



Ministry of Education
SINGAPORE

MOE Current Priorities in Education Research



Integrity, the Foundation ■ People, our Focus ■ Learning, our Passion ■ Excellence, our Pursuit

- Current immediate priorities for research
 - Key considerations
 - Seven broad areas
- How research in cognition and neuroscience add value to MOE's research priorities?
 - Four broad areas
- Application of Educational Neuroscience into the Classroom
 - Examples of possible links
 - Issues and ways forward



MOE's Key Considerations for Education Research

- Use-inspired – motivated by the need to solve education problems
- Actionable – clear or potential contributions to interventions
- Comprehensive – relevant to diverse learners, both typical student population & exception



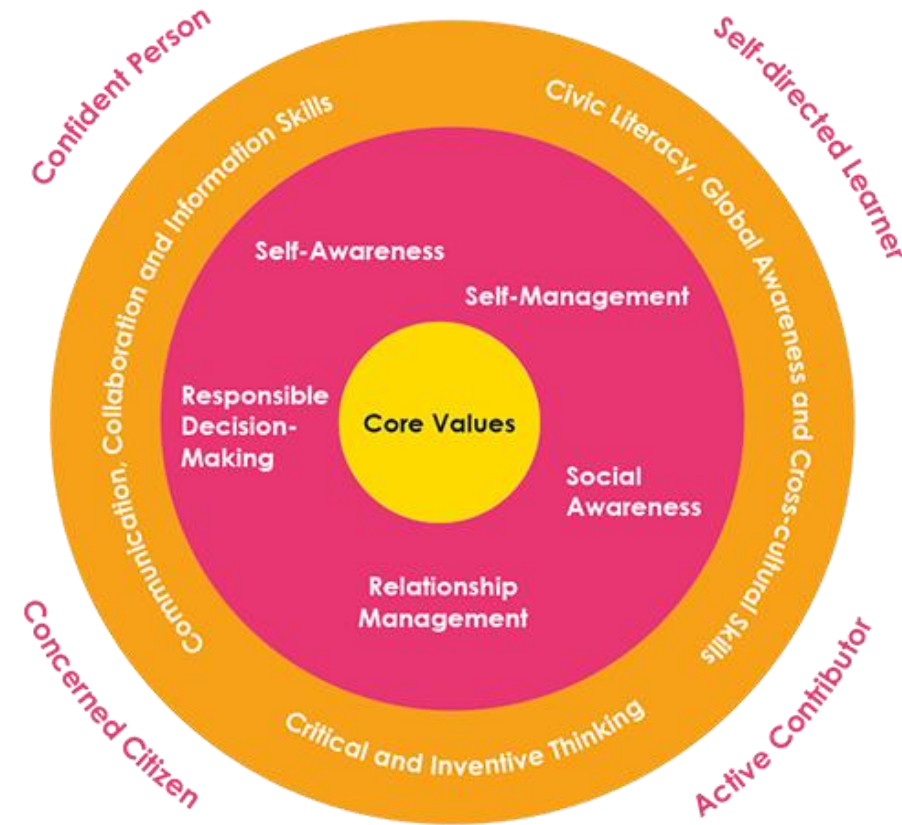
Current Immediate Priorities for Education Research

- Student-centric learning & teaching
 - How subject-specific pedagogies can be customised for diverse learners, e.g. in areas such as literacy, numeracy, learning of additional languages?



Current Immediate Priorities for Education Research

- 21st century competencies
 - What are the key non-academic skills that our students will need?
 - How do we effectively teach these skills, and assess them with reliability and validity?



Current Immediate Priorities for Education Research

- School efficacy
 - For example: what is the impact of homogeneous or heterogeneous groupings in classrooms and schools?
 - To what extent do types of groupings affect the quality of learning and social outcomes?
- Education structure
 - In what ways might the existing education structure & policies promote or hinder social mobility?



Current Immediate Priorities for Education Research

- Efficacy of targeted programmes introduced
 - What is the efficacy of the new implemented programmes & how can we improve them?
 - e.g. programmes for preschool, general and special populations
- Innovations in Practice
 - How do we adapt, implement and scale-up innovations across different schools?



Current Immediate Priorities for Education Research

- Teacher Development
 - For example: Are there specific traits of teachers who are better suited to teach different groups of students?
 - Can these traits be identified and utilised for teacher training and/or deployment?



Current Immediate Priorities for Education Research

- Student-centric learning & teaching
- 21st century competencies
- School efficacy
- Education structure
- Efficacy of targeted new programmes
- Innovations in Practice
- Teacher Development



How research in cognition and neuroscience add value to MOE's research priorities?



How research in cognition and neuroscience add value to MOE's research priorities?

Some Possibilities

- Provide insights into within-child & environmental factors that facilitate &/or hinder the development of core skills
- Inform the application & generalisation of evidence-based practices across different classroom contexts
- Inform the customisation & delivery of specific interventions to targeted populations, for example, intervention for students with difficulties (see illustration of Response-To-Intervention or RtI).



Multi-Tiered Literacy Intervention

Provides intervention to students with literacy difficulties who show poor **Response To Intervention (RtI)**

Tier-3 intervention

Specialised remediation for “non-responders” (~5%)

Tier-2 intervention

Learning support programme for ‘At-risk’ students (~10%)

Tier-1

Core instruction for all students



Components of Intervention



1. Alphabetic knowledge
2. Alphabetic principle
3. Reading fluency (oral and written)
4. Vocabulary
5. Comprehension



Progress in closing gap in reading and phonological deficit used as indicator of need for additional support.

Intensity of intervention increases for students with persistent difficulties

Tier 3

- For students who do not make good progress in Tier 2
- Often one-to-one
- Longer intervention sessions
- Greater intensity and duration than Tier 2

Tier 2

- For students who need more than core instruction
- Identified based on progress monitoring measures
- More focused and intensive than Tier 1
- Small homogeneous groups (2-6 students)
- 4 to 5 times a week, 15 – 30 minutes a session
- Outside core instruction

Tier 1 - Core instruction

- For all students
- Differentiation within classrooms by class teachers



- Tier 2 intervention well-established in all primary schools
 - 65% of students from Tier 2 able to overcome reading and phonological deficits, and sustained improvements after 2 years
- Tier 3 intervention started recently in some primary schools
 - Based on on-going monitoring, students showed good improvements in reading and phonological deficits, compared to ‘wait-list’ comparison group
 - Some showed persistent difficulties in reading and phonological deficits
- Oral Reading Fluency was predictive of improvement rate in reading over-time



Some questions from Rtl

- *Are there early markers of the persistent non-responders that can be used to identify them for different treatment early?*
- *Do responders and non-responders to intervention among children with reading difficulties exhibit different neurological profiles?*
 - *What changes are happening at the cognitive or neurological levels at Tier 2 & 3?*
 - *What do these changes tell us about how children learn to read?*
 - *Can we use the knowledge to customise interventions earlier to targeted students?*



Application of Educational Neuroscience into the Classroom

Learning points

- Growing interests among educators
- Some areas appears more ‘ready’, for example, reading
 - Sound and well-established body of evidence on reading development and instruction
 - Current conventional approaches in reading instruction integrates knowledge from pedagogy and cognitive science, e.g. reading instructors are using concepts and tool-kits that draw on cognitive psychology
 - Educators are keen to know ‘what else’ can be done for students who do not respond to ‘conventional’ teaching approaches



Application of Educational Neuroscience into the Classroom

- Emerging consensus for the need to start ‘building the bridge’ between Education and Neuroscience, amidst scepticism and lack of understanding
- A need to also ‘extent the shorelines’ of both disciplines
 - Increase understanding and appreciation among educators about neuroscience and its value proposition for educational practice
 - Increase the understanding of neuroscience researchers on the dynamics of classrooms, and how innovations are implemented in this context
 - Willingness to move beyond traditional roles boundaries and embrace new knowledge.



Thank you

