



Briefing report

Education Review Office (ERO): ERO Reports on Teaching Strategies for Science

Date	22 March 2021
Security Level	N/A
ERO Priority	Medium
ERO Reference	M21-8
Date requested	ERO initiated
Date due	ERO initiated
Proactive release	Recommended

Addressee	Action sought	Deadline
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**Associate
Minister of
Education**

It is recommended that you:

- a) **Note** the attached near final draft reports *Science in the Early Years: Early Childhood and Years 1 to 4; Shining a Light on Science: Good Practice in Early Childhood Services; and Growing Curiosity: Teaching Strategies to Engage Years 5 to 11 Students in Science.*
- b) **Note** that ERO intends to release these reports on 12 April 2021.
- c) **Note** that ERO are developing a series of guides tailored to different audiences.
- d) **Agree** to forward this briefing and reports to Ministers Hipkins, Sio and Davis, and to the Minister of Research, Science and Innovation, Hon Dr Megan Woods.
- e) **Note** that this briefing is recommended for proactive release.



Attachments:

**Education Review Office (ERO):
ERO Reports on Teaching
Strategies for Science**



Comments:

Minister's Office to complete

Noted

Seen

Approved

Referred to:

Date signed by Minister:



Our Ref: M21-8

22 March 2021

Hon Jan Tinetti William
Associate Minister of Education

ERO Reports on Teaching Strategies for Science in New Zealand

Purpose

1. This briefing is to inform you of ERO's upcoming reports about teaching strategies for science from early childhood to Year 11 and to provide you with a summary of key findings.

Upcoming reports on good practice in science teaching and learning in the New Zealand education system

2. Local and international evidence shows New Zealand students in Years 5 to 11 are not achieving as well in science as we would like. It also shows students become less engaged in science over time, and fewer 15-year olds see value in science, compared with international peers.
3. In order to address these issues, we need to understand how schools and early childhood services can strengthen their science teaching and learning in New Zealand.
4. ERO has explored this in early childhood services and schools across the country. On 12 April, ERO intends to publish three reports:
 - Science in the Early Years: Early Childhood and Years 1 to 4;
 - Shining a Light on Science: Good Practice in Early Childhood Services; and
 - Growing Curiosity: Teaching Strategies to Engage Years 5 to 11 Students in Science.
5. Near final drafts of the three reports are attached in Annex A.
6. These reports identify where schools and services are doing well, and highlight how schools and services could increase the impact of their science teaching and learning.
7. These reports are designed for leaders, teachers and kaiako and are intended to provide practical guidance and inspiration on how they can strengthen the science learning opportunities they provide.

Science in the Early Years: Early Childhood and Years 1-4

8. Previously, there has been very little information about the quality of teaching and learning in science in the early years. To help fill this gap, ERO took a more focused look at what was happening for learners in this age group.

9. Our investigation focused on three key components: leadership, intentional teaching, and responsive curriculum, and found evidence of all three. For example, kaiako/teachers provided interesting contexts for children's learning and made connections with children's prior knowledge.
10. ERO also found areas that could be strengthened to improve children's opportunities for learning in science:
 - Kaiako/teachers could plan more for children's learning and progress in science, rather than for discrete science activities.
 - Many kaiako/teachers could make better use of assessment to describe and understand children's learning and inform next steps for their learning.
 - Service and school leaders could also reflect more on how well their science learning programmes support children to progress in science. The report has included questions to help leaders reflect on the science learning provided in their school or service.

Shining a Light on Science: Good Practice in Early Childhood Services

11. To support science in the early years, ERO identified eight early childhood services that demonstrated good practice in science teaching and learning. This Good Practice report provides examples of:
 - Leadership that encourages collaboration and improvement.
 - Kaiako who are deliberate in their approach to supporting children.
 - Bicultural practice.
 - Learner-focused partnerships with parents, whānau and the community.
12. This report also gives examples for how leaders and kaiako can do effective internal evaluation focused on how well they provide rich and responsive science curriculum.

Growing Curiosity: Teaching Strategies to Engage Years 5 to 11 Students in Science

13. Previous ERO evaluations of science for the Years 5 to 11 age group identified a need for a greater focus on teaching the integrating strands of the science curriculum, and how many teachers found it difficult to maintain the integrity of science within an integrated approach.
14. To support teachers to achieve this, the report sets out strategies and approaches that a selection of successful schools had taken to increase students' engagement in science. Across these schools, ERO found the key influencers that contributed to improved outcomes in science were:

In primary schools

- A planned approach to strengthen students' engagement in science.
- Targeting external and in-school professional learning and development.
- Increasing the breadth of science experiences offered.
- Collecting and using a variety of information for planning and evaluation.

In secondary schools

- Reviewing science programmes across all year levels.
- Refocusing on the *Nature of Science*.
- Carefully structuring the development of skills and knowledge.
- Responding to learners' interests, strengths and needs.

15. The report includes examples of practice across these areas.
16. This report was peer-reviewed by Dr Rosemary Hipkins who has been involved in a number of projects related to the development of a 'capabilities' approach to curriculum design and an initial set of five "science capabilities for citizenship".

Next steps

17. The aim of these reports is to support leaders, kaiako and teachers to strengthen the science learning opportunities they provide. To have impact, the reports need to be picked up and used by leaders, kaiako and teachers. To enable this ERO will:
 - Publish the reports on the ERO website on 12 April 2021.
 - Publish short guides tailored for parents and whānau, leaders, kaiako and teachers.
 - Hold a forum on science for sector leaders at ERO's National Office.
 - Hold Zoom sessions with science leaders in schools and early childhood education services.
 - Hold workshops on the reports and guides with their ERO Review Officers to enable them to use them in their work with schools and early childhood education services.

Recommendations

18. It is recommended that you:
 - a) **Note** the attached near final draft reports *Science in the Early Years: Early Childhood and Years 1 to 4*; *Shining a Light on Science: Good Practice in Early Childhood Services*; and *Growing Curiosity: Teaching Strategies to Engage Years 5 to 11 Students in Science*. Yes / No
 - b) **Note** that ERO intends to release these reports on 12 April 2021. Yes / No
 - c) **Note** that ERO are developing a series of guides tailored to different audiences. Yes / No
 - d) **Agree** to forward this briefing and reports to Ministers Hipkins, Sio and Davis, and to the Minister of Research, Science and Innovation, Hon Dr Megan Woods. Yes / No


 Nicholas Pole
 Chief Executive

NOTED/APPROVED


 Jan Tinetti
 Associate Minister of Education
 with responsibility for the Education Review Office

31 / 03 / 2021