intent through multimedia design, website development, writing and making. Thus the project intersected with a variety of subject content in the curriculum domains.

[17] Middleton, L. [designer of case study buildings, Thornbury High School] pers. comm., 2 October 2009.

Figure 6: Students working on the foundations of the recording studio[18]

Built out of straw bales, the studio raised more interest and entailed more tacit learning than the GPC. Teacher 3, a teacher and driver of the building projects, reflected:

> In contrast to the general classroom where we have had very little interest or questions from the users, the new recording studio, which is more straightforward and outwardly green, has resulted in a lot more questions: 'why straw bale, why the air lock etc'...it is like being involved in the building is part of the learning itself... So even without there being a dedicated curriculum for sustainability linked to this building there is clear learning about sustainability happening by the fact it exists and leads to curiosity.[19]

In talking about the GPC, Teacher 3 reflected on those aspects of the space that are not directly attributed to sustainability but are related to good design:

[18] Source Thornbury High School website: http://www.thornburyhs.vic.edu.au (accessed 7 October 2009).
[19] Parker, G. [teacher Thornbury High School] pers. comm., 5 October 2009.

> The teachers LOVE the space, they think it is fantastic, particularly how the windows work and how the room leads the students to focus on the teacher and within the room even though they have lots of light (Figure 7). It has many good environmental design features, though it would have been nice to have double glazed windows and an air lock so that the conditioned air did not escape every time someone came in the door.[20]

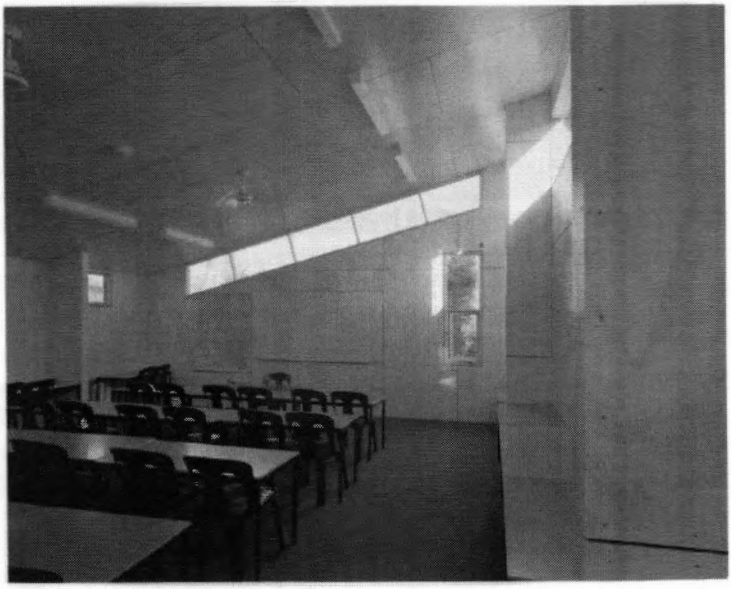

Figure 7: Thornbury High School general purpose centre (Photographer: Scott Haskins)

Asked if there was any specific sustainability teaching that the GPC supported, Teacher 3 spoke of the challenges of secondary teaching where spaces are not owned by the users:

> The Thornbury general classrooms are used by a number of teachers, the space isn't owned and even though the opportunity is there to write aspects of the building into the curriculum, no one does it. For example, there are vegie patches outside the classroom and the idea was that each Year 7 group would own one and it would be part

[20] Parker, G. ibid.

> of their learning to grow food there, and this would lead to other aspects of sustainability and the classroom being considered, but the curriculum isn't there, so it isn't being done... It isn't like a primary classroom where a teacher can integrate various aspects because it is their space and they teach a variety of material, here it is fragmented and so there is not ownership of the concept and people just work in their own silos and bits of the curriculum without talking to each other.[21]

Environmental sustainability, pedagogy, curriculum and teaching

The concept of using a building as a teaching aid fits well with the new directions in teaching and learning that emphasise the connectedness of knowledge and interdisciplinarity of concepts. Based on ideas of constructing knowledge and real-world experiences, these buildings provide the perfect test bed for collaborative group work and the exploration of the interconnected aspects and the effect on themselves. There is the opportunity to embed their learning into real-life experience.

At Woodleigh, the building is designed to cool at night using the low and high level windows. Experimenting with the impact of not opening these windows, students could directly experience the next day how much warmer and less comfortable the space was than when it was used correctly. Further, with 20 temperature sensors around the room, they could actually quantify this experience. Intertwined with this could be concepts of thermal mass, the physical properties of air, cross ventilation and stack ventilation.

Teacher 2 highlighted the connectivity of learning, experiencing and creating understanding through his reflection on the students' conversion of concepts on sustainability into practice:

> What was most interesting to see...was the playful exploration that students did. They applied the ideas we covered with them and provided a solution that would never have been reached by the adults involved. When the

[21] Parker, G. [teacher Thornbury High School] pers. comm., 5 October 2009.

> students took the straw bales and made their own solutions to what a 'sustainable building' should be, they demonstrated a playfulness and conceptual understanding beyond what had between covered in class. In many respects this understanding seemed more inherent and tacit than they could articulate in word. When asked why they had built the cubby that way their answers were 'it felt right' and 'it seemed to work' rather than 'because hot air rises, this keeps the sun out, lets light in' etc. Their building was very intimate, cave-like and inaccessible to adults. It worked really well thermally and had a small stack to ventilate it. This was all done through planning and negotiation across the four year levels, changing and evolving their 'design' together as they went along. The funny thing about this cubby was that it addressed all the aspects of the school policy which is about giving students citizenship and engagement in their environment – they had ownership of the program, how the building met their needs, their learning, the concepts covered and *how it all worked together became more than an idea...it invited individual meaning creation...it became part of them.*[22]

Conclusion

Schools are best understood as complex systems in which the physical environment interacts with pedagogical, curricular, social, cultural, management and economic factors. Rather than thinking of environmental initiatives only in terms of energy benefits, it is useful to also consider how simple green palettes can transform school environments into 3-D textbooks enhancing the school curriculum. The case studies demonstrate that students can interact with buildings and develop better appreciation of issues such as seasonal changes, comfort levels, passive design, material selection and efficiency. Being involved in the design, development and construction of the buildings provided a valuable learning experience. Most importantly, Woodleigh demonstrates that students can take these lessons and apply them within other contexts.

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[22] Friedlander, M. [teacher Woodleigh School] pers. comm., 6 October 2009.

Interestingly the two case studies have shown that there are important teaching opportunities for buildings that are overtly sustainable. This attribute seems to raise curiosity and interest. Those buildings that are not carrying their 'greenness' on their sleeves are used without reflection on its performance. Teaching/learning opportunities are lost. These three buildings and the reflections of the teachers demonstrate that using buildings as 3-D textbooks to support the teaching for environmental sustainability is an effective tool: *'once they have been there and have sat in it, they get it'.* [23]

Acknowledgements

Sincere thanks for the support and information provided by Luke Middleton from eme design, Thornbury High School and Woodleigh School, and the teachers interviewed: Charlie Clarke, Mark Friedlander and Greg Parker.

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References

Bryman, A. (2004) *Social research methods*, Oxford: Oxford University Press.

Chanan, V., White, S., Howe, C. & Jha, M. (2003) 'Sustainable Water Management in Commercial Office Buildings', Innovations in Water: Ozwater Convention and Exhibition, 6-10 April 2003, (Electronic Paper oz264).

Cleveland, B (2009) 'Engaging spaces: an investigation into middle school educational opportunities provided by innovative built environments. A new approach to

[23] Clarke, C. [teacher Woodleigh School] pers. comm., 6 October 2009.

understanding the relationship between learning and space', Conference Paper, 16th International Conference on Learning, 1-4 July 2009, University of Barcelona, Spain.

Hes, D. (2005) *Facilitating 'green' building: turning observation into practice*, PhD awarded June 2005, RMIT University, Melbourne.

Hes, D. (2007) *ESD design guide for office and public buildings*, 3rd edn., Canberra: Department of the Environment, Water, Heritage and the Arts, http://www.environment.gov.au/settlements/publications/government/esd-design/index.html (accessed 1 October 2009).

Middleton, L. (2008) 'Project: Woodleigh Ag Hort Building', Building Design Award entry 2008, Building Designers Association of Victoria.

Shum Miller, K. (2007) 'The A,B,C's of sustainable schools', SB08, International Sustainable Building Conference, 21-25 September, 2007, Convention Centre, Melbourne.

Yin, R.K. (2003) *Case study research, design and methods*, 3rd edn., Newbury Park: Sage Publications.

Spaces for Learning: A Teacher's Perspective

Emmanuel Skoutas (Dandenong High School, Victoria)

Introduction

'Is all this for us?' an incredulous student asked on the orientation tour of our new learning spaces earlier this year. I asked what he meant and he answered, along with a sweeping gesture of his arm, 'These buildings are "modern" and "professional" and we don't usually see places like these'. His comment and tone revealed an assumption that his class could not impossibly deserve such a building, so I retorted with something like, 'Of course it is for you, both the teachers and our community want to provide the best opportunities for your learning'. I also made reference to our school motto *Faber Quisque Fortunae* – We are the Architects of Our Destiny – and how we are aiming to create the foundations for successful futures for all of our students. 'But sir,' came the dry response, 'We are from Dandenong and don't have a future'.

There are many reasons why the expectations of this young person are low, but don't we as a society think that children like Liam deserve our best efforts so that they too can begin their life's journey with the skills and dispositions that can lead to a good life?

Dandenong High School has been operating since 1919. It is located in one of the most socio-economically disadvantaged urban centres in the country. Over the last two years the school has amalgamated with two neighbouring secondary schools – Cleeland Secondary College and Doveton Secondary College. Each has brought its own cultural identity and distinctive challenges and strengths.

Approximately 66 languages are spoken by the students. Almost 90% of the student population has a non-English speaking background. At present, Dandenong High School is in a transitional stage in its development of a

revised curriculum and the building of new physical spaces. Seven identical 'Schools Within Schools' (SWIS) are providing new spaces for learning. They have been designed to support the pedagogy of inquiry-based learning, the new relationship between learner and teacher, and the importance of interpersonal and collaborative learning skills.

In this paper I wish to describe the new learning and teaching spaces of the school and how they reflect and facilitate our curriculum. I will structure this reflection in three parts in order to provide a context. Firstly, I will describe the principal processes and structures the teachers and students used at Dandenong High School to participate in the development of the new learning spaces. Secondly, I will discuss my learning and teaching experience in the new spaces and describe some views of my students and colleagues about the new ways of working. Lastly, I will examine the pedagogical implications these experiences are having on the continuing development of the meaning I try to create in my role as a teacher.

The spaces in the new buildings at Dandenong High School (see Appendix 1) have made it possible for more meaningful dialogue, inquiry and authentic interpersonal relations and have enabled students to take on increased responsibility for their learning. The new spaces invite collaboration and negotiation between students and teachers and between teachers in the construction of the curriculum. The opportunities they provide assist us to identify and negotiate, more than ever before, what is important for learning and teaching.

Through the learning journey I am experiencing now, I am just beginning to grasp the complexity of my new understandings. I am wondering, for example, how it is possible to have gained such an insight when some of us have only been in the new learning spaces for merely two school terms. I think it is testament to the power of the environment to shape learning, together with the professional dialogue my colleagues and I have participated in during the previous eighteen months.

Part one: the context

Many invited staff and students participated in consultative committees during the pre-building stage. Dialogue and consultation occurred with architects and urban designers

(led by Richard Leonard, a director of Hayball Pty Ltd), educational theorists (particularly Julia Aitkin), interior and furniture designers (including Mary Featherston), teacher administrators, students and colleagues, about what our new learning and teaching spaces might look and feel like, and how they could support the curriculum and the best learning opportunities for our cohort of students. One of the formal structures used was the Curriculum Review and Development Team (CRDT), which served as a vehicle for teacher input into the design of the building, a forum for dialogue and understanding about the curriculum, and a means of identifying strategies and action plans in order to implement a wide variety of transitional objectives across the school. Staff members who volunteered to be a part of the CRDT were given time release from classroom teaching to participate in the workshops with the various consultants mentioned above and members of the principal class. So far we have had three allotments of around twenty five staff for each CRDT from a total school staff number of one hundred and eighty.

The first CRDT initially focused on the task of articulating a curriculum vision based on the values and needs of the key stakeholders of the school. In consultation with Julia Aitkin, we developed strategies to garner feedback and input from students, teachers, parents and the wider school community.

Following this process, we defined and clarified the key concepts and ideas from the submissions and considered the means by which we could best achieve these ideals in the context of the building design. The broad architectural structure was developed and presented to the CRDT by the architects and urban designers, Hayball. The task of the CRDT, in dialogue with the architects and interior designers, was to then communicate design suggestions on the ways in which the building and facilities could best meet the curriculum principles we had identified so far. This process was interesting due to the diversity of concerns that emerged from the interchange and exchange of ideas between students, teachers and designers. The CRDT was not part of the exchange that occurred at other levels of strategic development such as at the educational policy level from state government representatives, but we were informed of their decisions.

One impression from participating in the CRDT that remains with me is the process by which the dialogue and consultation was managed and facilitated, which was at times either explicit or implicit. When the process was explicit we felt we were engaged in a democratic, authentic, creative and meaningful process. But when the staff members were asked to contribute to planning and feedback workshops connected with progress and process that were not owned by the participants, it was a forgettable experience. The reason for this lay in the fact that the process of change was supposed to mirror the objectives of curriculum change. The changes we were being asked to make to our classroom teaching practice – and for some teachers this involved radical change – were supposedly being experienced by us as CRDT participants. For example, both Aitkin and Featherston made the process of exchanging our contributions and making our suggestions explicit. They explained the reasoning behind the structure of our involvement and the philosophies underpinning their dialogue. This reflected the inquiry-based learning we believed was valuable in our curriculum. The effect this had was to make us feel like genuine participants who had ownership of the curriculum development and the ways in which the design of spaces could support it.

However, the CRDT structure and process was only implicit in workshops that purely reflected the goals and preferences of the facilitators. Some workshops were not inclusive because we were not involved in genuine problem solving. For example, discussions about design elements that would assist to make wet areas as productive as possible in our teaching were a hollow exercise because the design had already been determined. We felt 'used' and did not have ownership of the process. My contribution and those of some others were not therefore authentic and, as a result, we had no personal investment in this outcome.

Both kinds of dialogue achieved outcomes. But was there a cost incurred by the latter? My view is that a dialogue without proper understanding and genuine contribution is merely instrumental, whereas the processes fostered by Aitkin and Featherston were transformative. We were impressed by Featherston's post-occupancy visits to observe us working within the spaces and by Aitkin's ongoing involvement in professional development sessions.

What this indicates for me is that, if in dialogue we are only focused on content and outcome without the process, form and meaning, we lose the deeper resonance that the results of the dialogue can have. One of those deeper results is the cultural change dialogue can foster. This cultural shift is evident in the way in which some of my colleagues and I approach and practice our learning and teaching in the new design spaces.

Part two: using the learning spaces

One of the significant steps taken in our curriculum has been the move to team teaching. The new learning spaces allow for a multitude of student groupings to enable a variety of learning experiences. Working as a team of three teachers with roughly fifty students, we now plan and deliver lessons accordingly. The spaces invite collaboration between students and teachers in the construction of learning. This means we are meeting regularly to reflect on and assess the learning experiences and outcomes so that we can continually work to meet the developmental needs of our students. Because of the nature of our school cohort, we have a gambit of programs including a program to support students with a non-English speaking background, high needs learning, integration aides, extension and accelerated learning, as well as meeting the requirements of a multitude of different students' learning preferences. These needs are continually assessed against the high academic expectations set by the curriculum. The new learning spaces satisfy and facilitate these learning and teaching interests.

In using the spaces, there has been an emergence of an understating of how these spaces can be used. For example, the fluid use of spaces allows for negotiation, and sometimes this aspect of learning cannot be planned for. The frequency of negotiation of the curriculum with students in connection with their learning is becoming an everyday occurrence. This is welcomed because it indicates a sense of responsibility from students for their learning. This is something I did not find in such a marked way when I taught in a traditional classroom space. At one stage I was teaching a group of twelve Year 7 students in a writing task (in itself a luxury not previously possible) and it emerged that two students preferred to work as a pair because they had figured out a way to plan their work together. They

explained to me how it would help their progress and explained that they had identified a small conference setting nearby as a place in which they could work effectively. Because most areas in the new building allow for visibility and access, I could continue to supervise these students while they worked independently, and at the same time devote more of my attention to those students who needed more direct instruction and assistance. The new spaces support learning experiences by providing the opportunity for possibilities, thus enabling and encouraging positive and fruitful learning dispositions.

A colleague who also teaches in the new learning spaces noted that:

> While our learning spaces allow us to inquire into essential questions with our students, the curriculum is still at the stage where it does not allow us to capitalise on the spaces.

Her comment indicates that, at this transitional stage, our curriculum needs to catch up with the ways in which the spaces are opening up possibilities for learning and which, importantly, students are identifying intuitively as they use the spaces. Our combined experience indicates that these spaces, which have in-built ICT access and purpose-built and supported collaborative working areas, are igniting the imagination of both teachers and students and are driving curriculum change. An example of this situation follows.

During an immersion activities week around the question, 'How can I take care of my environment?,' a group of four Year 7 girls decided to create a fundraising project following their visit to the Melbourne Zoo. They decided to support and raise awareness of the zoo's program to protect gorillas and their habitats by reducing the demand for coltan, a mineral used in the manufacture of mobile phones and illegally mined in gorilla habitats. The students planned how they would collect and recycle unused mobile phones, the people they would enlist to help support and promote their cause, and the action plan needed to coordinate their tasks. Because of the school's current curriculum demands they would need to do this in their own time. In the new learning spaces, once we have an inbuilt flexible approach to assessment and reporting tasks, they could, with our help,

construct their own 'curriculum'. It could run concurrently with the established curriculum and timetable and take advantage of the flexibility of the teaching spaces. They could be working on an authentic task that encompassed all the requirements of the curriculum. They would have access to ICT, advice and support from their teachers and all the other infrastructure facilities our learning centre has to offer.

We want our students to be engaged and fulfil their potential to a high standard. The spaces are providing them with both the opportunities and tools to do so. We as teachers need to ensure that we continue to evaluate and reform our curriculum so that it provides students with the opportunity to learn to their maximum capacity.

Part three: pedagogical implications

What have I learnt by shifting from a traditional learning environment to one of the new cultural spaces created for inquiry? Fundamentally, my experience of education at this point in time can be explained as one where I am leaving behind a predominately utilitarian and instrumental model of education to one that makes learning and the dispositions for learning a goal for its own sake. The new learning spaces that have been designed and built provide for the possibility to inquire, create and develop good habits of learning. I have observed how students this year are coming to me to discuss their education because the 'divide' between teacher and learner has dissolved. This is an ideal I have read about in educational theory but am now experiencing as a practical and authentic outcome of a new curriculum supported by new learning spaces and facilities of the school.

It is not surprising that the image of students as empty vessels is not an alien notion to us. Many in education have experienced this perversely persistent pedagogical model in their own learning and possibly continue to perpetrate it in their teaching. The philosophical underpinning of such a model is a utilitarian view that regards education as a means to achieve an economic imperative and end. But education for the 21st Century has been articulated regularly in formal statements such as the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008), the Principles of Learning and Teaching (PoLT, DEECD, 2009) and the e5 Instructional

model (DEECD, 2009) which are all underpinned by the view that the future our children will face has one defining feature: the inevitability of change. Those school leavers with the best capacity to negotiate change will also have the skills and dispositions to be life-long learners. A utilitarian approach to education will not provide such skills; how could it? If education is seen as a means, then by definition it cannot be an end.

To be a life-long learner one needs to appreciate and value the dispositions of a learner. Education is a transformative and emergent experience and, as such, it is an end to aspire to. It can move beyond the limited confines of information gathering and storing to become a creative enterprise. The learning spaces that promote this type of learning will not be spaces that support the transmission of information from a figure of authority. Instead, the spaces for education, such as those we enjoy now at Dandenong High School, essentially place the learner at the centre of education by enabling and fostering democratic and civic values, collaborative interaction, inquiry, diversity, dialogue and creativity.

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About the author

Emmanuel teaches Philosophy and English and is a Domain Leader at Dandenong High School, in an outer Melbourne suburb. With an MA in Philosophy, he has an ongoing professional interest in the pedagogy of Philosophy for Children (P4C) that informs his practice as a classroom teacher. In particular, the approach appeals to him because of the rigour it introduces to thinking, the structure it provides for better interpersonal and caring relationships and the fact that it fosters democratic civic values. Above all, he likes P4C because it encourages and facilitates his students' creativity.

References

Ministerial Council on Education Employment Training and Youth Affairs (MCEETYA) (2008) *Melbourne Declaration on Educational Goals for Young Australians*, Melbourne.

DEECD (2009) *e5 Instructional Model,* Department of Education and Early Childhood Development, Melbourne.

DEECD (2009) *Principles of Learning and Teaching*, Department of Education and Early Development, Melbourne.

http://www.learning-by-design.com

http://www.featherston.com.au

http://www.hayball.com.au/#/projects/dandenong-education-precinct

http://www.zoo.org.au/Calling_on_You

Appendix 1: Dandenong High School floor plans
(Courtesy Hayball Pty Ltd)

Thinking Space Required: Making Room for Communities of Philosophical Inquiry in our Schools

Carol Collins (School of Education, University of South Australia)

Introduction

I have been inspired but also unsettled by the ideas emerging from the Smart Green Schools project.[1] In Clare Newton's (2009) words, the authors have effectively exposed me to 'a series of unsettling moments' through their writings on the transformation of spaces and pedagogies. Why haven't I given more thought to the pedagogical implications of the spaces in which I teach? Why haven't I taken up invitations to contribute to the planning for refurbishment of university tutorial rooms? Why don't I set aside class time to discuss the strengths and weaknesses of various teaching and learning spaces with my student teachers? Why don't I try harder to convince school principals and teachers that space for thinking is required if their philosophical communities of inquiry are to succeed and thrive?

The project's authors also helped answer these questions. I belong to an education system that seems, on the whole, to pay scant attention to the significant relationships existing between learning and teaching spaces, pedagogy and educational outcomes. My own schooling was predominately spent in a chair behind a desk set in one of many rows facing the classroom teacher and blackboard. My children, on the other hand, sat in small groups, though still facing the teacher (and now a whiteboard), for most of their formal education, all of us having missed completely the open-plan classroom era that fell somewhere between our experiences of schooling. Moreover, during my four year

[1] See papers by members of the Smart Green Schools project team (2009), Newton, Wilks, Cleveland, Hes and Skoutas in this special issue of *Critical & Creative Thinking*.

teacher education degree in the mid-90s, consideration of teaching and learning spaces was confined to an exploration of the practicalities of configuring desks, chairs and storage units – including the matter of where to put students who misbehaved – and the need to dedicate areas for displaying students' work.

In reading the Smart Green Schools collection of papers compiled for this special issue of *Critical & Creative Thinking*, I have come to realise just how little thought I have given to the important educational issue of teaching and learning spaces in my own work as a classroom teacher and teacher educator. Yet, I have also been reminded that, since happening upon 'Philosophy for Children' in 1997, I have come to understand at least something of the need to provide particular kinds of spaces for fostering thinking and dialogue. By reflecting on my own experiences of conducting communities of philosophical inquiry with students of all ages and in all kinds of spaces during the last decade, this paper is an attempt to highlight some key elements of learning and teaching spaces that enhance whole class discussion and philosophical thinking.

Communities of philosophical inquiry

The educational movement known as 'Philosophy for Children' originated in the early 1970s largely through the efforts of US philosopher and educator, Matthew Lipman, whose primary goal was to bring philosophical inquiry to schools. To that end he developed, with colleagues, a philosophy curriculum covering the age-span of formal schooling that would ignite students' curiosity about the world and their place in it, and foster in them a desire to think deeply about matters of individual and social importance. Lipman also argued for a dialogue-based approach known as 'Community of Inquiry' methodology, which, if executed well, would serve to keep students engaged and promote (among other things) the development of logical and ethical reasoning skills and dispositions. For Lipman (1991), an effective classroom community of philosophical inquiry is one in which:

> Students listen to one another with respect, build on one another's ideas, challenge one another to supply reasons for otherwise unsupported opinions, assist each other in drawing inferences

> from what has been said, and seek to identify one another's assumptions. (Lipman, 1991, pp. 15-16)

'Community of Inquiry' style pedagogy is widely used in the teaching of philosophy in schools and typically takes the form of extended whole class discussions of philosophical issues in which the teacher's role is primarily one of facilitator but also that of a co-inquirer. Discussion topics and questions are most often generated by the students themselves in response to carefully selected stimulus materials which may include extracts from Lipman's curriculum or other novels, picture books, poems or song lyrics, or perhaps paintings, photographs and film footage. A record of the students' questions and the key ideas raised during discussions is usually displayed for the duration of the philosophical inquiry. The physical arrangement most widely recommended for conducting whole class discussions is to seat students and the teacher together in a circle or semi-circle (Lipman, 1988; Splitter & Sharp, 1995). As Philip Cam (1995) explains:

> Children need to be facing each other, so that every child is able to see every other child's face. The best arrangement is to place the children in a circle, either in their seats or on the floor. A session can be as short as twenty minutes...[or] as long as an hour and a half... In many cases, therefore, it is best to have the children in their seats. Don't allow children to sit outside the circle, or to form little corners where they will not be full participants in the discussion. (Cam, 1995, p. 35)

The circle or semi-circle arrangement remains central to community of inquiry methodology and features strongly in contemporary 'Philosophy for Children' teaching resources and video demonstrations of communities of inquiry in practice.[2]

This structured approach to engaging young people in the processes of philosophical inquiry seems far removed from the image of Socrates discussing ideas with his students in the market square or of philosophy students

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[2] See, for example, *Thinking Allowed: Philosophy for Children at Gallions Primary School*, Gallions Primary School, London (2007) and various clips on You Tube (e.g. http://www.youtube.com/watch?v=tk_B32HtnWg).

deeply engaged in dialogue with their professors in university cafes and bars. Yet the formality and structure is necessary to some extent at least. Conducting classroom communities of inquiry in a circle or semi-circle arrangement is helpful both in terms of supporting inexperienced students to learn the procedures of engagement in collaborative philosophical inquiry, and in enabling the teacher to manage large numbers of students (up to thirty in some cases) involved in whole class discussions.

Real-world classroom communities of inquiry

Although a circular seating arrangement for community of inquiry discussions is clearly worth aiming for, finding the space in which to create such a circle in real-world classrooms and schools is very often difficult and, at times, seemingly impossible. In my role as an educational researcher and provider of professional development for teachers introducing philosophy to their students, I have worked in schools where there is no space available for class discussions beyond the classroom itself. In very many cases, these classrooms were so small that the only obvious solution was to stack and squeeze the furniture into one corner so that the children (with or without their chairs) had room to form a new inquiry circle each time philosophy appeared on the timetable. While the most dedicated teachers were willing to undertake this task with their students two or three times a week, the disruption was significant, as was the amount of time wasted both before and after the philosophy lessons. It took an enormous effort to manage this furniture shifting exercise so frequently and, surely for many, took the shine off the prospect of philosophy lessons. Some persevered for two terms, but in the long term this practice is unlikely to be sustainable. Moreover, even when furniture has been moved, the space created for whole class discussion was still often sorely inadequate for a class of twenty five or more students. As a result, I have been part of many communities of inquiry shaped more like an oval or oblong than a circle with the outcome (as noted by Cam, above) that students are unable to see the participants seated directly to their left and right without straining their necks or leaning forward, which in turn blocks the view of other students. In such cases, the teacher too is disadvantaged as observations of and engagement with all

students becomes more difficult. What alternatives might there be in such cases?

I have worked with some teachers who have tired of the disruptive time-wasting process of moving desks and chairs and others who have resisted the idea of moving furniture from the beginning. Instead, they attempt to facilitate philosophy sessions from the front of the classroom while the students are seated at their desks, configured either in rows or groups of 4-6 around a table ('cabaret style' as it is often called). It seems to me, as a result of experience and observation, that facilitating philosophical discussions from the front of the classroom, standing as one must to see all participants, makes it particularly difficult to fulfil the role of a genuine co-inquirer. It is much easier to slip into a more traditional practice of providing information and answers to students' questions when standing at the whiteboard. What is more, some students will have their backs to others and will have to turn their chairs if they wish to see and hear contributions from others. In addition, the potential for being distracted by books, pencils and other desk-paraphernalia appears to increase dramatically when students are in their usual classroom seating arrangements. Such problems seem relatively minor, yet they impact significantly on the potential for engaging students in deep thinking and discussion of philosophical issues. I recall for example observing an energetic and enthusiastic group of some ten Year 6 and 7 students discussing the problem of free will and determinism with their teacher and a guest philosopher, while the remaining fifteen or more students, seated cabaret-style, chatted quietly but off-topic to their partners, busied themselves with drawing or writing, or stared into space apparently oblivious or at least unaffected by the animated discussion going on around them, despite ongoing attempts to draw them into the inquiry.

In an attempt to overcome such a lack of space in the classroom for philosophy lessons, one classroom teacher and her school principal decided to turn an old storage room into a philosophy area. The prospect was exciting but unfortunately unsuccessful. The room, located at the top of a flight of stairs and well away from everyone else in the school, felt like a huge, echoing cavern and we sat in our perfectly formed community of inquiry circle, at first in the middle of the room and then in one corner, all the while

feeling engulfed by the space and trapped by its isolation. While there might have been some benefit in that noise from discussions would not disrupt other students or staff members, the dedicated space was not in any way conducive to the promotion of thoughtful discussion. Philosophy suddenly seemed far removed from school and everyday life. Clearly (as the Smart Green Schools project team would remind us) the selection and creation of alternative school spaces to house communities of philosophical inquiry requires careful consideration to matters of location, comfort levels and acoustics.

Finding and creating effective spaces for thinking

From my own observations of philosophy in schools over a number of years, it seems (anecdotally at least) that the most effective spaces for conducting communities of inquiry are classrooms large enough to house desks, chairs and storage units, but also with space enough to set aside a dedicated community of inquiry area. In such learning areas, students are able to move to their philosophy space with ease at change of lesson time, and this seems as effective in junior primary settings as it is in more senior classrooms. I have had the pleasure, for example, of participating in junior primary classrooms where dedicated story/philosophy areas enable the students and teachers to sit together in their circle, with easel nearby for picture books and the recording of questions and notes. I have also observed upper primary students crossing the classroom to philosophy sessions with minimal disruption and with engagement in discussion beginning within moments of the previous lesson ending. In these classrooms, a sense of belonging, the comfort of a dedicated philosophy area and ease of access to the community of inquiry space appear to combine to make philosophy a positive experience in the weekly timetable.

One further advantage in such classrooms is ease of access to a range of relevant resources (paper, pencils and books, for example) and also to classroom computers. I have, for example, observed a teacher directing students to collect their 'thinking journals' when everyone was excitedly trying to contribute their thoughts at once, so that ideas could be noted and not forgotten before returning to the discussion. In a different example, the question of whether fishing was cruel was raised unexpectedly, prompting a small group of

students to search the Internet on the classroom computer in order to find out whether fish feel pain when caught by either hooks or nets. The information retrieved enabled the community of inquiry participants to make further progress in their ethical inquiry discussion. Ready access to computers, a television or audio equipment is also helpful for the teacher wishing to use electronic sources (film footage, photographs, interviews etc) as a stimulus for discussion. Interestingly, I have also noticed that when communities of inquiry are functioning smoothly and regularly as part of the life of the classroom, the practice seems to generate curiosity and interest in the approach within the wider school community. I have been involved with an upper primary class, for example, where guests – staff members, parents, student teachers and even other students – frequently sat in and joined in the community of inquiry sessions.

Nevertheless, Sue Wilks (2009) is right to remind us that, even where space allows for the successful implementation of innovative and engaging pedagogies such as those described in the examples above, success will not necessarily be immediate. Students may well rebel against the idea of a dialogue-based approach or question the value of a philosophy corner. They may well demand to know why they are just sitting in a circle discussing ideas rather than reading or writing, and they may want to know why the teacher is suddenly asking so many more questions but not supplying any answers. Perseverance is required too, then, while students and teachers alike adjust to less traditional and more innovative spaces and pedagogical approaches.

Thinking ahead together

What more could we achieve in our quest to bring philosophy into the lives of our students if we were genuinely willing to consider the significant relationships that exist between learning and teaching spaces, pedagogy and educational outcomes? Some of my most memorable community of inquiry sessions with student teachers have been conducted on the university lawns on sunny spring afternoons. Could outdoor philosophy spaces work just as well in some school settings? Could classroom-based philosophy sessions be conducted over lunch or afternoon tea from time-to-time, emulating what works so well in philosophy cafes? Might it be possible to create comfortable philosophy corners in

classroom and school spaces where small groups of (even very young) students could gather to discuss ideas that matter to them? Could team teaching situations or open-plan classrooms provide even more opportunities for philosophy in schools?

No doubt, classroom teachers with a passion for philosophy will already be familiar with the kinds of space-related obstacles and solutions suggested here. It is also highly likely that many more innovative ideas and strategies have already been put in place by teachers trying to overcome problems of space to enable their communities of inquiry to flourish. Clearly, it would be beneficial if such knowledge and experience could be shared with others working in the field. If we are to really learn from the team members of the Smart Green Schools project though, it is time that we, as teachers of philosophy, take more notice of the spaces in which we work and actively contribute to the planning and design processes for both new school building projects and the refurbishment of school spaces whenever such exciting opportunities arise. If thinking space really is required, we had better play our part in finding and creating it.

References

Cam, P. (1995) *Thinking Together: Philosophical Inquiry for the Classroom*, Hale & Iremonger, Sydney.

Lipman, M. (1991) *Thinking in Education*, Cambridge University Press, Cambridge.

Newton, C. (2009) 'Disciplinary dilemmas: learning spaces as a discussion between designers and educators', *Critical & Creative Thinking: The Australasian Journal of Philosophy in Education*, Vol. 17, No. 2.

Splitter, L. & Sharp, A. (1995) *Teaching for Better Thinking: The Classroom Community of Inquiry*, The Australian Council for Educational Research, Melbourne.

Wilks, S. (2009) 'Observing the transformation of pedagogies and spaces', *Critical & Creative Thinking: The Australasian Journal of Philosophy in Education*, Vol. 17, No. 2.

A Model for Identifying Student Moves in Communities of Inquiry

Yip Meng Fai (Republic Polytechnic, Singapore)

Introduction

In traditional classrooms, students are often passive receivers of information. Lessons are characterised by a focus on transmittal instruction and individual work. However, the scenario is different in Philosophy for Children (P4C) lessons as the students assume new roles in collaborative classrooms, their new roles being those of active learner, collaborator and reconstructor.

In P4C, the lessons are to a great extent student-centred and inquiry-based. The students are first presented with a stimulus. The stimuli can be in the form of stories, pictures, artefacts, videos or pop songs, anything that provokes thinking and discussion. Subsequently, the students think about the stimulus, raise questions or issues, and choose the questions they wish to investigate. This is followed by a face-to-face or online discussion[1] of the question within a community of inquiry, in which the students engage in a collaborative search for understanding. Each member of the class is given the opportunity to express his own opinions and feelings about the question for discussion, and each must consider the points of view and ideas of others. Hence, students are collaborators and active learners in P4C classrooms.

With the information and ideas obtained, each student reconstructs his personal base of understanding. The P4C lesson may culminate in action projects or works of art, but in any case it should culminate in the students' reconstruction of their previous beliefs, feelings and values.

Previous studies have shown that most of the talk that occurs in traditional classrooms when students work together is either 'disputational' or 'cumulative' (Mercer,

[1] The idea of online discussion in communities of inquiry was first suggested by Yip, Quek and Tan (2008).

2000). Disputational talk is characterised by a consistent reassertion of one's opinion. It consists of short exchanges of assertions and counter-assertions (e.g. 'yes it is – no it isn't' exchanges). In cumulative talk, students add information of their own. In other words, they build positively but uncritically on one another's contributions.

Similar results were reported by Mercer (1995) on students involved in the Spoken Language and New Technology project. Fisher (2003) shares similar sentiments about cumulative talk, noting that 'children's contributions can be...endlessly anecdotal...' (p. 178).

The role of teachers shifts from 'content expert' to 'facilitator' in P4C classrooms. As facilitators, teachers encourage students in discussions to shift from assertion and cumulative moves to clarification and argumentation moves.[2] They can do this by modelling the moves the students are expected to make, and by Socratic questioning (Institute for the Advancement of Philosophy for Children [IAPC], 2003). In Socratic questioning, teachers ask open-ended questions, including those that seek clarification, probe reasons, explore counters, and test implications. '[T]he facilitator...guides the children...by asking open-ended questions...' (IAPC, 2003, What is a Typical P4C Session like? section, para. 4). Over time, when the community of inquiry reaches the mature stage of growth, the students take on question-asking roles instead of always being guided by the facilitator (Fisher, 2003).

This paper presents and assesses a content analysis model developed for the purpose of identifying the afore-mentioned moves in face-to-face and online P4C discussions. To facilitate explication of the model and subsequent replication of this study, selections of coded messages will be included, along with interrater reliability figures. The details of the process of model development will be described. It is hoped that the model will be a valuable tool that allows researchers and teacher-facilitators to carry out subsequent P4C-related studies.

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[2] A move, or its technical equivalent, 'illocutionary act', is the action intended to be performed by a speaker in the course of producing an utterance. It entails understanding the speaker's utterance and identifying the illocutionary act behind the utterance. For example, a speaker is said to have *asked a question* when he utters the sentence 'What is science?'.

Literature review

As P4C teacher-facilitators are required to encourage students in discussions to shift from assertion and cumulative moves to clarification and argumentation moves, the model to be developed needs to reflect this progression. Due to the unique characteristics of the P4C classroom, no appropriate models for use can be found in the published or online literature. The existing model closest to the above requirement is Gunawardena, Lowe and Anderson's (1997) 'Interaction Analysis Model'. We shall take a closer look at this model.

The Interaction Analysis Model was originally created to examine by content analysis the co-construction of knowledge in a one-week adult professional development online debate. It enables researchers to identify the different elements of a discourse through five phases that correspond to a progression in the knowledge construction process. The Interaction Analysis Model containing the five phases is shown in Table 1. According to Gunawardena et al. (1997), messages rated under Phases I and II are considered to 'represent the lower mental functions', while messages ranked under Phases III, IV and V 'represent the higher mental functions'. Each phase is classified into sub-categories, called 'operations'.

In the present case, we can develop a model to identify the different moves within a discussion through describing phases that correspond to a progression from assertion and cumulative moves (Phase 1) to clarification and argumentation moves (Phase 2). The preparation of this model is described in the next section.

Table 1: The Interaction Analysis Model for examining social construction of knowledge in computer conferencing

Description of phases
Phase I: Sharing/comparing of information
IA. Stating opinion in direct response to the discussion question
IB. A statement of agreement from one or more other participants
IC. Corroborating examples provided by one or more participants
ID. Asking and answering questions to clarify details of statements
IE. Definition, description or identification of a problem
Phase II: The discovery and exploration of dissonance or inconsistency among ideas, concepts or statements
IIA. Identifying and stating areas of disagreement
IIB. Asking and answering questions to clarify the source and extent of disagreement
IIC. Restating the participant's position, and possibly advancing arguments or consideration in its support by references to the participant's experience, literature, formal data collected, or proposal of relevant metaphor or analogy to illustrate point of view
Phase III: Negotiation of meaning/co-construction of knowledge
IIIA. Negotiation or clarification of the meaning of terms
IIIB. Negotiation of the relative weight to be assigned to types of ideas or answers
IIIC. Identify areas of agreement to overlap among conflicting ideas
IIID. Proposal and negotiation of new statements embodying compromise, synthesis
IIIE. Proposal of integrating or accommodating metaphors or analogies
Phase IV: Testing and modification of proposed synthesis or co-construction
IVA. Testing the proposed synthesis against 'received fact' as shared by the participants and/or their culture
IVB. Testing against existing cognitive schema
IVC. Testing against personal experience
IVD. Testing against formal data collected
IVE. Testing against contradictory testimony in the literature
Phase V: Agreement statements/application of newly constructed meaning
VA. Summarisation of agreements
VB. Applications of new knowledge
VC. Metacognitive statements by participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the computer conference interaction

Preparation of model

We shall first review two authoritative passages on discussion within the P4C context:

> Participating in a community of inquiry engages young people in important cognitive moves such as creating hypotheses, clarifying their terms...giving good reasons, offering examples and counter examples, questioning each other's assumptions, drawing inferences... But inquiry is also a social enterprise, which requires students to share their own perspectives...challenge and build on one another's thinking, look for missing perspectives... (IAPC, 2003, What is a Typical P4C Session like? section, para. 2)

> Philosophy for Children seeks...progress in coping with the philosophical questions – which might include adapted beliefs, new hypotheses for experiment or even clarification of the question... (IAPC, 2003, What is a Typical P4C Session like? section, para. 5).

Applying the structure of Gunawardena et al.'s (1997) Interaction Analysis Model and reorganising the above passages gives us two Community of Inquiry Models (call them 'CM1' and 'CM2'). CM1 and CM2 are used for content analyses of the processes of non-conceptual and conceptual inquiry respectively. CM1 is used for discussion questions which are not of the form 'What is X?'. Examples of such questions include:

- Should animals be killed?
- If you swapped brains with someone else, would you be a different person?
- How do we know we are not dreaming?

CM2 is used for discussion questions of the form 'What is X?'. Examples of such questions are:

- What is beauty?
- What is justice?
- What is courage?

Table 2 presents the categories of CM1 and the P4C terminology and dimensions associated with each category. CM1 enables researchers to identify the different moves in a discussion through phases that correspond to a progression from assertion and cumulative moves (Phase 1) to clarification and argumentation moves (Phase 2). The P4C phrase 'building on one another's thinking' involves three types of sub-moves: (1) adding a word or phrase which makes another opinion (that was in direct response to the discussion question) less strong or general, (2) adding a concept to the previous participant's ideas, and (3) adding statement(s) to the previous participant's ideas. The moves associated with the P4C phrases 'offering counter examples' and 'questioning each other's assumptions' are examples of the more generic act of countering another's ideas. Lastly, the perspectives initially provided in a discussion are more often than not 'yes' and 'no' perspectives. The P4C phrase 'look for missing perspectives' is about putting forth perspectives of the type 'yes, only if...' or 'no, only if...'[3] after the 'yes' and 'no' perspectives have been provided. In other words, the students adapt the 'yes'/'no' perspectives by adding words which make the perspectives less strong or less general. Hence the P4C phrase 'adapted beliefs'.

[3] Other versions include 'yes, unless...', 'no, unless...', 'yes, except...' and 'no, except...'.

Table 2: CM1 for discussion questions which are not of the form 'What is X?'

Phase	P4C terminology #	P4C dimension #
Phase 1: Assertion/cumulative		
1.1 Stating opinion in direct response to the discussion question	'share their own perspectives'	Social
1.2 Adding		
(a) word or phrase which makes another opinion (that was in direct response to the discussion question) less strong or general	'build on one another's thinking'	Social
	'look for missing perspectives'	Social
	'adapted beliefs'	
(b) concept to the previous participant's ideas	'build on one another's thinking'	Social
(c) statement(s) to the previous participant's ideas	'build on one another's thinking'	Social
Phase 2: Clarification/argumentation		
2.1 Clarifying		
(a) meaning of simple/complex term	'clarifying their terms'	Cognitive
(b) discussion question	'clarification of the question'	
2.2 Justifying claim	'giving...reasons'	Cognitive
	'offering examples...'	Cognitive
2.3 Countering another's ideas	'offering...counter examples'	Cognitive
	'questioning each other's assumptions'	Cognitive
	'challenge...one another's thinking'	Social
2.4 Inferring from another's claim(s)	'drawing inferences'	Cognitive

Source: IAPC (2003)

Table 3 presents the categories of CM2 and the P4C terminology and dimensions associated with each category.

Table 3: CM2 for discussion questions of the form 'What is X?'

Phase	P4C terminology #	P4C dimension #
Phase 1: Sharing of Information		
1.1 Suggesting		
(a) answer (definition) in direct response to the question 'What is X?'	'creating hypotheses'	Cognitive
(b) new definition of X (after counter-examples have been produced against all previous definitions)	'new hypotheses...'	
Phase 2: Argumentation		
2.1 Countering another's ideas by		
(a) giving a counter-example that is an example of X but fails to fit the definition	'new hypotheses for experiment'	
(b) giving a counter-example that fits the definition but is not an example of X	'new hypotheses for experiment'	

Source: IAPC (2003)

This is actually the Socratic Method or what Law (2003) called the 'Method of Counter-Examples'. Some of the earliest examples of the use of this method were given by Socrates, as recorded in the dialogues of Plato. The phases indicate the steps involved in the Socratic Method. With this method, students would be able to carry out processes of conceptual inquiry and progress towards conceptual clarity.

Pilot testing of model

CM1 was pilot tested. The main purpose of the pilot test was to assess the model and gather relevant information to refine the model. The details of the pilot testing are provided in the next three sub-sections.

Sample

The sample consisted of a P4C class of 30 male students (aged 15) from a high school in Singapore. The class was randomly divided into three groups of 10 students each, and the students in each group discussed the question 'Is astrology scientific?' via a computer network using Knowledge Forum (http://www.knowledgeforum.com). The online discussions were conducted asynchronously beyond curriculum hours and spanned a time period of eight days.

Procedures

To assess CM1, the three online discussions were used. The discussions had been automatically saved in Knowledge Forum. They were analysed by the author and a student attending the postgraduate diploma in education, both of whom were philosophy graduates. The author provided the postgraduate diploma student with a coding manual delineating the exact criteria for assigning a code for different categories. The latter was given time to read the manual and was asked to clarify any items that he did not understand. Consequently, both coders analysed one of the online discussions according to CM1. Their results were then evaluated for interrater reliability. Also, refinements, if any, were made to CM1 based on suggestions from the coders. A second online discussion was then coded. Again, the results were evaluated for interrater reliability, and refinements, if any, were made to CM1. Finally, the third online discussion was coded according to the refined CM1.

In summary, the following were noted during the assessment of CM1:

1. Interrater reliability for the first online discussion,
2. Any refinements made to the model after analysis of the first online discussion,
3. Interrater reliability for the second online discussion,
4. Any refinements made to the model after analysis of the second online discussion, and
5. Interrater reliability for the third online discussion.

The illocutionary act was used as the unit of analysis. As mentioned in the introduction, this entailed understanding the students' utterances and identifying the

illocutionary acts via these utterances. For example, a student was said to have *asked a question* when he utters the sentence 'What is science?'.

Holsti's (1969) coefficient of reliability (CR) was used to measure interrater reliability. The formula for calculating this is:

$CR = (2m / n_1 + n_2)$
Where: m = the number of coding decisions upon which the two coders agree
n_1 = number of coding decisions made by rater 1
n_2 = number of coding decisions made by rater 2

Capozzoli, McSweeney and Sinha (1999) highlighted that the CR did not account for chance agreement among raters.

Some researchers may do their coding independently and then come together to attempt to reach a consensus on the discrepancies in their coding results. Following Rourke, Garrison, Anderson and Archer (2001), we discourage such an attempt at reconciling disagreements because it 'invariably influences coding toward higher agreement and this lack of independence is likely to make data appear more reliable than they are' (Krippendorf, 1980, p. 132). However, in the present case, after identifying and categorising the target variables on their own, the coders came together to share their coding decisions and the reasons for their decisions with one another. The purpose was to eliminate chance agreement between the coders. This solved the problem highlighted by Capozzoli et al. (1999) and mentioned earlier in this section, that the CR did not account for chance agreement among raters.

Cohen's kappa (k) was not used to measure interrater reliability. Cohen's kappa offers a chance-corrected measure of interrater reliability which assumes mutually exclusive categories (Cohen, 1960). However, in CM1, 'clarifying meaning of simple/complex term' and 'clarifying discussion question' are not mutually exclusive categories, as illustrated in the following example of an online message from another discussion: 'The question implies that steel bars include bars that have been prevented from expanding by the use of pins' (Yip, 2008, p. 51).

In Table 4, a selection of online texts are presented. The purpose is to illustrate how the texts are analysed using CM1, and to facilitate replication of the protocol by subsequent researchers. To accomplish these objectives and to avoid ethical concerns, we have fabricated the texts, rather than presenting actual ones.

Table 4: A table illustrating how segments of text are coded

Text	Analysis	
Example 1		
S1: Title – Is astrology scientific?	Something is scientific if and only if it involves a methodical acquisition of knowledge through experimentation and observation.	Clarifying meaning of simple/complex term (2.1(a))
Something is scientific if and only if it involves a methodical acquisition of knowledge through experimentation and observation. Astrology is the study of the relative positions of celestial bodies in order to obtain information about personality, human affairs and other terrestrial matters.	Astrology is the study of the relative positions of celestial bodies in order to obtain information about personality, human affairs and other terrestrial matters.	Clarifying meaning of simple/complex term (2.1(a))
I think that astrology is not scientific because it is based on observation with no experimentation. Astrologers assume that their hypothesis is true with no evidence to support it.	I think that astrology is not scientific.	Stating opinion in direct response to the discussion question (1.1)
	I think that astrology is not scientific because it is based on observation with no experimentation. Astrologers assume that their hypothesis is true with no evidence to support it.	Justifying claim (2.2)
S2: Title – No evidence?	Astrologers do have evidence. It's just that the evidence does not seem plausible as there is no control group.	Countering another's ideas (2.3)
Astrologers do have evidence. It's just that the evidence does not seem plausible as there is no control group.		

Example 2

S3: Title – Is astrology scientific? The discussion question does not ask whether astrology is considered a science. It asks whether astrology is scientific. I believe that astrology is not scientific. For something to be scientific, it has to be proven by controlled experiments. But there are no such experiments in astrology.	The discussion question does not ask whether astrology is considered a science. It asks whether astrology is scientific. I believe that astrology is not scientific. I believe that astrology is not scientific. I believe that astrology is not scientific. For something to be scientific, it has to be proven by controlled experiments. But there are no such experiments in astrology.	Clarifying discussion question (2.1(b)) Stating opinion in direct response to the discussion question (1.1) Justifying claim (2.2)
S2: Title – Just asking Does all science have to be proven by experiments? Consider string theory. This theory is impossible to prove as very great energies and masses are required. Is it unscientific then?	Does all science have to be proven by experiments? Consider string theory. This theory is impossible to prove as very great energies and masses are required. Is it unscientific then?	Countering another's ideas (2.3)

Results

As mentioned in the previous section, the first two online discussions were used to refine CM1. The focus then turned to the third online discussion, which was coded with the refined model. The CR for the first online discussion returned a value of 0.72. Riffe, Lacy and Fico (1998) indicated that 'research usually reports reliability figures in the 0.80 to 0.90 range' (p. 131). However, they noted that this criterion applied primarily to categories that had been used extensively. They added: 'Research that is breaking

new ground with concepts that are rich in analytical value may go forward with reliability levels somewhat below that range' (Riffe et al., 1998, p. 131). After the first online discussion, our CR reached 0.91 (for the second discussion) and 0.88 (for the third discussion). The fact that the CR went beyond 0.90 for the second online discussion indicated excellent interrater reliability for the discussion.

One refinement was made to CM1. CM1 still contained the six categories, but sub-categories 1.2(b) and 1.2(c) were reworded. The original wording of these sub-categories was:

1. Adding concept not mentioned previously in the discussion, and
2. Adding statement(s) not mentioned previously in the discussion.

This was misleading. 'Not mentioned previously in the discussion' was intended to mean 'not mentioned by the previous participant'. But coders would most probably interpret it to mean 'not mentioned anywhere in the discussion'. The sub-categories were subsequently reworded as:

1. Adding concept to the previous participant's ideas, and
2. Adding statement(s) to the previous participant's ideas.

Future research

As mentioned in one of the passages quoted earlier, the reasons that students provide are expected to be good ones: 'Participating in a community of inquiry engages young people in important cognitive moves such as...giving *good* reasons...' (IAPC, 2003). In other words, the quality of students' justifications is seen as important in P4C. It would be useful to develop a content analysis model for determining the quality of utterances coded according to CM1 as 'justifying claim'. In future analyses, we should also consider assessing CM2.

The aim of this paper is to create a content analysis model (CM1) that could expeditiously provide important teaching and learning information with regard to the

progression from assertion and cumulative, to clarification and argumentation moves in a community of inquiry. The findings were encouraging, and CM1 was worth further investigation. We invite others to verify the results that we present and further develop CM1.

References

Capozzoli, M., McSweeney, L., & Sinha, D. (1999). Beyond kappa: A review of interrater agreement measures. *The Canadian Journal of Statistics, 27*(1), 3-23.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*(1), 37-46.

Fisher, R. (2003). *Teaching thinking* (2nd edn.). London: Continuum.

Gunawardena, C.N., Lowe, C.A. & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 397-431.

Holsti, O. (1969). *Content analysis for the social sciences and humanities.* Don Mills: Addison-Wesley.

Institute for the Advancement of Philosophy for Children (2003). *What is 'Philosophy for Children'?* Retrieved April 11, 2009, from: http://cehs.montclair.edu/academic/iapc/whatis.shtml

Krippendorf, K. (1980). *Content analysis: An introduction to its methodology.* Newbury Park, CA: Sage.

Law, S. (2003). *The philosophy gym: 25 short adventures in thinking.* London: Headline.

Mercer, N. (1995). *The guided construction of knowledge: Talk amongst teachers and learners.* Clevedon: Multilingual Matters.

Mercer, N. (2000). *Words and Minds: How we use language to think together.* London: Routledge.

Riffe, D., Lacy, S. & Fico, F. (1998). *Analyzing media messages: Quantitative content analysis.* New York: Lawrence Erlbaum Associates.

Rourke, L., Anderson, T., Garrison, D.R. & Archer, W. (2001). Methodological issues in the content analysis of computer conference transcripts. *International*

Journal of Artificial Intelligence in Education, 12, 8-22.

Yip, M.F. (2008). *Computer-supported collaborative argumentation in a Secondary 3 Philosophy for Children classroom.* Unpublished master's thesis, Nanyang Technological University, Singapore.

Yip, M.F., Quek, C. L. & Tan, S.C. (2008). eP4C: Using technology to support community of inquiry. *Critical & Creative Thinking: The Australasian Journal of Philosophy in Education, 16*(2), 39-58.

Thinking Emotions: A Proposal for Early Childhood Education

Marta Giménez-Dasí (Universidad Nacional de Educación a Distancia)
Laura Quintanilla (Universidad Nacional de Educación a Distancia)
Lina Arias (Universidad Autónoma de Madrid)
Marie-France Daniel (Université de Montréal)

Abstract
During early childhood education, children begin to develop in the social world. They start to make friends, have conflicts, collaborate etc. Providing children with effective instruments that enable them both to obtain social acceptance and to accept others must be a priority at this stage of education. The great majority of intervention programmes designed to improve emotional and social skills attempt to teach specific strategies or techniques for children to use in their everyday life. Although it cannot be said that they are useless, when their results are evaluated, it is observed that children do not generalise to other contexts what they have learned, or maintain the results in the medium or long term. The aim of this paper is to present the design of an intervention programme that, although it includes specific learning techniques, focuses mainly on critical reflection as a form of learning. Through methods that demand an in-depth participation on behalf of the child, such as 'Philosophy for Children' elaborated by Lipman and Sharp, it is possible to promote a critical reflection on the nature of emotions and their management. Our proposal defends the need to set up a programme in early childhood education designed to improve children's social and emotional skills through reflection, critical thought, creativity and understanding the world through their own experiences.

Thinking emotions: a proposal for early childhood education

Over the past years, psychology has again become interested in the emotional world. This absence, imposed by dominant cognitive theoretical trends in psychology, started to change in the1980s decade. From then onwards, there has been an increase in publications and theories recognising the relevance of emotions in social life, its evolution and repercussions throughout development and the importance of being 'socially and emotionally competent' (Eich & Schooler, 2000).

Part of this interest is reflected in the recent appearance of numerous intervention programmes targeting children and adolescents, aimed at improving their social and emotional competences. These interventions, designed and implemented chiefly in the United States, are either part of programmes whose objective is to improve intellectual skills or to establish good health habits, intellectual coexistence, or education for peace. Other programmes primarily seek to improve social and emotional skills. Their purpose is to help children understand and regulate their emotions better and to learn interaction norms that facilitate the forming of satisfactory relations with peers and adults. However, many of these programmes face important objections that question their very basis and validity. Some programmes are based on definitions and concepts that are unclear, others do not achieve the expected improvement or the improvement is not stable over time (Denham & Almeida, 1987; Johnson & Johnson, 1996; Kam, Greenberg & Kusché, 2004; Lochman, 1992; Pfeiffer & Reddy, 1998; Topping, Bremmer & Holmes, 2000, among others).

The aim of this paper is to justify the claim that intervention programmes in socio-emotional skills should start during early childhood education. In addition, we aim to advance a proposal for working with emotional development of 3- to 6-year-old children which is based on combining two methods: 1) Lipman's Philosophy for Children (P4C), which provides reflection tools and learning methods through dialogue and the development of critical thought; and 2) learning different 'techniques', just as the most conventional intervention programmes propose.

Why is intervention in socio-emotional skills necessary from early childhood?

By simply interacting with others, observing the results of one's behaviours and rectifying them when they do not work as desired, children learn social and emotional competences.

Efficiency in social interaction is acquired throughout development, and more or less everyone is able to intuitively distinguish a socially reprehensible act from a socially acceptable act. However, in everyday life explicit instructions, development of awareness and reflection – even basic – about the nature of the social relations and emotions involved, are usually absent. In Western society, this taboo has generated a somewhat 'anti-emotional' culture, something quite paradoxical given the relevance and impact of this area for human beings (Hyson, 2004).

It is a fact that schools do not usually include children's emotional needs as part of the curriculum (Hyson, 2004; Monjas Casares, 1993, 2000; Schleifer, Daniel, Peyronnet & Lecomte, 2003). In general, the guidelines offered by the education departments of different Western countries do not include emotional skills as an integral part of the contents on which schools should focus. Indeed, when they are included, it is only in a general way or as part of a long list of skills proposed. It is usually assumed that emotional education is the responsibility of the families, and that schools have no say in the matter. However, in the current social context the traditional function of upbringing is becoming increasingly limited. Families restrict their role in their child's upbringing to ever-more basic aspects, increasingly the family spends less time together, and children spend most of their time in educational institutions. In short, given the importance of social and emotional issues in personal development, the characteristics of Western society in dealing with this subject, and the absence of educational guidelines, both private and institutional, an intervention programme in this area could fill an important educational gap.

As previously stated, there are in fact numerous programmes dedicated to improving socio-emotional skills, but the great majority are designed for the primary stage of

education.[1] It seems as if prior to age six or seven years, learning to be socially and emotionally competent is regarded as not relevant. From developmental psychology, however, the scene depicted is very different. Between ages three and six years, one of a child's most important tasks, if not the most important, is to enter the world of social relations (Denham, 1998; Dunn, 1994). For many youngsters, the start of preschool education is their first contact with other children with whom they spend many hours. During the time they are together and from such an early age, children start to form their first affective relations, make their first friends and express their first rejections. Although the most traditional developmental research work maintained that at these ages instability characterised children's relationships, it is also true that it is possible to observe the beginnings of very close and long-lasting relationships (Dunn, 2004; Rubin, 1980). As Dunn (2004) observed, already at four years, children express rejection for some of their peers. These children rejected by the others from such an early age tend to lack adequate interaction patterns for becoming part of a group, they do not take the needs of others into consideration, and they obtain worse results in mental and emotional comprehension tests.

Moreover, interaction patterns that children practise to relate with others already seem to show certain stability. For example, Denham, Mason, Caverly, Schmidt, Hackney, Caswell and DeMulder (2001) observed children's group interaction at two time points: at three years, and after their fourth birthday. Through these observations, they established two interaction types based on the predominant emotional tone between the children, which produced a classification of 'positive playgroup' and 'negative playgroup'. While children in the former playgroup expressed happiness, paid attention to the emotional demands of the other children and played in harmony, children in the latter group tended to express negative feelings – such as being angry, in disagreement and fighting – showing little responsiveness to others, and maintaining rather conflicting dynamics. The most interesting result for our current purpose, however, is

[1] Although it is true that some programmes, such as PATHS or the Incredible Years, are targeting younger children, most are designed for older children.

that the observations carried out a year later showed stability over time of the two group types. That is, the children who established warm and positive relations at three years did so again the following year, but the children who maintained conflicting relations also continued to do so the following year. This result, therefore, shows that children's interaction patterns and social and emotional skills have certain stability, although one year is still a relatively short time. This is a very encouraging result for the children in the 'positive playgroup', but worrying for children in the 'negative playgroup'. Thus, the importance of relationships with others from the first years of life, observing from these early ages that there are 'popular' and 'unpopular' children, and the fact that relationship patterns already have certain stability, are all elements that justify early intervention in this field.

Why is Philosophy for Children necessary?

What type of intervention is it possible to carry out in this field? Programmes seeking to provide children with a comprehensive training through complex thoughtful considerations and reflections seem more useful than those whose aim is only to teach techniques (Denham & Almeida, 1987; DuPaul & Eckert, 1994; Grossman & Hughes, 1992; Hundert & Houghton, 1992; Johnson & Johnson, 1996; Kam, Greenberg & Kusché, 2004; Palardy, 1992; Urbain & Kendall, 1980). In this sense, programmes such as P4C are valuable tools that can be adapted to specific needs or concrete areas of intervention. The aim of this type of programme, in general, and Lipman's, in particular, is that children reflect and develop critical thinking through group questioning (Lipman, Sharp & Oscanyan, 1980).[2] Specifically, the aims of this programme are to improve children's and adolescents' thinking skills, develop creative thinking, promote personal and interpersonal growth, develop an understanding of the ethical dimension, and help to understand the world through experience. To achieve these aims, Lipman and colleagues use a series of stories or

[2] Although we cannot spend too much time in a detailed presentation of this programme as it exceeds our present aims, we will however outline its basic guiding principles and general purpose to provide the framework for our proposal. The interested reader can look up Lipman, Sharp & Oscanyan (1980).

novels to present philosophical issues (ethics, logic, metaphysics and aesthetics) adapted for children. The teacher or the children themselves, if they already can, read the stories and decide about what specific aspects to reflect upon together. In this way, what Lipman calls a 'community of inquiry', in which all participants become involved in order to reflect and converse together, is created between the children (Lipman, Sharp & Oscanyan, 1980). For the community to reap the benefits, it is necessary that its members become involved in an 'authentic dialogue' (Dewey, 1983), that they are prepared to listen and to change the way they think or their opinions when they consider the arguments put forth by others. Obviously, these conditions are not created or achieved in a short period of time. Indeed, it is necessary to establish an appropriate atmosphere and to have a motivated teacher who can adequately guide reflection sessions.

As mentioned above, Lipman and colleagues' programme addresses philosophical issues that incite reflection in children. Through the stories they read, children discover how the characters reason, and how they apply their reasoning effectively to everyday life. The aim is that through the teacher-guided discussion, children internalise peers' reflection and questioning processes in order to generate critical and creative thinking. At the same time, the aim is that children learn to value their opinions and that of others, together with the significance that their contributions may have. For example, one of their stories brings up the Cartesian statement and its famous conclusion, 'I think, therefore I am', and the teacher asks a series of questions to guide the discussion. The aim is that the children start to reflect on the truth of their existence, of objects and of other persons, and that they ask themselves about what proof there is that confirms their own existence, just like Descartes did.[3]

Given that the aims of this programme are more deep and complex than the mere transmission of techniques or skills, this method requires time and effort on behalf of the children and the teacher. Ideally, this type of programme, which intends to provide overall training to the individual student, should last throughout the school years.

[3] Even if Lipman's stories refer to important Western philosophers, the narratives are based on children's everyday life experiences.

Nevertheless, shorter interventions have also proved effective with respect to academic skills, such as development of critical and analytical thought, language, reading and writing etc (Daniel, Lafortune, Pallascio, Splitter, Slade & De la Garza, 2005; García-Moriyón, Colom, Lora, Rivas & Traver, 2000; Iorio, Weinstein & Martin, 1984; Morehouse & Williams, 1998; Niklasson, Ohlsson & Ringborg, 1996; Reed, Ronald & Henderson, 1984). However, even though the programme, and its application, has become widespread, P4C still has some methodological problems that have not been solved. As García-Moriyón, Rebollo and Colom (2005) have pointed out, maybe the most important is the absence of specific measurements or data in many published reports to evaluate the effectiveness of the programme. In addition, the different authors have employed a wide variety of designs and methods in applying the programme and the samples are usually small. However, in a meta-analysis of 18 studies selected on the bases of three criteria – that it assessed the programme's effectiveness, evaluated cognitive skills, and provided the necessary statistical information to calculate the effect of the programme's effectiveness – García-Moriyón et al. (2005) found that the results confirmed the programme's effectiveness and the increase in children's cognitive abilities.

A final drawback for our purpose is, indeed, that most empirical studies on P4C have focused on cognitive aspects, and very few studies have evaluated affective, emotional and/or social skills. Although there are practically no studies verifying the effectiveness of programmes dealing with socio-emotional issues, some research studies point out the benefits students can obtain in this area. For example, Trickey and Topping (2006) elaborated an open questionnaire for 11-year-old students who had followed a P4C programme for seven months, exploring participants' subjective evaluation. Students were required to evaluate overall the experience, to describe which aspects of the classes they liked most and least and what changes and progress they observed, if at an individual level the programme had helped them in something, if there was transference from the system of reflections to other areas etc. Among the most significant results, they found not only that most students valued the experience positively, but that

in addition to the changes encouraged by the programme and the individual help received, many children mentioned changes in social behaviour and progress in emotional intelligence. For example, they mentioned aspects such as absence of peer abuse, a more easygoing atmosphere at school, greater disposition to accept and appreciate others, increased cooperation, greater control of emotions, and increased empathy (Trickey & Topping, 2006, pp. 27-28). Romero (2006) also evaluated in Spain the level of group cohesion and the perceived atmosphere in class, in a group of 15- and 16-year-old students, after having worked with P4C during the complete academic year. Pre- and post-test comparisons within the experimental group and between the experimental and control groups highlighted a relevant effect of the programme on both variables. On the one hand, there was a clear increase in the experimental group's cohesion compared to that of the control group. On the other, measures related to the socio-emotional aspects of the atmosphere in the classroom significantly increased at the end of the programme. Finally, on other occasions benefits have been observed after participation in the programme, reflected mainly in an improvement of children's self-concept and self-esteem (Palsson, Sigurdardottir & Nelson, 1998).

Within the field of early childhood education, one of the few published reports that includes measures over a period of time evaluated the impact of philosophical discussion on aspects such as recognising emotions, empathy, moral autonomy and moral judgement (Schleifer et al., 2003). The study used a series of philosophical stories as the basis for discussion with a group of 39 boys and girls, aged five years, from three different schools. Weekly sessions were carried out during the school year. The two groups, experimental and control, were evaluated before and after treatment in four aspects that the study was seeking to improve: recognising emotions, empathy, moral autonomy and moral judgement. The results showed that at the end of the school year, children in the experimental group were significantly more empathic and offered more elaborated judgements when the content was related to violence than the control group. In addition, in two of the three classrooms in the experimental group there were significant improvements in recognising emotions compared with the

control group. Although these results are encouraging, the authors themselves recognise that:

> ...given the neglect of the emotions in education (even in moral education), much more work needs to be done on how children can be helped to learn about, identify and articulate their own, and other's emotions. More research is needed on the impact of programmes like Philosophy for Children, on both short-term learning, and long-term development of emotions, particularly with very young children. (p. 7)

In this same line, an interesting proposal comes from Daniel (2002, 2009) who has elaborated a programme, based on P4C, aimed at preventing violence in children from five years onward. Her programme includes a number of philosophical stories presenting issues related with emotions, body privacy, social relations and violence, which children are required to reflect on and discuss. Although, as she herself recognises, her programme is no panacea, preliminary studies carried out show that its regular and continued use contribute to the child's overall education and to the development of skills related to the prevention of violence (Daniel & Delsol, 2005; Daniel, Doudin & Pons, 2006; Daniel & Michel, 2000; Daniel, Peyronnet & Schleifer, 2005). In short, even though there is a lack of data regarding specific intervention programmes applying P4C to socio-emotional issues, the programme's methodology has a lot to offer for the development of these issues. A community of inquiry represents a domain that in itself promotes awareness and regulation of emotions, acquisition of socially-adapted interaction strategies and empathy. Therefore, the main work of P4C applied to the socio-emotional domain would consist, in general, in making emotions explicit and conscious, and in providing children the strategies to regulate them in a socially-adaptive way (Gazzard, 2000).

Thinking emotions: a programme for early childhood education based on P4C

From this framework, we consider that our programme fits well with the results of empirical studies that indicate that encouraging reflection, using dialogue as a tool to promote perspective taking, and promoting listening and attending as requisite to negotiate meanings, are sufficiently attractive aspects that they could well constitute an intervention proposal in the field of emotions and in understanding the social world of children in the second cycle of preschool education (three to six years of age). However, it would also be important to combine the above with other more specific techniques that, in some cases, may aid learning.

As we have seen, P4C achieves deep and lasting changes, but it has not been used systematically in the field of emotions, and the authors working in this area express a need for such a programme. In addition, the method itself would contribute to achieving the aims of the programme, for, as we have seen, a community of inquiry favours positive social integration and empathy. There are also no programmes combining this methodology with specific learning techniques. The best combination and the one that could probably achieve more deep and lasting changes would be a primarily reflexive programme that also incorporates specific techniques that are useful for some children or at certain moments of the intervention. This combination of methods could solve some problems. For example, it is possible that not all the children in a class are equally ready to undertake a joint reflection at the time proposed. On the other hand, the children with greater problems could benefit sooner from learning specific techniques, and this would allow them to become involved and make the best use of the dialogue and joint reflection. In the following table (Table 1), the different aspects addressed in the proposed intervention programme are summarised, together with the aims to be achieved.

Table 1: Main aspects on which the intervention programme focuses and aims to achieve

1.	**Basic emotions**	Happiness Sadness Fear Anger	For each of these emotions the following achievements will be reached: • To recognise and identify emotion in oneself • To recognise and identify emotion in others • Correct labelling of emotions • Causes of emotions • Consequences of emotions • Adequate expression of emotions • Adequate regulation of emotions
2.	**Complex emotions**	Pride Envy	
3.	**The nature of emotions**	Transmit the notion that emotions change, become confused, are not always clear, and need reflection and awareness	
4.	**Apparent versus real emotions**	Sometimes what is felt and what is expressed does not coincide; the role of context and culture	
5.	**Empathy**	What it is, what it is for, and how to foster it	
6.	**Social competence**	Strategies to make friends, solve interpersonal problems and achieve social acceptance	

Work in the classroom would be as follows:

1. Reading a story dealing with the specific aspects that are being targeted
   All the points addressed in the programme would be introduced through a short story presenting the subject. The main support to be used would be the *Tales of Audrey-Anne* elaborated by Daniel (2002, 2003) which has already been used in the P4C programme.

2. Philosophic reflection and discussion
   Based on the story presented to the children, there would be teacher-guided philosophical discussion in which those issues considered more interesting are debated, commented on and questioned. These discussions would follow the P4C's own methodology developed by Lipman et al., (1980).

3. Activities and strategies

After the debate, specific activities targeting the issues previously discussed would be proposed, and specific behaviour strategies using techniques that have obtained the best results with children in this age range would be shown i.e. mainly modelling, training, reinforcement and role-playing (Johnson & Johnson, 1996; Lochman, 1992; Trianes, Muñoz & Jiménez, 1997, among others).

As an example, we next present a story targeting envy, together with different guidelines for the discussion, and the activities and strategies we designed for it.

The Little Mouse

Today Ana has arrived at school slightly later than usual. When she reaches the playground, she sees that all the children are in a circle around Julia. Julia has something hidden in her hands. 'Show it to us, we want to touch it,' they are all saying.

Julia shakes her head and wants to be left alone. Ana feels great curiosity. She approaches Julia and asks her what she is hiding in her hands. Javier also comes up and says, 'Julia has a small mouse we've found in the playground.'

'Can I hold it?' Ana asks.

Julia says, 'No.' Nevertheless, she opens her hands a little and Ana can see the mouse's ears, eyes and snout.

Suddenly, Maria shouts, 'Now it's my turn! I want to hold the mouse!'

But Javier says, 'No, I was before!'

Julia looks at the children and says, 'I'm not going to let anyone hold this little mouse. It's mine and no one is going to touch it.'

Javier starts to cry and says to Julia, 'But you promised you would let me hold it a little.'

Suddenly, Maria says, 'Huh! Well that mouse isn't that nice. My cousin has a hamster that's much bigger and softer and he lets me play with it whenever I want.'

The children were so absorbed with the mouse that they did not see the teacher arrive. 'What's going on here? Why are you crying Javier?' the teacher asks.

Then Javier explains, 'We've found a small mouse in the school playground but Julia won't let me hold it.'

Julia says, 'Well I got it first.'

As she is saying this, the mouse jumps out and runs away along the playground. All the children look at the mouse. Julia becomes sad and starts to cry when she sees that her mouse has escaped. Javier remains looking at the mouse and smiles.

Introduction for teachers

Envy is a feeling that has, at least, two different meanings: one expressed openly and the other hidden or disguised. The first refers to a feeling of wanting something that someone else has or has achieved, but the person assumes it in such a way that its absence does not cause frustration or negative feelings. In fact, the feeling of envy is coupled with a positive emotion towards the person that possesses the desired object. It is a question, therefore, of enjoying someone else's pleasure, without allowing the absence of the desired benefit or object to affect one's self-confidence or self-esteem.

The second meaning of envy refers, however, to a harmful feeling that surfaces in a person when someone else has something that that person wants. Envy can then generate two very different emotions: on the one hand, it is possible to feel sadness, frustration, anger or even violence when one cannot obtain what someone else has; on the other, it is possible to feel happiness when that something is damaged. In fact, envy generates the feeling that one has no possibility of access to that desired something and this is lived as an injustice, for there is nothing to justify why it is the other and not oneself who possesses that something. In reaction, the envious person would like to destroy the desired object, thus destroying any possibility of sharing, of reciprocity, and of opening up to the other. In short, this feeling can generate conflicts between individuals.

Discussion plans and activities

Discussion plan

- Why do you think all the children want to touch or look at Julia's mouse?
- Why do you think Julia does not want to show the mouse to Javier and the other children but shows it to Ana? Give at least two reasons.
- Why do you think Maria suddenly changes her opinion and says that Julia's mouse is not so nice after all? Is it a good strategy? What do you think are her feelings? Do you like the mouse or not?
- Is Julia right not sharing the mouse with the other children? Why? What is the outcome?
- If we lend another child a toy, do we lose the toy forever?
- Why do some children always want what others have?
- What do you think someone feels when they want what someone else has and they do not have it and they also want it: happiness, sadness, anger, frustration? Give examples to illustrate your answer.
- Why does Javier start to cry?
- How do you think Javier is feeling? Why?
- Who has found the mouse?
- Why does Javier not have it?
- Why does Javier half laugh when the mouse runs away from Julia's hands? What does Javier feel to make him smile? Does he have a good reason to be happy?
- Is it right for Javier to smile when the mouse runs away from Julia's hands?
- Can you think of a solution for children who always want what others have?

Activity: the two meanings of envy

The teacher divides the blackboard into two columns. In the first, they write 'Ana' and, in the second, the names 'Javier' and 'Maria'. They ask the children to list all the differences between what Ana is feeling (e.g. pleasure) and what Javier and Maria are feeling (e.g. everybody wants to hold the mouse). The teacher writes down and discusses the

children's responses to ensure that the whole group is in agreement. The activity can be completed with the following discussion.

Discussion plan

- What do you prefer to feel: Ana's emotions or Javier and Maria's emotions? Why?
- What are the consequences of Ana's attitude for her? And for her friends?
- What are the consequences of Javier and Maria's attitude for them? And for their friends?

Activity: birthday presents
The following situation is proposed to the children and they are asked to explain what they would do:

> It is your birthday and you have received a very nice present. Your friend Javier has also wanted it for some time. Would you lend it to him? Explain the consequences of your decision.

The following objects can be used in this situation:

- A puppy (cat, dog or hamster)
- A building block game
- A skipping rope
- A ticket for the zoo
- A story book
- Light-up shoes

For these situations, the children must explain if they would lend the object to their friend and why; what would be the consequences of their choice for them and what consequences would their action have for their friend.

Activity: looking for solutions so that Javier will stop crying
The teacher goes over the story for the children and proposes different possibilities to find solutions to Javier's envy.

Javier wants to see Julia's mouse but she does not let him have it. At a certain point in the story, Javier starts to cry. Explain what you think Javier is feeling at that moment and help him find a solution so that he is happy

once again. For guidance, the following questions may be proposed:

- Do you think that Javier can change his mood? Do you think he can stop crying and become happy even if Julia does not let him have the mouse? Why?
- What could Javier think or do to stop crying and be happier at that moment? Find a solution to help Javier.

Activity: can we have what others have?

In the story, the children envy Julia because she is holding a small mouse in her hands. Some children, like Ana, are happy for her but others, like Javier, think it is unfair. For the following situations (Table 2), indicate if it is fair or unfair not to have what others have and explain why.

Table 2: Activity – can we have what others have?

Julia has...	**If you do not have it, do you think it is just or unjust for you? Explain why.**
• A little mouse • A little mouse that might have microbes because they have found it in the schoolyard • A little worm • Chickenpox • A story book that you do not have but that you have already read in the library • Brothers and sisters that buy her a lot of sweets, while you only have a younger brother who loves you more than anything else in the world	

The activity may be completed with a discussion.

Discussion plan

- Do we envy everything that others have and we do not? Why?
- Are there things that others have and we do not want? Set an example.
- How can we be sure before envying a peer that what s/he has will make us happy and not cause us problems?

- Is it possible not to envy others and be happy with what one has? Explain your idea.
- If, at times, your friends have things that you do not have and, other times, you have things that your friends do not have, is it fair or unfair? Why?

Activity: from envy to empathy

In some situations, we would like to have what someone else possesses. Sometimes it involves material things and others' personal qualities. However, when someone possesses what we desire, we may feel what in everyday usage we know as 'healthy envy'. This feeling does not have the negative characteristics of true envy (frustration, low self-esteem, lack of awareness); there is a good feeling towards that person's good fortune. In other words, there is empathy towards the person. Even though they may involve possessions or qualities that the person would also desire, nonetheless, s/he is pleased that the other person can enjoy them. Through this feeling of 'healthy envy', empathy skills emerge, allowing one to adopt the point of view of the other and to feel jointly.

The activity proposed next is for children to do at home with their parents. It would make the activity easier for the children and they would obtain greater benefit. The teacher tells the children that with their parents they have to think of a situation in which they felt happy for another person (ideally another child or sibling, if they have one). Then they need to think of another situation in which they felt envy with all its components: someone else has something they desire and do not have, they feel saddened, they consider the situation unjust because they should have it and they are pleased if the other loses it. If the children and parents cannot recall a real life situation, they can invent a fictitious one. In both situations and with the parents' help, it is necessary to establish the following (Table 3):

Table 3: Activity – from envy to empathy

Empathic situation	Envious situation	Comparison and strategies
• How did you feel? • Why did you feel like that? • Why did you not feel envy?	• How did you feel? • Why did you feel like that? • Why did you feel envy? • What did you do to overcome the envious situation?	• Which situation did you like more, which one made you feel better? • What can you do the next time you feel envy to transform it into empathy?

Activity: defining envy

Based on the previous activities, the aim is to obtain a clear and simple definition of what envy is, stating in which situations it appears, and what elements will favour it. Ideally, using as the starting point the situations that the children have worked on with the story and with their parents, for example, to list the situations in which there is envy and those in which there is empathy, extract their common characteristics, and reach a definition. The teacher will essentially perform this activity but with the help of the children who, in the end, will be the ones to obtain the definition.

Activity: face portraying envy

This is a short and simple activity that allows children to realise that there are feelings that cannot be identified through a facial expression. The teacher asks the children (all at the same time or each in turn) to put on a face showing envy in front of a mirror. The rest of the class must say if they do or do not recognise the expression as envy. To highlight the contrast, the teacher can ask the children to put on an angry face, a sad face, a happy face etc.

As a conclusion, the activity shows that there are feelings without a 'face' and that, therefore, they are not as easily recognised as others. This is a good opportunity to go over other emotional expressions that have already been worked on in class.

Activity: recognise envy and write a story (I)

If this is a feeling with 'no face', then how may we recognise it? Returning to the definition and the situations that the

children have worked on with their parents, it is possible to extract the characteristics that allow us to recognise envy in oneself and in others (even if it is at a very basic level). For example, these could be worked on in class:

- A child feels s/he wants something s/he does not have.
- The child thinks s/he should also have it.
- The child gets angry.
- The child gets into a bad temper.
- The child starts to cry.

The children invent a short scene that they can represent with puppets, in which a boy or a girl wants something that someone else has and when s/he does not get it, s/he becomes angry, cries etc.

Activity: focus on envy and write a story (II)

The intention is to provide guidelines that allow the children to reduce envy and be pleased with or take comfort in other things (more materials and simpler situations than those on which the following activity focuses). Once we have identified that we want something we do not have and we feel bad, what can we do? Reflect with the children about the following issues:

- Do we feel good when we want something that we do not have?
- What can we do about it? Guide the reflection towards:
  - Attempt to obtain it politely (we ask for it).
  - Look for something else that also interests us and think how nice and what fun it is to have it.
  - Think that there are many attractive things and activities with which we can have fun.

Once we have debated and described the strategies we consider more adequate, we continue making up the story of the previous activity, the aim being that the characters put into practice through a story the strategies described. The children represent the story with puppets. Role-playing can also be used with the children.

Activity: cultivate self-esteem, a way of reducing envy

As we have already mentioned, envy reflects a feeling of internal emptiness or an absence. It is possible that by working their autonomy and self-esteem, children manage to reduce gradually negative comparisons with others and, therefore, the desire for what others have or are. Although comparisons are inevitable, on occasions they make the children feel different from the others. However, the negative result of a comparison must not only focus on this aspect. It can also help value that even though one does not possess a quality (or material something) like that of the other person, one has other qualities that are positive and that deserve to be recognised by oneself.

In this sense, teachers can help children become aware of the positive characteristics of their personality. For this purpose, they give each child one of the following sentences. Teachers ask each child to explain to the class a positive quality or characteristic that they have. Then teachers write it down on a card that they place on the classroom wall. Prior to responding, children can ask their parents, teacher or friends to help them.

- Name a situation in which you were brave.
- Describe what you like most.
- Describe what your mummy likes most about you.
- Explain what makes you different from other children.
- Remember some situations in which you were successful.
- Name qualities that characterise you.
- Name activities in which you are good.
- Name new things you have learned in class.
- Name an occasion in which you took the initiative.
- Name an occasion in which you did not give up.
- Describe things you have made up (games, songs, stories etc).
- Describe an occasion in which you helped a friend.
- Explain how you made up after a quarrel with a friend.
- Name an occasion in which you were able to cooperate with your peers.
- Name a situation in which you stood up for a friend.
- Name positive emotions inside you.

- Name a situation in which you were happy for a friend.

Conclusions

As we have seen, becoming aware of emotions, emotional regulation strategies, empathy and acquisition of social skills are issues that need to fostered from the beginning of socialisation. From development psychology, attention has been drawn to the close relationship between the socialisation process and the acquisition of social skills. On the other hand, current approaches to social and emotional development propose that dialogue is one of the cultural and socialising activities involved in the emergence of basic abilities – cognitive, social, and emotional – in order to understand one's own and others' subjective aspects (Meins & Fernyhough, 1999; Symons & Clark, 2000; Nelson, 2007).

From our point of view, P4C is a good methodology through which to develop all these aspects, as one of the bases on which it is founded is dialogic activity. This activity would be the link and the medium that would connect and at the same time promote social and emotional skills and understanding. The research community of inquiry is the setting in which children must immerse themselves, not only to think about the specific contents of the programme, but for the dialogue itself, at the heart of which cognitive abilities emerge. However, we must point out that any programme promoting emotional awareness and social skills, like the one being presented here, will have limitations if not all the agents involved in the socialisation process participate. The involvement of the different agents, especially the families, is an essential element to obtaining real benefits. Therefore, within the programme, activities will be proposed to promote parents' greatest possible participation. The ultimate aim is to achieve in-depth reflection, awareness and social and emotional skills by joining the efforts of the children, the school and the families.

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References

Daniel, M-F. (2002). *Les contes d'Audrey-Anne.* Québec: Michel Cornac.

Daniel, M-F. (2009). *Dialoguer sur le corps et la violence. Un pas vers la prévention.* Québec: Michel Cornac.

Daniel, M-F. & Delsol, A. (2005). Learning to dialogue in kindergarten. A case study. *Analytic Teaching, 25*(3), 23-52.

Daniel, M-F. & Michel, A.M. (2000). Learning to think and to speak: An account of an experiment involving children aged 3 to 5 in France and Quebec. *Thinking, 15 (3)*, 17-25.

Daniel, M-F., Doudin, P-A. & Pons, F. (2006). Children's social representations of violence. Epistemology and moral development. *Journal of Peace Education, 3*(2) 209-234.

Daniel, M-F., Lafortune, L., Pallascio, R., Splitter, L., Slade, C. & De la Garza, T. (2005). Modeling the development process of dialogical critical thinking in pupils aged 10 to 12 years. *Communication Education, 54*(4), 334-354.

Daniel, M-F., Peyronnet, E. & Schleifer, M. (2005). Learning to philosophize in preschool: A step toward primary prevention of violence? In F. Pons (Ed.), *Emotions in learning* (pp. 59-75). Aalborg: Aalborg Universitetforlag.

Denham, S.A. (1998). *Emotional development in young children.* New York: The Guilford Press.

Denham, S.A. & Almeida, M.C. (1987). Children's social problem-solving skills, behavioral adjustment, and interventions: A meta-analysis evaluating theory and practice. *Journal of Applied Developmental Psychology, 8*, 391-409.

Denham, S.A., Mason, T., Caverly, S., Schmidt, M., Hackney, R., Caswell, C. & DeMulder, E. (2001). Preschoolers at play: Co-socialisers of emotional and social competence. *International Journal of Behavioral Development, 25(4)*, 290-301.

Dewey, J. (1983). *Démocratie et éducation. Introduction à la philosophie de l'éducation.* Artigues-près-Bordeaux: L' Âge d'Homme.

Dunn, J. (2004). *Children's friendships: The beginnings of intimacy.* Oxford: Blackwell Publishing.

DuPaul, G.J. & Eckert, T.L. (1994). The effects of social skills curricula: Now you see them, now you don't. *School Psychology Quarterly, 9*, 113-132.

Eich, E. & Schooler, J.W. (2000). Cognition/Emotion interaction. In E. Eich, J.F. Kilhstrom, G.H. Bower, J.P. Forgas & P.M. Niedenthal (Eds.), *Cognition and Emotion* (pp. 3-29). Oxford: Oxford University Press.

García-Moriyón, F., Colom, R., Lora, S., Rivas, M. & Traver, V. (2000). Valoración de "Filosofía para Niños": un programa de enseñar a pensar. *Psicothema, 12 (2),* 567-571.

García-Moriyón, F., Rebollo, I. & Colom, R. (2005). Evaluating Philosophy for Children: A meta-analysis. *Thinking, 17 (4)*, 14-22.

Gazzard, A. (2000). What does Philosophy for Children have to do with Emotional Intelligence? *Thinking, 15(1)*, 39-45.

Grossman, P.B. & Hughes, J.N. (1992). Self-control interventions with internalizing disorders: A review and analysis. *School Psychology Review, 21*, 229-245.

Hundert, J. & Houghton, A. (1992). Promoting social interaction of children with disabilities in integrated preschools: A failure to generalize. *Exceptional Children, 58*, 311-320.

Hyson, M. (2004). *The emotional development of young children: Building an emotion-centered curriculum.* New York: Teachers College Press.

Iorio, J., Weinstein, M. & Martin, J. (1984). A review of District 24's Philosophy for Children Program. *Thinking, 5* (2), 28-35.

Johnson, D.W. & Johnson, R.T. (1996). Conflict resolution and peer mediation programs in elementary and secondary schools: A review of the research. *Review of Educational Research, 66*, 459-506.

Kam, C.M., Greenberg, M.T. & Kusché, C.A. (2004). Sustained effects of the PATHS curriculum on the social and psychological adjustment of children in special education. *Journal of Emotional and Behavioral Disorders, 12*, 2, 66-78.

Lipman, M., Sharp, A.M. & Oscanyan, F.S. (1980). *Philosophy in the classroom.* Philadelphia: Temple University Press.

Lochman, J.E. (1992). Cognitive-behavioral intervention with agressive boys: 3-year follow-up and preventive effects. *Journal of Consulting and Clinical Psychology, 60*, 426-432.

Meins, E. & Fernyhough, C. (1999). Linguistic acquisitional style and mentalising development: The role of maternal mind-mindedness. *Cognitive Development, 14,* 363–380.

Monjas Casares, I. (1993). *Programa de enseñanza de habilidades de interacción social (PEHIS) para niños y niñas en edad escolar.* Valladolid: Trilce.

Monjas Casares, I. (2000). *Las habilidades sociales en el currículo.* Madrid: Ministerio de Educación, Cultura y Deporte.

Morehouse, R. & Williams, M. (1998). Report on student use of argument skills. *Critical and Creative Thinking, 6 (1)*, 14-20.

Nelson, K. (2007). Becoming a language user: Entering a symbolic world. In C. Brownell & C. Kopp (Eds.). *Socioemotional development in the toddler years.* (pp. 221-240) London: Guilford.

Niklasson, J., Ohlsson, R. & Ringborg, M. (1996). Evaluating Philosophy for Children. *Thinking, 12 (4)*, 17-23.

Palardy, J.M. (1992). Behavior modification works, but... *Journal of Instructional Psychology, 19*, 127-131.

Palsson, H., Sigurdardottir, B. & Nelson, B. (1998). Philosophy for Children really works! *Critical and Creative Thinking, 6 (1)*, 14-22.

Pfeiffer, S.I. & Reddy, L.A. (1998). School-based mental health programs in the United States: Present status and a blueprint for the future. *Educational and Child Psychology, 15*, 109-125.

Reed, T., Ronald, H. & Henderson, A. (1984). Preliminary report of a three year study teaching analytic thinking to children in grades K-7. *Thinking, 5 (3)*, 45-58.

Romero, G. (2006). Estudiando el contexto educativo: el proyecto Filosofía para Niños y Niñas en el clima social de aula. *Cultura y Educación, 18 (1)*, 15-30.

Rubin, Z. (1980). *Children's friendships.* London: Open Books Publishing.

Schleifer, M., Daniel, M-F., Peyronnet, E. & Lecomte, S. (2003). The impact of philosophical discussions on

moral autonomy, judgment, empathy and the recognition of emotion in five year olds. *Thinking, 16 (4)*, 4-12.

Symons, D. K. & Clark, S. E. (2000). A longitudinal study of mother–child relationships and theory of mind in the preschool period. *Social Development, 9,* 3–23.

Topping, K., Bremmer, W. & Holmes, E. A. (2000). Social Competence: The Social Construction of the Concept. In A.R. Bar-On & J. D. A. Parker (Eds.), *The handbook of Emotional Intelligence. Theory, development, assessment, and application at home, school, and in the workplace* (pp. 28-39). San Francisco, Ca: Jossey-Bass.

Trianes, M.V., Muñoz, A.M. & Jiménez, M. (1997). *Competencia social: su educación y tratamiento.* Madrid: Pirámide.

Trickey, S. & Topping, K. (2006). Collaborative philosophical enquiry for school children: Participant evaluation at eleven years. *Thinking, 18 (3),* 23-34.

Urbain, E.S. & Kendall, P.C. (1980). Review of of social-cognitve problem-solving interventionswith children. *Psychological Bulletin, 88,* 109-143.

Developing Judgement in Young Children: Ideas from a Montessori Perspective

Virginia Tregenza (School of Education, University of South Australia)

Introduction

This paper is a reflection and provocation arising from the writer's experiences of early childhood training and working in both the United States of America and Australia. It has also arisen from the author's exposure to the philosophies and principles of education found in the work of Maria Montessori and Matthew Lipman. As I observed and worked with children in Montessori environments in the USA, I became aware that they were engaging in opportunities to form and act on their own judgements in ways which appeared to be uniquely created by the specific use and form of Montessori materials. A central tenet of Matthew Lipman's work is the critical role judgement plays in the development of critical thinking. Sound judgement is a necessary component to engaging effectively in critical thinking. Early childhood education is a time when the foundations for cognitive capacities are being laid and developed, which raises questions about the types of opportunities and experiences that are available to young children to provide a sound base for the more complex thinking they will later engage in. This paper explores the view that Montessori material design and use may have unrealised value in developing and strengthening young children's exercising of judgement.

A child's experience, an adult's observations

It is mid-morning in the room for 3-6 year olds in a Montessori school. The room is light and airy, and low level shelves are filled with a large variety of materials. Twenty four children are working alone and in pairs and in one corner, a group of four is talking animatedly over a collection

of plants at a table. Children are engaged with a variety of activities at tables and on the floor with small mats. In front of one shelf, a child pauses. She then moves to a basket of rolled rugs, selects one, and carries it to a space on the floor. She unrolls it. Moving to the shelf, she selects a small red coloured rod from a collection of rods. The rods are all the same thickness and colour, but are of varying lengths. She holds the rod by grasping each end and walks to the rug, places it on the rug, walks back to the shelf and selects another rod. She repeats this ten times, until all the rods have been moved from the shelf and have been placed randomly on the rug. With the last three rods, she can't reach from end to end as her arms aren't long enough, although she stretches as far as she can. Sitting in front of the rug, she picks up the shortest rod and places it carefully at the bottom left hand edge of the rug, horizontally. She looks at the remaining nine rods and says quietly, 'next shortest', pauses then selects one. Slowly aligning the end of this rod with the left hand edge of the first rod placed, she places this rod above it, edges touching. She looks intently at them. She then looks at the eight remaining rods, pauses, selects one saying, 'next shortest', and repeats the process until all rods are laid horizontally next to each other with the left hand edge aligned. She looks at the 'stair' shape formed by the rods, and runs her fingers slowly down the left hand edge, pushes in one rod which is protruding from the aligned edge, runs her hands again down the side and nods to herself. She stands up, looks at the completed 'stair', kneels back down, and reverses the positioning of two rods, stands and looks again, nodding to herself. Smiling, she seeks out another child, brings her to the completed activity and gestures to it. 'Ta dah!' she says. The other child pauses and looks carefully at the work on the rug. 'You did it!' she exclaims, throwing her arms around her.

Montessori and Lipman – an impetus for thinking about pedagogy for thinking

This was one of my first observations in a Montessori environment. I was living in the USA and undertaking the Graduate Diploma of Montessori Studies in Early Childhood (3-6 years) at a Montessori Teacher Training Institute in Maryland. Having completed two months of intense theoretical training, I had just commenced a year-long

practicum in a fully accredited Montessori school in Virginia. The child in the observation had used the 'Red Rods', one of the didactic materials in what is referred to as the 'Sensorial' curriculum area. Designed by Maria Montessori and following clear principles of design, the materials are intended to educate children's sense perceptions and develop the ability to analyse them (Lillard, 2005). I was immediately taken by the calm and care the child in this example showed as she selected and placed each rod. I was interested in and surprised by her quiet confidence in the choices she made, the self-correction she engaged in, her level of concentration and her obvious pleasure in her accomplishment of what would appear on the surface to be an uninspiring activity for a young child. As the year progressed, these qualities of engagement were consistently exhibited by many children across a broad range of activities and interactions.

On return to Australia I undertook a graduate entry teaching degree in Early Childhood at the University of South Australia. One of the core courses was on ethics and critical thinking and here I was introduced to the work of Matthew Lipman and the 'Philosophy for Children' program. I was struck by the philosophical and theoretical similarities between Lipman and Montessori's work and began to consider the compatibility of principles underpinning them both and what this might mean for work with young children. When I read the Introduction in Lipman's (1987) *Instructional Manual to Accompany Elfie* (an early childhood curriculum designed to foster the development of reasoning in young children), I was repeatedly drawn to the author's claims about the development of judgement. Lipman explains that there is a relationship between critical thinking and judgement and that:

> ...what we call judgement is the product of comparison and contrast, and comparison and contrast involve the perception or understanding of relationships. We cannot judge an individual as an individual: we can make such a judgement only when we see such an individual comparatively – in relationship with other such individuals or in relationship with ideal standards of some sort... And so to facilitate judgement, we have to be able to grasp relationships and to grasp relationships

> requires alert, critical thinking. (Lipman, 1984, p. vii)

Lipman qualifies the notion of making comparisons. He states that making distinctions and finding connections are two fundamental cognitive operations which are '...presupposed when making comparisons' (Lipman, 1987, p. ix) and are the foundations for all other reasoning. Critical thinking is linked to the ability to form judgements if, as Lipman states, critical thinking facilitates judgement through a reliance on criteria (2003, p. 212). Sound criteria are those which are reliable and used to classify and evaluate, which provide an objective and defendable basis for forming judgements – they are the 'instruments' and 'apparatus of rationality' (ibid, p. 213).

In reading Lipman's work, I thought about my teaching experiences with young children as they worked with Montessori materials, such as those in the sensorial area that focus on concepts such as length and volume. Lipman's ideas raised the question of whether the *process* of making judgements can be facilitated and refined through the design and use of the sorts of materials I had experienced in Montessori classrooms. I began to reflect on the skills and dispositions the children I had observed and worked with exhibited as they engaged with these materials and I began to wonder if the materials were unusually placed as a means for supporting children's abilities to make comparative judgements through perceiving relationships.

Montessori – principles for consideration

As I reflected on Lipman's ideas on judgement and my experiences in Montessori environments, two Montessori principles persistently demanded attention. The two principles provide the basis of pedagogy that influences both the design of the materials and their function in a child's learning experiences. Firstly, in addition to supporting a child's immediate need to engage with learning a particular skill or concept, wherever possible, Montessori materials and activities are designed to indirectly prepare a child for future learning, on the premise that this optimises future learning success. With the Red Rods, for example, although the perception of the concept of 'length' is the immediate focus, they also serve as an indirect preparation for mathematics.

There are ten rods, reflecting the decimal system, and metric measurement is found in the length of the rods, the smallest being 10 cm, with each rod increasing in length by 10 cm to one metre. Secondly, one of the principles of Montessori material design is that the conceptual sensory stimulus which the material focuses on is to be isolated as far as possible, that is, the design of the material draws attention to the concept at hand. The design of the materials strips perceptual information to a minimum to isolate the sense which the child is encouraged to focus on (in this case, the perception of length). For the Red Rods, the only thing that changes is the length. The rods have the same colour, thickness and form (rectangular prisms). The perception of length is provided both visually and kinaesthetically as the children hold the rods end-to-end as they carry them. The theory is that the 'paring down' of the conceptual focus in the material design supports the child's task of discovering and solving the problem the materials present, in this case, seriating the rods by length. I also began to think about the way in which the materials are introduced and implemented in the classroom and whether this may also influence children's ability to compare, contrast and make judgements.

A short lesson in the use and purpose of Montessori materials

The didactic materials in a Montessori environment are considered to have a serious, singular and specific purpose, as a means of initiating an experience with a particular concept or skill or into a way of thinking. Accordingly, a culture of careful handling and respect of the materials is integral to the environment. Children are introduced to the material by the teacher when spontaneous interest in the material is observed. The appropriate timing of a child's introduction to a material through a lesson is considered a critical teaching skill, requiring sensitivity and flexibility to the child's development and interest. Initial lessons with sensorial materials can be considered 'ritualistic'. Demonstration of the material follows a sequence of precise movements with minimal or no language, as Montessori theorised that experience precedes language and that learning begins with imitation of procedures. Clear language (e.g. 'long' and 'short' for objects differing by length only) is introduced by the teacher to 'fix' it to the idea of the quality

in the material, when it is clear that the child is able to recognise differences between the quality isolated in the materials. This initial presentation, which the child aims to repeat initially, is seen to be an entrance strategy which acts as a catalyst for the child's awareness of the possibilities the material offers (Barron, 1996). Children's subsequent work with these materials is by choice, and the material holds the potential for multiple and creative variations and extensions.

As noted, the material is designed to isolate a single quality but in different degrees, so that gradual and regular distinctions between that one quality can be seen and experienced. By isolating one aspect of a stimulus, such as length, this becomes the sole focus of attention and all other distractions are, as far as possible, removed. In this way, the focus on the particular concept is made a feature of the material itself. In the Red Rods, where only length changes, any discrepancy regarding length should come directly to a child from the material itself as he or she builds the 'stair'. The placement of a shorter rod on top of a longer one will be clearly visible and is physically experienced as the rods are carried. This leads a child to concentrate on the differences in the single quality. The nature of the problem is visible. A child then has to re-examine what he or she is doing, and look for an alternative response to correct the problem. To do this, he or she must use 'reason' and 'critical faculty' to make the correction (Montessori, 1972a, p. 103). The *error* becomes the learning source and so the *thinking processes* required to make the correction, not the concept the material aims to highlight, are the principal learning function of the material.

The principal purpose of the materials is to assist a child in organising and categorising his or her sense perception (Montessori, 1965). In discussing this, Montessori (1965, p. 71) clearly states that:

> ...the aim is an inner one, namely, that the child train himself to observe; that he be led to make comparisons between objects, to form judgements, to reason and decide.

Lillard (2005, p. 59) adds that working with the materials:

> ...is intended to train the child's powers of observation, judgement, and decision making: the child must carefully observe features of objects, discriminate differences and decide (which piece of material) to place...next.

Although the materials clearly focus a child's attention on a concept, 'learning' the concept is not their key purpose. However, a child's conceptual understanding of 'length' becomes the basis for making determinations and judgements based on the criterion of length. This focus on thinking processes and a clearly stated pedagogical method of a child's engagement with a material is not an area that appears to have been considered in existing research on the role of materials or 'manipulatives' in education. Thinking, however, was a hallmark of my observations of children's careful and attentive work with materials and of my conversations with them about their reasoning as they worked with such materials.

The role of materials in learning – a different focus

Research on the role and use of materials has focused on materials as a means of facilitating learning and understanding abstract concepts, and has had mixed support (see for example Chao, Stigler & Woodward, 2000; Clements, 1999; DeLoache, Uttal & Pierroutsakos, 1998; Gellert, 2004; Meira, 1998; Moyer, 2001; Pape & Tchoshanov, 2001). There appear to be inherent difficulties in children drawing analogies between the material and the abstract concept it is purported to represent. It cannot be assumed that the concept we see the material representing will be visible to the child, simply because they engage with it (McNeil & Jarvin, 2007). In addition, the ineffective use of the materials by educators, the taxing of children's limited cognitive resources through the material having too much perceptual detail, and the difficulty in attempting to re-represent objects which have been commonly used for other purposes (e.g. toys) have been put forward as reasons for materials not achieving the conceptual learning for which they were designed (McNeil & Jarvin, 2007).

However, research to date appears to have focused on the value of materials for conceptual learning alone, not on the 'thinking processes' that children undergo in engaging with the materials. The 'thinking process' distinction was

one that Montessori (1964, p. 215) saw as setting her approach apart from other education practices, in that '...no one has attempted the *methodical* preparation *of the individual for the sensation'*. She believed that 'sense education' was critical to the development of rational organisation and categorisation of sense perception, and that through the refinement of the senses, a child will be changed and his or her capacity for exploration of the world enriched. Montessori's educational method was developed through her observations of what children are deeply interested in and capable of doing by and for themselves when internally motivated and supported to do so. Recognising the experiences of children from 0-6 years as a crucial period of development, Montessori saw that the environment can be an effective facilitator of change, and that the relationships children develop with the environment are where they connect their ideas, deepen their knowledge and understanding and develop intellectual capacities. Montessori observed the marked development of reasoning powers in children as they entered the traditional age for formal schooling at around 6 years of age. She saw reasoning as a driving force in children's mental processes at this age, when children are strongly motivated to know the underlying causes of or reasons for what they encounter in the world. Because of this, the curriculum for 3- to 6-year-olds that *precedes* this period provides indirect preparation to support children for this subsequent intellectual development. It is possible that a combination of the design of the sensorial materials that reflect the learning aims and the method of use are one way of providing opportunities for children to develop skills in judgement, and are a way that has been given little if any consideration elsewhere.

Young children, their experiences and reasoned thinking

Montessori (1972b) theorised that the development of the ability to reason is gained from and determined by the quality of the images and experiences the human mind receives from the environment. She saw the period of development between 3 and 6 years as a time when intellectual habits of mind and basic concepts are formed (Montessori, 1972a). Montessori observed that young children have an inner drive to engage in activities that further their development and that they seek sensory

experiences that engage them in discriminating and making judgements about the external relationships between objects and their qualities (Montessori, 1972b; Lillard, 2005). Accordingly, she reasoned, if the mind is given access to methodical and ordered sense training, it has the ability to become highly skilled in thinking, reasoning and processing information and highly attentive to the environment. Children can learn to make distinctions between accidental and essential impressions from the environment by engaging in experiences with specifically-designed materials that promote making judgements using perceptual criteria. Montessori (1965, p. 128) wrote that:

> ...as a general rule for the direction of the education of the senses, the order of procedure should be:
>
> 1. Recognition of *identities* (the pairing of similar objects and the insertion of solid forms into places which fit them).
> 2. Recognition of *contrasts* (the presentation of the extremes of a series of objects).
> 3. Discrimination between objects very *similar* to one another.

These are capabilities that Matthew Lipman would also be highly likely to consider critical for making distinctions: finding connections and providing the comparative and contrastive skills that lead to the product of judgement.

The types of experiences provided, then, arguably have the potential to change what skills and knowledge are gained, and how these are subsequently used. Garton (2004), in exploring the relationship between problem solving and reasoning, states that perceiving a discrepancy is pre-requisite for the need to apply thinking to a problem to solve it. Conceptual discrepancy is integral to the design of Montessori sensorial materials. Kuhn, Black, Keselman and Kaplan (2000, p. 500) note that the nature of the discrepancy is a critical factor in the capacity to draw inferences, stating that:

> ...to make a valid inference, it is necessary to make a controlled comparison between two instances that differ only with respect to a single feature that is the focus of analysis.

Moreover, Manches, O'Malley and Benford (2009) suggest that the success of tangible materials for supporting problem solving rests on how the material shapes the problem solving strategies and the effective use of their inherent representational properties. If the *form* and the *nature* of the problems presented to young children becomes important for the thinking processes, Montessori sensorial materials appear from their very design and aim to be a 'problem presented'.

Rethinking 'thinking education' for young children

Murris (2000) points out that the idea of supporting young children in reasoning by engaging in practices that *require* reasoning has deep roots. This may be so, yet there is little to show that this idea is reflected in consistent, committed and conscious curriculum that reflects preparation for complex thinking, directly or indirectly, for children prior to entering school. Research into the use of specifically designed materials as a vehicle for the development of thinking skills and processes necessary for sound judgement and reasoning appears limited. A dedicated pedagogical combination of the two appears to belong to Montessori alone.

On reflection, I wonder how the young children in the Montessori 3-6 year room in the USA would present if they met the 'Elfie' stories through Lipman's 'Philosophy for Children' program. Would their ability to exercise judgement be different in any significant ways from children who had not been exposed to Montessori materials and the practices that support them? Would their capacity to engage in philosophical discussion reveal any unexpected qualities? Could Montessori materials, when implemented effectively within Montessori environments, provide unique or worthwhile support for the development of the skills of judgement? If so, would it be possible to integrate the principles of Montessori's material design, use and aims into other early childhood environments in a way that captures the essential qualities?

Markovits and Barrouillet (2004, p. 113) suggest that '...research to trace the development of reasoning has become relatively rare'. Perhaps the principles and pedagogies underpinning the work of Montessori and Lipman can provide alternative ways of thinking about this critical area of early childhood education and open up research to explore wider possibilities for the development of reasoning in young children.

References

Barron, M. (1996). *Sensorial ideas: innovative enrichment activities for the Montessori sensorial area.* New York: Fannin Graphics.

Chao, S., Stigler, J.W. & Woodward, J.A. (2000). The effects of physical materials on kindergartners' learning of number concepts. *Cognition and Instruction,* vol. 18, no. 3, pp. 285-316.

Clements, D.H. (1999). Concrete manipulatives, concrete ideas. *Contemporary Issues in Early Childhood,* vol. 1, no. 1, pp. 45-60.

Deloache, J.S., Uttal, D.H. & Pierroutsakos, S.L. (1998). The development of early symbolization: educational implications. *Learning and Instruction,* vol. 8, no.4, pp. 325-339.

Garton, A.F. (2004). *Exploring cognitive development: the child as problem solver.* Malden USA: Blackwell Publishing.

Gellert, U. (2004). Didactic material confronted with the concept of mathematical literacy. *Educational Studies in Mathematics,* vol. 55, pp. 163-179.

Kuhn, D., Black, J., Keselman, A. & Kaplan, D. (2000). The development of cognition skills to support inquiry learning. *Cognition and Instruction,* vol. 18, no. 4, pp. 495-523.

Lillard, A.S. (2005). *Montessori: the science behind the genius.* New York: Oxford University Press.

Lipman, M. (1987). *Getting our thoughts together: instructional manual to accompany Elfie.* Montclair, NJ: Institute for the Advancement of Philosophy.

Lipman, M. (2003). *Thinking in Education* (2nd edn.). New York: Cambridge University Press.

Manches, A., O'Malley, C. & Benford, S. (2009). Physical manipulation: evaluating the potential for tangible design. *Proceedings of the 3rd International Conference on Tangible and Embedded Instruction,* pp. 77-84. New York: USA.

McNeil, N. & Jarvin, L. (2007). When theories don't add up: disentangling the manipulatives debate. *Theory Into Practice,* vol. 46, no. 4, pp. 307-316.

Meira, M. (1998). Making sense of instructional devices: the emergence of transparency in mathematical activity. *Journal for Research in Mathematics Education,* vol. 29, no. 2, pp. 121-142.

Montessori, M. (1912/1964). *The Montessori method.* New York: Schocken.

Montessori, M. (1917/1965). *Spontaneous activity in education: the advanced Montessori method.* trans F. Simmons. New York: Schocken.

Montessori, M. (1972a). *The discovery of the child.* New York: Ballantine Books.

Montessori, M. (1972b). *The secret of childhood.* New York: Ballantine Books.

Moyer, P.S. (2001). Are we having fun yet?: how teachers use manipulatives to teach mathematics. *Educational Studies in Mathematics,* vol. 47, pp. 175-197.

Murris, K. (1987). Can children do philosophy?, *Journal of the Philosophy of Education Society of Great Britain,* vol. 34, no. 3, pp. 129-140.

Pape, S.J. & Tchashanov, M.A. (2001). The role of representation(s) in developing mathematical understanding. *Theory Into Practice,* vol. 40, no. 2., pp. 118-127.

A Life Teaching Thinking by Matthew Lipman

Reviewed by Clinton Golding

Let me get this out of the way first: You should read this. The charming, witty, quirky and insightful story of the life of Matthew Lipman and the creation of Philosophy for Children is mandatory reading for anyone interested in Philosophy for Children, teaching thinking or teaching philosophy. (I particularly recommend you purchase a signed copy as I did!)

The question is, what is it that you will be reading? The term 'autobiography' does not do justice to *A Life Teaching Thinking*. It is about Matthew Lipman's life, but it is much more as well.

It is an intellectual self-portrait of Lipman (to match the painted self-portrait on the cover), which shows that philosophy is central to who he is and not just an abstract concern. It is a story of inquiry, judgement and existential choice, during a life of intellectual awakening and transformation. It is also a story of chance encounters (I'm amazed at how many famous artists Lipman knew), full of anecdotes, which I often found incredible, amusing and saddening. It presents an exemplary model of how to be engaged in an examined life, to be an educational leader and how to live.

But in a curious way it is not about Lipman at all. As Lipman explains, *A Life Teaching Thinking* is written:

> ...not for myself but for philosophy and education, with the overriding hope that this story's telling will benefit children and expand the boundaries of what the world has, up until the advent of Philosophy for Children, thought of as education. (p. 166)

The personal life of Matthew Lipman thus provides a context for understanding Philosophy for Children, and a call to arms for carrying on the movement.

Because of the varied functions the book serves, it is also a stimulus for inquiry. Although Lipman does not explicitly say this, *A Life Teaching Thinking* could be seen as the last, and most real, of Lipman's philosophical novels. Rather than being for children, this novel is for stimulating inquiry for adults on the topic of how to live. The teacher manual (if one were produced) would include sections on such things as living a philosophical life, love of philosophy, educational innovation and leadership, and standing for something.

I enjoyed reading this book on many levels, personally, professionally and aesthetically. I think Matthew Lipman successfully shows how teaching philosophy, if it becomes part of who you are, involves putting yourself outside the norm. You have to think differently about education, teaching and learning and who you are as an educator and a person. I anticipate returning to it again and again as an inspiration to continue promoting educational reform where educating for thinking and philosophical inquiry are core to any programme of teaching and learning.

Lipman, M. (2008). *A Life Teaching Thinking*. Montclair, N.J.: IAPC.

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