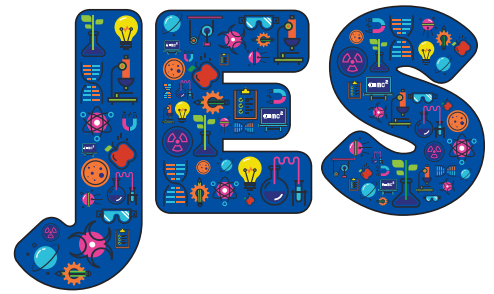


Guest Editorial



● Prepared by Deb McGregor

A special edition

This bumper edition of *JES* contains a collection of articles for the special edition emerging from the June 2016 International Conference of Primary Science held in Belfast, Northern Ireland. The title of the Conference, *No Boundaries No Barriers*, offered an open forum within which to be creative about the focus of the papers and workshops presented. This inaugural international conference, sponsored by the Primary Science Teaching Trust (PSTT), was well attended by over 380 practitioners, researchers and educationalists working in primary science. The papers included here are all written by teacher-researchers or teacher-education-researchers, with the intention of informing, illuminating or recommending ways to enhance teaching, learning, assessment or leadership of primary science.

Articles focusing on creative practice and the development of literacy and inquiry skills

This special edition begins with the first three papers (Digby, McGregor and McClune) relating to different kinds of practice and the ways in which they support literacy and inquiry skill development with early years, Key Stage 1 (age 5-7) and Key Stage 2 (age 7-11) children.

Digby's paper, *To what extent can Video-Stimulated Reflective Dialogue facilitate the development of practitioner critical reflection and understanding of creativity in scientific inquiry in the early years?* offers a range of useful insights for teachers. She describes how she organised and managed a group of teachers (who worked as mutually supportive colleagues) to consider how inquiry was evidenced in early years education. She adopts the approach of Moyles *et al* (2003) to frame practitioner discussions whilst watching recordings of children playing. Her findings suggest how video-stimulated dialogue can promote pedagogical understanding

of different ways to encourage more investigative learning with young children.

McGregor's paper entitled, *Using drama within a STEM context: Developing inquiry skills and appreciating what it is to be a scientist!* also details a particular pedagogy, designed to promote thinking about science. Her project, though, reports on the creative use of drama strategies, rather than written work, to augment children's understanding about the processes of scientific inquiry within a technological context. Her innovative work using drama places children in role as scientists, so they are encouraged to *work scientifically*. Her findings suggest how the application of dramatic conventions can achieve what Ofsted (2013: pp.10-11) recognises is at its 'highest where pupils were involved in planning, carrying out and evaluating investigations that, in some part, they had suggested themselves'.

McClune discusses *Committing curriculum time to science literacy: the benefits from science-based media resources*. He describes how different pedagogic strategies, used in a creative way to promote literacy skills with Year 6 (age 11) children, can support criticality in reading. His study examines how authentic material, such as text presented in the media, can be adopted and used as a learning resource. His findings corroborate Norris & Phillip's (2003) view that literacy in its fundamental sense is central to scientific literacy, and suggest that the innovative approaches used to engage and guide the children to carefully consider media reports can facilitate them in recognising links between claims and evidence in relation to the trustworthiness of a report.

Articles focusing on assessment in primary classrooms

Earle's paper, *The challenge of balancing key principles in teacher assessment*, clearly and



insightfully articulates the various issues teachers need to consider (and balance) when endeavouring to validate and verify their assessments of children's work. She imaginatively applies a metaphor of a seesaw to illustrate the relationship between validation, that is, ensuring measures of children's attainment are robust and repeatable, with the contrasting issue of verification, ensuring there is substantive and comprehensive evidence that is practicable to assimilate. She also includes in her theorisation concerns about balancing moderation and manageability.

The Serret *et al* paper, *Transforming assessment and teaching practices in science inquiry*, highlights the various forms that professional development can take and describes how teachers might be supported to better understand inquiry in European contexts. The article illustrates rather eloquently how the scrutiny of transcripts from differentiated inquiries (Wenning, 2005), which are subsequently discussed by teachers, can offer insights into classroom practices that augment professional development and further understanding of science teaching and learning processes.

Articles focusing on science leadership

McCullagh & Doherty's paper reporting on *Innovative approaches within Initial Teacher Education to develop emergent science leaders* suggests how a fresh approach to teacher education could address concerns related to the reduced time spent on science in the primary curriculum. They discuss how their 'Student Teachers' College' project, which requires pre-service teachers to demonstrate their competence in four areas: excellence in classroom teaching; peer dissemination; professional development activity with schools and science education agencies; and practice-related research, can facilitate subject leadership skills.

The paper by Mackintosh *et al*, *Developing teachers as leaders of science in primary schools*, considers how the Primary Science Quality Mark (PSQM) award programme can be utilised as a way of addressing the reported decline in the status of science in primary schools. They draw on Fairman and MacKenzie's 'Nine Spheres' (2012) model to suggest the range of leadership skills that are useful for science leaders. Their findings exploring

the impact of PSQM suggest how science leaders' perspectives can be shifted from science learning and practice in isolated classrooms to a whole-school vision.

Bianchi's paper, *A trajectory for the development of teacher leadership in science education*, offers a theoretical model that can be applied to inform CPD. There are five stages of the developmental model, which are described, justified and illustrated through rich descriptive reflections from teachers and teacher educators. The article contributes to the literature on teacher development by considering the various (and often sequential) processes essential for effective CPD.

Scientist-teacher collaboration: exploring the nature of successful STEM placements in primary schools by Choudry *et al* highlights quite unique insights into the processes and outcomes of STEM volunteers working alongside primary science teachers. The reflections of the volunteers on their experiences are provided in much detail, clearly detailing how each reaps greater or lesser rewards. The challenges and benefits of the programme are discussed and reflected upon to suggest how schools might make more effective use of them in future endeavours.

Articles considering transition from primary to secondary science classes

Howard's paper, *Exploring the use of inquiry-based science pedagogies across primary-secondary transition: How does the literature relate this to the declining uptake of science in secondary schools?* considers what the research suggests about the key issues. She highlights that how the subject is taught influences the nature of pupil engagement, subsequent learning and the development of an individual's scientific identity. She suggests that we still need to pay attention to the Rocard report (2007), which identified how inquiry-based science education (IBSE) is still relevant. This is because children like science as they get to carry out experiments and they love investigating, frequently saying, 'You learn loads when you do it yourself, like Science days when you do experiments and don't copy up work' (Hopkins 2008: pp.397–8).

Finally, Coppard's paper, *What does a review of the literature suggest about the teaching of the nature*

and behaviour of matter during the transition years from primary to secondary? critically examines key ideas from the research literature. She discusses what we know from various research studies about the nature and behaviour of matter in Key Stages 2 and 3 (ages 7-14). She offers an argument that suggests the current approach often fails to ensure meaningful learning of the particulate nature of matter and what might be appropriate features of a more successful curriculum model.

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Professor Deb McGregor, Oxford Brookes University, is the Guest Editor for this edition of *JES*.

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