



Australian Government



IMPACT STATEMENT

Science of Learning Centres - Preparing a learning society for the future

PMSEIC



Introduction

To take a quantum leap towards the future of learning, Australia needs to focus on integrating multidisciplinary, scientific research with sustained practitioner involvement.

The *Transforming Learning and the Transmission of Knowledge* Report to the Prime Minister's Science, Engineering and Innovation Council focuses on fundamental questions that influence our ability to learn and highlights the potential of bringing together researchers and practitioners to address the science of learning within a structured and sustained program.

The Report contains as its central recommendation the establishment of a Science of Learning Program, delivered through a number of interdisciplinary, interprofessional Science of Learning Centres (Centres). If adopted, they have the potential to transform how all Australians acquire and apply knowledge throughout their lives.

Impact of Science of Learning Centres on the future of learning in Australia

Centres will have a transformational impact on learning, bringing significant and differential advantage to Australia through an interdisciplinary and collaborative approach, by:

- advancing the scientific understanding of effective learning techniques,
- generating knowledge to inform education policy and practice and advance that knowledge through interaction between all stakeholders, and
- testing innovative approaches in real world environments to maximise learning outcomes.

Research findings will lead to improvements in equity, educational practice and practitioner development, and the development of support and intervention strategies for child and adult learning, thereby narrowing the achievement gap and maximising Australia's economic productivity.



Courtesy Zillmere State School

Why establish Science of Learning Centres?

To be effective, all learning environments must do more than impart knowledge. They must provide opportunities to develop skills to the point that they can be used effectively beyond the specific learning context. Centres would provide the ground-breaking research and innovation to best achieve this.

By leveraging Australia's world-leading science research, we have the opportunity to explore new interdisciplinary paths to enhance the science of learning and provide proven and effective tools to assist educators.

Centres will investigate existing practices and deliver new professional development programs to ensure all teachers participate in, learn from and broadly disseminate new best practice gleaned from this research.

Why now?

To assist Australians to engage in a rapidly developing knowledge society, we need to identify state-of-the-art understanding of how people acquire knowledge throughout their lives and potential barriers to knowledge acquisition. Applying this understanding in learning settings could have a positive transformational impact on the acquisition of knowledge across the full spectrum of socioeconomic environments, including Indigenous, rural and urban Australia.

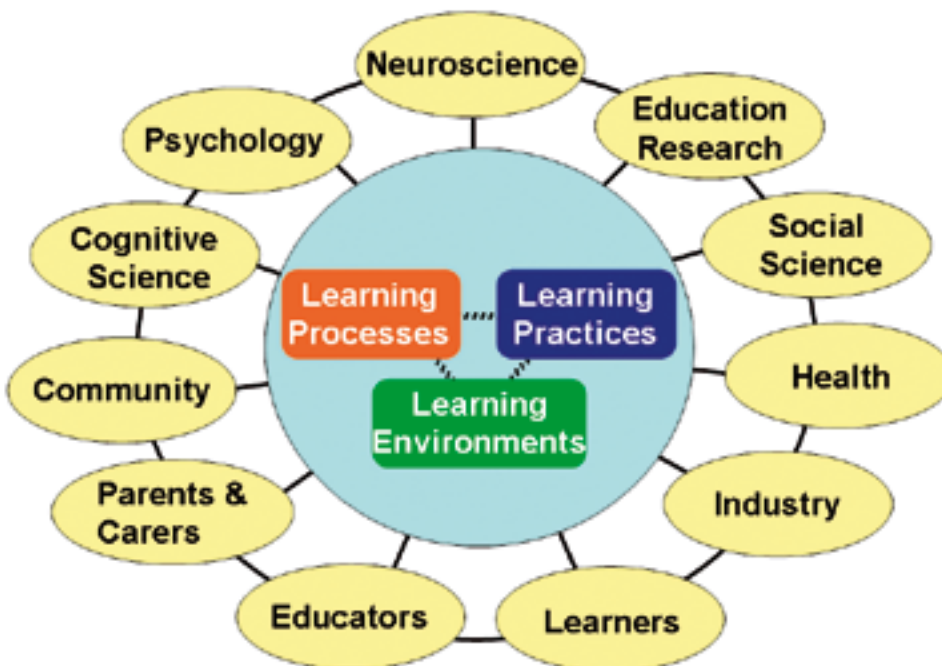
Recent advances in science and technology provide the opportunity to invigorate instructional techniques. Exploiting this opportunity now will help create a resilient and adaptive nation, better prepared to meet future complex challenges and opportunities, and generate a competitive advantage across all sectors in the global marketplace, including education.

What is a Science of Learning Centre?

Centres will harness input from parents, carers, learners, community leaders, formal and informal educators, and researchers from different disciplines to inform research, foster collaboration and disseminate knowledge amongst stakeholders.

The nature of learning suggests the need for the following program elements to be integrated within each Centre:

- Science of Learning Practice – learning from and sharing best practice in learning, discovering and disseminating its scientific basis.
- Science of Learning Environment – studying environmental impacts on learning, including the forms and processes of learning in formal and informal settings, and integrating this with an understanding of the basic brain, cognitive and motivational processes that influence learning.
- Science of Learning Process – researching the basic science of learning in areas such as neuroscience, cognitive psychology and motivational theory, and applying these findings to the development of transformational and highly effective new teaching practice.



Scope of proposed Science of Learning Centres

Implementing a Science of Learning Centre program

A practical way of implementing the program would be to establish a number of Centres where researchers work collaboratively with community institutions and educational providers at all levels of learning. Each Centre would be linked with an overall research program, cover Australia geographically and socio-economically, and include aged, gifted and special needs learners in urban and rural areas.

Commonwealth funding would be provided to establish Centres through a competitive process, possibly managed through the Australian Research Council. It is envisaged that bids would be sought from a range of consortia from both the public and private sectors. They would also need to tap into, and work with, existing Commonwealth and state/territory programs.

Centres should be located to allow community access and involvement, but should not exclude outreach programs to access and research remote learning communities including, for example, those areas where learning is undertaken via electronic learning models. This would give researchers access to isolated learners, and isolated learners access to the excitement of learning.

They must form collaborations with live educational settings, 'living laboratories', to provide test beds for the rapid transfer of new scientific insights into practice. This will encourage the dissemination of new teaching methods, allowing more rapid advancement of learning through innovations that draw on available research knowledge and reflect best practices.

To be successful, Centres must be science-driven and responsive, so that science informs practice, and practice informs and drives scientific research programs. A diverse array of educators, including parents, carers, relevant health practitioners, teachers and trainers, would be actively involved with researchers in the selection of research topics and in communicating and implementing research outcomes.

Synergies across different bodies of learning-related research are not being realised. Frequent interaction between Centres is essential to ensure their research is collaborative and not undertaken in isolation. This could involve student/researcher exchanges, workshops and meetings to identify future research topics, share knowledge about research outcomes and evaluate methods for implementing practical application in classrooms.

The role of researchers

Each Centre could include neuro, cognitive and social scientists, psychologists and educational researchers.

Researchers would study models of successful learning and address factors that hinder learning, ranging from the basic science of learning through to issues relating to Indigenous learners, learners in regional and remote locations, learners from underprivileged backgrounds, and the role and integration of digital technology as a learning tool.

Science of Learning Centres will provide a world-leading environment to conduct learning-related research and attract key Australian and international research talent.

The role of teachers

Professional educators are, and will remain, central to the process of the formal transmission of knowledge transfer for children, adolescents and young adults. The skills and experience of teachers represent a rich, valuable and cost-effective learning resource.

Educational research will be enriched by closer integration of teachers and researchers. Embedding teachers in Centres, and involving them in setting the research direction, will focus researchers on questions that are relevant to teachers and other stakeholders.

Implementing a program to allow teachers to communicate their experiences and learning will offer opportunities to improve the practical and theoretical learning of teachers. This will encourage teachers to:

- hold positive attitudes and beliefs about their own learning,
- become more motivated to improve outcomes for students,
- recognise that their own learning is a never-ending process, and
- raise awareness of research findings, and ensure evidence-based best practice is at the forefront of learning experiences.

Providing opportunities for as many teachers as possible to participate in Science of Learning Centres research projects is the key to maximising equity and the broad dissemination of findings.

The role of other stakeholders

A collaborative Centre program with government support, in which day-care centres, preschools, schools, tertiary institutions, adult/aged learning providers, industry trainers and other organisations engaged in learning are actively encouraged to act as living labs, will give researchers access to representative samples of the population. Parent and teacher associations and other community groups in each state will also supply input into setting research directions and benefit from the findings.

The work being conducted across Australia by Departments of Education, researchers and other educational groups to enhance learning, support teachers and promote learning is extremely valuable. It is envisaged that Centres will work with these organisations to broaden the stakeholder base and enhance the integration of these initiatives.



Communicating research outcomes

A communication program would be put in place to ensure that outcomes are disseminated as widely and frequently as possible to ensure the research is converted to evidence-based best practice in learning.

This could be a two-pronged approach: using the experiences of teachers in the Centres to inform peers, and conducting an ongoing, public awareness program.

Conclusion

By adopting the recommendation to establish Science of Learning Centres, and by introducing them across urban and rural Australia, we can deliver a society of effective lifelong learners and ensure that Australia continues to be at the forefront of the global education revolution.



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