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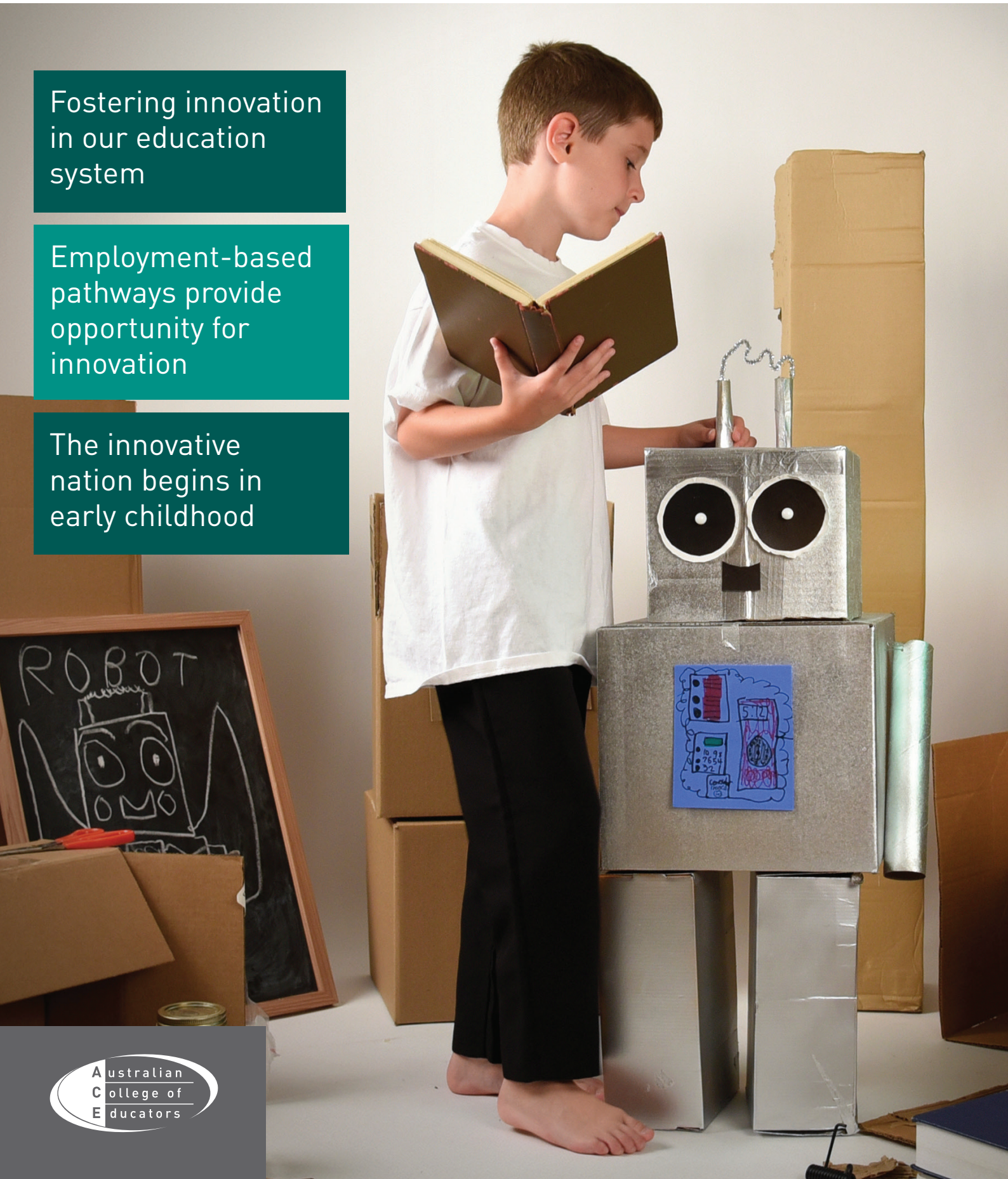

Fostering innovation in our education system

Employment-based pathways provide opportunity for innovation

The innovative nation begins in early childhood

Australian College of Educators

The innovative nation begins in early childhood

SUSAN KRIEG, MACE

The Turnbull Government's 'innovation agenda' can be viewed from many different perspectives. When viewing the innovation agenda from an early childhood perspective we ask the following questions: What role might Early Childhood Education play in developing an innovative nation and what might a 'culture of innovation' look like in Australian Early Childhood settings? These questions point to some of the challenges and possibilities Australian Early Childhood Education as we advance into the 21st century. Let's consider why the new national policy directives designed to promote a 'culture of innovation' in areas including Science, Technology and Business must include our very youngest citizens.

The first point to be made in relation to early childhood is that it is internationally recognised as birth to eight years. In Australia, as in many other countries, early childhood settings that span these years include childcare, preschool and the early years of school. Part of this discussion regarding the relationship between early childhood education and the innovative nation will involve blurring some of the existing institutional and pedagogical boundaries between 'prior to school' and the 'early years of school'. This is necessary because in many discussions of early childhood education the differences between the child-centred and play-based pedagogies of the birth to five years have often been contrasted with the 'teacher directed' and 'subject driven' approaches in the early years of school. This simplistic binary does not reflect the nuanced approaches to pedagogy that are required across the birth to eight years if early childhood education is play its part in contributing to the national innovation agenda.

What role might early childhood education play in an 'innovative' nation building agenda?

The distance between nation building and Early Childhood Care and Education (ECCE) is so great that the connections are often missed. This is because young children's experiences in early childhood are often viewed as relatively separate and distinct from what happens in later life and therefore attempts at

nation building often do not include a consideration of the experiences of early childhood. However, in the contemporary discussions around Australia as the 'Innovative nation', it would be wise to reconsider the relationship between what happens in the years between birth-8 and Australia's future.

This is because there is a long-term and ever increasing body of evidence that suggests quality ECCE contributes to children's life trajectories (and therefore the broader national trajectory) far beyond their experiences in the early years. For example, evidence drawn from longitudinal research suggests children who have access to quality ECEC are less likely to engage in criminal activities or engage in substance abuse, and are more likely to gain long term employment (Heckman, 2006).

Research also suggests that providing young people with quality early childhood programs leads to more successful outcomes in the later years of school (Sylva et al 2004; Warren & Haisken-DeNew, 2013). Unfortunately, in many discussions regarding educational outcomes and achievement, the learning that happens 'in school' is perceived to be more significant that the years prior to school entry. Most often, engagement with the 3R's within schools (which in contemporary policy means Literacy and Numeracy) is viewed as more important than all the learning that has occurred before it. This perception persists despite research from Neuroscience, Economics and Social Science that suggests the experiences and learning that is done in the first 2000 days of life, *before* a child enters primary school, are most critical in determining future trajectories in health, learning and behaviour (Van Leer, 2015). Therefore, the experiences prior to and in the early years of school are just as important as the experiences in primary, secondary and tertiary education. If the policy changes that are designed to achieve national 'innovation' are limited to primary, secondary and tertiary education, the policy focus is coming all too late.

Early learning experiences and long term outcomes

Experiences in early childhood have long lasting effects. One of the trajectories established early in life relates to children's attitudes to innovation and their capacity for creativity as adults.

For example, researchers have found connections between a 'predisposition to be playful' and creativity and innovation (Bergen, 2009). It seems that 'playfulness' (at any age) is an essential ingredient of innovation. Play has a long history of being valued as an important medium for learning in early childhood education. Bergen argues that 'children who are skilled at playful learning will be more likely to demonstrate creativity and innovation in their adult Computer-Technology, Scientific, Mathematical, and Engineering professions' (2009, p. 423). One of the most famous and oft-cited examples of this connection is from architect Frank Lloyd Wright who said "I sat at the little Kindergarten tabletop... and played...with the cube, the sphere and the triangle...I learned to see this way and when I did...I wanted to design' (Wright (1957) in Bultman, 1997, p.2). Wright's experience of a Froebelian Kindergarten where children explored and manipulated systematically arranged play's with particular materials produced long-term outcomes. Brosterman (1997) also traces the early childhood experiences of Mondrian, Klee, Kandinsky, Albers, Itten and Le Corbusier as famous artists and architects who were exposed to a Froebelian play-based approach in early childhood with long-lasting effect.

What might a 'culture of innovation' look like in early childhood settings?

It is important to differentiate between the concepts of creativity and innovation. These concepts are interrelated in that 'creativity involves the act of *generating* a new idea or solution concept, while innovation refers to the act of either *applying* some creative ideas, or *creatively applying* a familiar idea, in such a way as to create value' (Milne & Leifer, 1999, author's own emphasis. We are left with the question of how these dispositions, capacities and habits of mind are developed, enhanced and sustained in Early Childhood Education.

In the Australian context, if young children's innovation and creativity are to be supported as they move between the play-based pedagogy they often experience in prior-to-school settings and more formalised early years of school, then early childhood educators need to find a path between the open-ended outcomes of the Early Years Learning Framework (EYLF) (Department of Education Employment and Workplace Relations (DEEWR), 2009) and the Achievement Standards outlined in the National Curriculum (Australian Curriculum Assessment and Reporting Authority, 2009). The broad outcomes in the EYLF articulate broad capabilities and dispositions such as communication, learning and identity whereas the Australian Curriculum Achievement Standards are much more specific in terms of both content and process. This situation requires educators to provide a balance between a play-based child-centred and a teacher directed subject driven approach. Contemporary research regarding early childhood education has provided evidence that this balanced and flexible approach is necessary. For example, *The Effective Provision of Preschool Education* study (Sylva et al., 2004) demonstrated that children's learning is most effectively supported by a program that 'combines both 'teaching' and providing freely chosen yet potentially instructive play activities' (p. 6).

Play, innovation, and creativity

It is beyond the scope of this paper to examine the concept of play in depth. However, it is important to acknowledge that he word 'play' has many meanings. There are some common features of play that distinguish it from other human activities and learning processes. If people (and I use this word deliberately as the characteristics of play apply at any age) are experiencing enjoyment or internal satisfaction (fun), have (at least some) choice in the activities in which they are involved and there are no predetermined outcomes, the activity meets most criteria to be classed as play. To use Neumann's (1971) words, play is characterised by, 'internal control, internal motivation, and internal reality' (p.8). In the early years, this means children are creating their own realities, rather than being constrained by adult rules and outcomes. It is this element of open-endedness and flexibility that is the key to the concept of creativity and innovation.

In ECCE, these characteristics are often on display as children engage in playful learning. There are multiple different types of play, including 'socio-dramatic' play and 'construction' and many more. In socio-dramatic play, for example, children transform roles, environments and objects to create imagined scripts and events. Playfulness involves 'fantasy and imagination' (Bergen, 2009, p.417). With regards to construction play, George Foreman asserts that play is not 'acting to make something happen' but rather 'acting to see if something might happen' and as children experiment with wood, clay, metal and other materials, they attempt to 'solve problems using divergent rather than convergent thinking'. He states, 'scientific and mathematical professions value this type of systems thinking' (Foreman, 2006, in Bergen, 2009, pp. 418-419).

In summary, when children play, they transform objects, they explore and change roles, and they develop themes and ideas to create new meanings. This transformative process is the basis of innovation.

The play of the future: A struggle for recognition

For those of us who have worked with young children on a day-to-day basis, it is easy to see the benefits of play: children demonstrate a level of engagement, enjoyment, satisfaction, commitment, persistence, and creativity that is difficult to replicate in other learning situations. However, producing 'causal' empirical evidence of the direct relationship between play and children's development has been more difficult. Lillard and colleagues (2013), for example, conducted a comprehensive review of the research evidence into the impact of pretend play on children's development and found that (for many reasons) there is limited research evidence of a direct causal effect. It seems that play is one of a cluster of factors that contribute to long-term learning outcomes such as creativity and innovation. This is because

there are many aspects of early childhood learning programs (such as relationships between adults and children, physical environments, time, materials) that work together to realise these outcomes. As Lillard and colleagues (2013) conclude 'some good studies favor an epiphenomenon position in which *child, adult, and environment* characteristics that go along with play are the true causal agents' (p.1, author's own emphasis). Most important in our discussion regarding the connections between early childhood education and innovation, Lillard and colleagues conclude that the lack of existing causal evidence that pretend play helps development should not be taken as an allowance for school programs to employ traditional teacher-centered instructional approaches that research has clearly shown are inferior for young children. The hands-on, child driven educational methods sometimes referred to as 'playful learning' (Hirsh-Pasek et al., 2009) are the most positive means yet known to help young children's development (p.27).

Some historical and social periods have valued play more than others. In the current Australian educational context (as in many other western countries) with its emphasis on competition and consumerism, play as a medium for learning, is struggling for existence. In this context, those advocating for better quality early childhood care and education have defended each child's right to play. Here we are defending the child's right to play as an important foundation of adult creativity and innovation.

Australia's development as an innovative nation will rest on shaky ground if decisionmakers do not pay attention to the early years. Australia's aspirations to produce the Frank Lloyd Wrights of the future will depend on our national long-term, sustained, commitments to our youngest citizens' experiences of education.

Susan Krieg is an Associate Professor and Program Coordinator: Early Childhood at Flinders University, Adelaide, SA.

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Contact details

Phone	03 9035 5473
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