Integration, pedagogy and assessment in the redeveloped Primary School Curriculum: Innovations, issues and implications

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Abstract

Intensive debate surrounds integration, pedagogy, and assessment in educational research. While these fundamental concepts have regularly been explored individually, they have rarely been considered in tandem with each other. Research (Burke & Lehane, 2023a, 2023b) to support the redevelopment of the *Primary School Curriculum* has highlighted a number of critical issues for their design and enactment, both individually and in concert. In this article, we chart the affordances and challenges of curriculum integration, highlighting principles that might inform its curricular and classroom implementation. The manifold perspectives on pedagogy are synthesised to highlight convergence and contradiction in the available literature. The crucial role of assessment in sustaining ongoing learning is outlined. In synthesising the literature from these areas, the article looks back and projects forwards, identifying meaningful innovations, potential issues and key implications for the coming period of curriculum reform.

Keywords: Curriculum integration, pedagogy, assessment, curriculum, agency

Context and background

Irish primary schools are on the cusp of significant curriculum change. Preliminary proposals (National Council for Curriculum and Assessment (NCCA), 2016, 2020) have given way to the publication of the final *Primary Curriculum Framework* (Department of Education (DE), 2023a), the foundational document for curriculum in primary and special schools. Arising from the framework, the NCCA has proposed a series of new curriculum specifications for the arts (2024a); science, technology and engineering education (2024b); social and environmental education (2024c); wellbeing (2024d); and modern foreign languages (2024e). Though there are multiple new components of the curriculum to consider, the distinct and interconnected roles of integration, pedagogy and assessment highlighted in the new framework deserve particular attention given recent advancements in educational research. In this article, we draw on two reports commissioned by the NCCA1 (Burke & Lehane, 2023a, 2023b) to explore their application in the classroom. We summarise the latest research on integration, pedagogy, and assessment presented in these reports, while also reflecting on their relevance in the context of previous curriculum

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reforms in Ireland. Additionally, we identify meaningful innovations, potential issues, and key implications for integration, pedagogy and assessment in the upcoming phase of reform.

The current *Primary School Curriculum*, published in 1999, consists of a series of detailed statements of curriculum content objectives elaborated over six curriculum areas and 11 individual subjects. The updated *Primary Curriculum Framework* (DE, 2023a) consists of five broad curriculum areas for Stage 1 and Stage 2 (junior infants to second class) and 12 individual subjects in Stages 3 and 4 (third to sixth class). This redevelopment has involved extensive deliberation and research over a protracted period, in line with the consultative model to curriculum reform adopted by the NCCA. While this can be viewed as a significant change to the curriculum, it would be incorrect to conceive that this space has remained static since 1999. For example, 2007 saw the publication of guidelines for assessment in the primary curriculum (NCCA, 2007). The publication of *Aistear* in 2009 signalled the first introduction of a curriculum framework for both early childhood settings and infant primary classes (Department of Education and Skills (DES), 2009). The form of the 1999 curriculum was also changed as a result of the National Literacy and Numeracy Strategy (DES, 2011), which allocated more time to English/Gaeilge and mathematics. The strategy also led to the early introduction of a revised *Primary Language Curriculum* (DES 2015; 2019) and *Primary Mathematics Curriculum* (DE, 2023b).

One of the most significant new emphases in the *Primary Curriculum Framework* (DE, 2023a, p.5) is the vision of children and teachers as 'agentic' individuals. While definitions vary, the updated framework explains child agency as the "capacity to act independently and make choices about and in their learning" (DE, 2023a, p. 25). For teachers, agency is associated with making "professional decisions" that will allow them to enact the curriculum in a way that best supports their own school context (DE, 2023a, p. 25). The literature on teacher agency suggests that these decisions are influenced by past experiences, practical considerations in the present, and their thoughts and aspirations for the future (Priestley et al., 2015). In this way, teacher agency is considered to be an emergent phenomenon that should not be confused with teacher autonomy. While autonomy is a necessary condition for agency, it is not sufficient. Affording a high level of autonomy to teachers in how they prepare, teach and assess does not necessarily translate into agentic practice. Instead, the development of agentic professionals requires a focus on individual teachers' capacities (e.g. teacher knowledge) while also considering cultural (e.g. values in a school), structural (e.g. relationships within a school) and material (e.g. access to resources) factors (Priestley et al., 2015). For teachers to exercise agency in the classroom, they need a strong knowledge base and a range of supports within the education system. These are essential prerequisites that enable teachers to make informed and effective decisions to enhance children's learning. In the coming sections, we highlight key messages from the research on integration, pedagogy and assessment that should inform decision-making and practice at the teacher, school and system level.

Curriculum integration: harmony, disharmony and the realities of enactment

The notion that subjects should be taught in an integrated manner is a popular one that has stood the test of time in Irish primary curriculum documents:

> The young child is not conscious of subject barriers; he views knowledge as a key to life and his questions concerning the world around him range over the whole field of knowledge. (DE, 1971, p.19)

> For the young child, the distinctions between subjects are not relevant: what is more important is that he or she experiences a coherent learning process that accommodates a variety of elements.(DES, 1999, p.16)

> Children live their lives in an integrated world, and, for most real-world problems, children need to apply knowledge and skills from multiple areas. (DE, 2023a, p. 26)

Based on these statements, curriculum integration could be perceived as a self-evidently beneficial endeavour. Yet, an examination of the theoretical, empirical and practice-focussed literature on the construct paints a more contested picture. For example, the concept of curriculum integration is poorly understood and poorly defined, with confusing and inconsistent use of terminology (Badley, 2009). Most conceptualisations of curriculum integration focus on making connections – be this between the child and the curriculum (e.g. Beane, 1997; Dewey, 1900) or between different disciplines of knowledge – usually in the service of more holistic learning (e.g. Drake & Reid, 2018; Fogarty, 1991). Beyond this philosophical agreement, the exact conceptualisation and operationalisation of integration varies enormously.

Integration is often associated with a child-centred curriculum, in which a child's life is seen as a starting point for learning. This is most notably demonstrated in the progressive education movement associated with Dewey (1900) and further exemplified in the democratically-focussed negotiated integrated curriculum (Beane, 1997; Dowden, 2014; Fitzpatrick et al., 2018). In this form of curriculum, children's concerns (e.g. a question, a problem related to their everyday life) direct a unit of learning, with subject-based knowledge woven in if and when appropriate. Children are afforded a high degree of agency in determining both the what and the how of learning in these units, with teachers acting as facilitators to support learner inquiry. At its face, this form of integration would appear to be in harmony with the strong focus on child agency outlined in the *Primary Curriculum Framework*. It is worth noting, however, that although this form of integration has strong theoretical foundations, it has not been tested beyond small scale qualitative studies internationally (Brough, 2012; Calder & Brough, 2013; Dowden, 2014) and nationally (Fitzpatrick et al., 2018). Furthermore, while child-centred approaches to learning have an important role to play in primary classrooms, teachers must still ensure that children are exposed to facts, concepts and ideas outside of their day to day lives to support the development of knowledge beyond that which is immediately evident or accessible (Young & Muller, 2010).

A thorough systematic review of recent research on curriculum integration (Burke & Lehane, 2023a) indicates that, more often than not, a school subject or collection of subjects forms the starting point for integration. Within the broad disciplinary areas of language, arts, STEM, social and environmental education and wellbeing, different forms and models of integration prevail. Language and literacy has been integrated with other subjects in a variety of ways, through, for example, projects that put literacy skills to use in the service of learning about the local environment (Duke et al., 2021) or learning about the discipline-specific way that literacy is used to support learning in science (Fazio & Gallagher, 2019; Wright & Gotwals, 2017). Looking to arts education, the literature flags that integration can be carried out in a manner that is co-equal, in which arts learning receives a joint focus with the integrated subject. However, other approaches to arts integration reduce the arts to a vehicle for learning in other areas (Bresler, 1995). The literature is replete with examples of the arts being used to further learning in, for example, literacy (Peppler et al., 2014) or numeracy (An et al., 2014). Integrating science, technology, engineering and mathematics in the service of STEM learning has received significant attention in recent years, though Irish research demonstrates that there is much unpacking to be done by teachers in putting this into practice (Hourigan et al., 2021). There is a long tradition of integrating disciplines like history and geography under the curriculum area of social studies in the United States. Writing on the this subject, Hinde (2015) indicates that **healthy** integration occurs when there are meaningful connections forged, **fractured** integration occurs when social studies is linked in a shallow manner, and **stealthy** integration when it is disguised under the heading of other subjects (e.g. only encountering social studies in English reading lessons). Thus it is evident that despite the fact curriculum integration is premised on the idea of harmony between subjects, its enactment can lead to a range of dissonant notes. All subjects may not benefit equally or consistently from this approach.

Some forms of integration have been examined in robust classroom-based studies. Others have not. Approaches that integrate literacy with other curriculum areas have been tested in a range of experimental or quasi-experimental studies (e.g. Duke et al., 2021; Kim et al., 2023; Wright & Gotwals, 2017) and its apparent positive effects have been further supported in meta-analytic reviews (Hartzler, 2000; Hwang et al., 2021). Outside of literacy, the benefits of integration are on a less firm empirical footing. Individual studies included in the NCCA review of curriculum integration (Burke & Lehane, 2023b) chart benefits for domains such as motivation (e.g. Jia et al., 2021) and engagement (e.g. Sáez-López et al., 2016). However, there is a dearth of high quality evidence for integration due to inadequate study design and measurement (e.g. a reliance on researcher-designed measures, inadequate descriptions of sampling procedures; Burke & Lehane, 2023b). While many empirical studies report positive effects of curriculum integration, it is unclear if these positive effects are maintained and beneficial in the long term. It is crucial that curriculum principles that appear to make sense are matched with actual evidence from classroom-based studies. Thus, it is necessary to conduct further robust research on curriculum integration before stretching its application to all areas of learning in the curriculum.

Bearing in mind the many ways in which it can be put into practice and the patchy evidence base, how, then, should we progress with integration in a *Primary Curriculum*

Framework that advocates so strongly for its use? A number of high-level principles provide food for thought as the primary system moves forward (Burke & Lehane, 2023b):

i. Integration is not an end itself – it should only be adopted when there is a meaningful reason for doing so.
ii. Relevant conceptual connections between subjects are more important than the volume of connections.
iii. Integration works well when it responds to context, including children's interests, knowledge and experiences.
iv. There is no one way to integrate the curriculum, but a national curriculum specification or framework should go as far as possible in identifying potential connections (as a scaffold for teachers).
v. Integrated units of work can and should work alongside non-integrated teaching; a balance is needed.
vi. Different teaching and assessment approaches can be used when integrating; while there is potential for project- and inquiry-based units of work there is also the need for more explicit forms of teaching.
vii. Integration comes into its own when it is used to look at a topic in depth or from multiple angles.

As teachers review these principles, it may become clear that there is nothing particularly groundbreaking or revelatory in what the literature tells us about curriculum integration. The benefits of integration must be balanced with the challenges experienced in its implementation. Most importantly though, these principles do not advocate for an 'all or nothing' approach in relation to curriculum integration. Positioning an integrated curriculum against a subject-based curriculum is not helpful given that the reality of classroom life and current research suggests that both need to be considered when appropriate. Genuinely endorsing teacher agency must allow for decisions around curriculum integration at a local level, supported by meaningful guidance from the curriculum framework itself.

Pedagogy: the need for nuance

The *Primary Curriculum Framework* envisages that teachers will use "appropriate and evidence-based pedagogical approaches and strategies to foster children's engagement, ownership and challenge" (DE, 2023a, p.6), framing pedagogy as one of the eight principles of teaching, learning and assessment. The literature proposes a more expansive and all-encompassing view of pedagogy. Alexander (2000) conceptualises **teaching** as the instructional act, and **pedagogy** as the broader discourse that surrounds it (Alexander, 2000). Broadly speaking, it generally refers to the science, art, policies, evidence, theories and values that underpin teaching and learning. The term 'pedagogy' envisages a role for the child – not just the teacher – in how learning unfolds. Pedagogy involves decisions; it is bound up in how classroom time and space are organised (Devine et al., 2023). To think about pedagogy is to think about manifold perspectives on what teaching and learning can and should look (and feel) like. Both the richness and complexity of teaching stem from the many competing and overlapping perspectives on what should inform how it should be

carried out in classrooms. These include, but are not limited to, those outlined in Table 1.

Table 1: Perspectives that influence pedagogy, drawn from Burke and Lehane (2023b)

Child-Centred	Children's interests, concerns and preferences are given nuanced attention in teaching and learning.	Dewey, 1900 Lundy, 2007
Creativity	Imaginative, innovative approaches are used to support risk-taking and the exploration of ideas.	Cremin & Chappell, 2021 Dezuanni & Jetnikoff, 2011
Criticality	Prevailing norms and wisdom are challenged; consideration is given to who is and is not represented.	Giroux, 2011 Freire, 1970
Democratic, Global and Socially Just Dialogue	Pedagogy looks outwards and is premised on a sense of equity and action - making a change in the world. Learning and thinking are advanced through purposeful and meaningful talk and discussion.	Ayers et al., 2009 Dewey, 1900 Alexander, 2018 Resnick et al., 2018
Diversity	Teaching builds on, responds to and sustains learners' knowledge and experiences e.g. culture, language.	Ladson-Billings, 1995 Moll et al., 1992
Inclusivity	Differences in learners is to be expected and learning should be made accessible to all using evidence-based approaches.	Florian & Black-Hawkins, 2011 Fletcher & Vaughn, 2009
Relationships	Warm, supportive, positive relationships bolster teaching and learning.	Osher et al., 2020 Noddings, 2012
Self-Regulation	Children are supported to reflect on and manage their own thinking, behaviour, emotions and, ultimately, new learning.	Benick et al., 2021 Muijs and Bokhove, 2020

Broader debates and considerations on pedagogy are always at play, whether or not they are obvious at any given moment in the classroom. However, teaching is also very much predicated on skills like classroom management and how to explain new concepts. What the literature says on such skills should also be considered when one examines pedagogy.

Learning from effectiveness studies

Though questions remain over whether we should even attempt to summarise what 'effective pedagogy' looks like (Biesta, 2015; Bogotch et al., 2007), large scale reviews have nonetheless identified a range of observable practices that contribute to successful teaching (e.g. Coe et al., 2020; Creemers & Kyriakidēs, 2012; Ko et al., 2013; Kyriakides et al., 2013; Muijs et al., 2014; Siraj et al., 2014; see Burke & Lehane, 2023b). These reviews highlight the importance of teacher pedagogical content knowledge (Shulman, 1987); that is a teacher's understanding of subject content, how it is presented in the curriculum, and how best to support children in developing this knowledge. Effective teachers carefully orient children to new learning, drawing on their prior knowledge and experiences to deliberately structure and sequence new learning. They are skilled in how to present and explain new concepts and successfully monitor and review children's understanding on an ongoing basis. This learning is premised on proactive classroom management, high expectations for all and the creation of a positive classroom climate. Teachers also support children's cognitive engagement with new learning, including their ability to self-regulate. Interestingly, studies conducted in the Irish context have re-iterated some of the preceding practice documented

internationally, but have tended to further emphasise the relational dimension of good teaching (Devine et al., 2013). The Children's School Lives longitudinal study – drawing on both child and teacher perspectives – has identified the need for "positive, respectful, and nurturing relationships that focus on the holistic development of children" (Devine et al., 2023, p.44). In summary, both cognitive and affective dimensions of teaching require attention in any consideration of what is meant by 'good pedagogy'.

A continuum of approaches

The preceding perspectives and fundamental teaching skills that inform pedagogy can be put into practice in different ways. A range of overarching pedagogical approaches are commonly adopted and recommended, but teacher discretion is pivotal in deciding how and when to deploy them. Examining the research evidence for a given pedagogical approach throws up opportunities and pitfalls (Burke & Lehane, 2023b):

- **Collaborative** approaches to learning in which children work together on a shared learning goal are extremely common and have been shown to be beneficial (Tenenbaum et al., 2020), yet a high level of teacher expertise is needed to ensure actual learning is occurring in this classroom configuration (van Leeuwen & Janssen, 2019).
- **Explicit teaching** is sometimes perceived as an outdated pedagogy, but research evidence suggests that it is a necessary approach, particularly in ensuring that all children in a class achieve new learning outcomes (Burke & Lehane, 2023b; Stockard et al., 2018).
- **Play-based** approaches to learning have found significant favour in recent policy and literature (Hirsh-Pasek, 2009; Mardell et al., 2023; Parker & Thomsen, 2019), yet the empirical evidence base for playful pedagogy is far from conclusive (Education Endowment Foundation, 2023; Lillard et al., 2013; Skene et al., 2022).
- **Project-, problem- and inquiry-based** learning are distinct approaches that are commonly used in integrated learning, but the research shows that teacher guidance, feedback, scaffolds and examples are crucial for their success (Alfieri et al., 2011); unassisted discovery finds less favour in the research.
- **Scaffolding** in a variety of forms is crucial across all pedagogical approaches to ensure success and development for all learners, but scaffolds need to be carefully introduced and faded (Van de pol et al., 2010).
- There has been a steep rise in the use of **technology** to support learning, yet there is no guarantee that the use of devices or other tools will actually improve learning (Lewin et al., 2019; UNESCO, 2023).

Even this brief consideration of pedagogical approaches highlights that considerable nuance is needed in deciding how to go about teaching a given concept or skill. Assessment should assist in this process. The focus on teacher agency in the new curriculum will require that teacher knowledge of the if, how and when of different approaches should be supported. Teachers will also need to be trusted to make local decisions about how best to support a particular group of children, with particular learning goals, at a particular point in time.

Assessment: central rather than additional

The *Primary Curriculum Framework* highlights that assessment is a collaborative process which involves gathering, recording, interpreting, using and reporting information about learners (DE, 2023a, p. 20). Nevertheless, it is important to recall what the desired outcome of the assessment process is. Black and Wiliam (2018) assert that assessment is a "procedure for making inferences about student learning" (p. 553). As a result, precedence should be afforded to the **inferences** that arise from assessment. These inferences could help the teacher decide about the stage of learning that a student has reached (e.g. *Mary is able to fluently read 2nd class texts with no support*) or what should be done next to advance a student's learning (e.g. *Mary now needs to learn how to read multisyllabic words*). When assessment is framed in this way, its value to a teacher's classroom practice and a student's learning is evident.

Foundations of classroom assessment

Many of the perspectives that inform contemporary pedagogy are also highly relevant to assessment, particularly as they relate to inclusion, technology and diversity (e.g. adopting culturally and linguistically responsive approaches; Herrera et al., 2013). Authentic assessment, whereby learners must apply their knowledge, skills or abilities in a way that resembles 'real-life' has also heavily influenced current writing on assessment (Gulikers et al., 2004). However, some things have remained consistent in their importance to classroom assessment: purpose, validity, fairness and reliability. While it has become common for teachers to categorise the **purpose** of a classroom assessment in line with the summative/formative classification system, this may be somewhat counterproductive as a single piece of assessment evidence could support a variety of summative and formative inferences (Lysaght et al., 2019). For example, an end-of-term assessment designed to measure operational knowledge in mathematics may have been originally conceived as a summative measure of learning. Yet it can also be used to identify areas for future learning and instruction. Therefore, instead of classifying an assessment as 'summative' or 'formative', it is more important that teachers determine from the outset what information they need to gather to support particular inferences about a student's learning.

Given that the broad purpose of classroom assessment is to support future learning, the **validity** of a classroom assessment is closely linked to the success of future instruction. Assessments that are specific enough to inform a teacher's 'next steps' can support the best inferences on student learning. These assessments should be **fair** and provide all students with an opportunity to make what they know visible to their teacher. Finally, the assessment data gathered by teachers should be **reliable**, a crucial prerequisite for validity. Within a classroom context, reliable assessments should provide sufficient evidence about a student's learning, usually in relation to a particular objective (Brookhart, 2018). This can inform a teacher's understanding of a learner, which can be refined over time with daily interactions and multiple samplings of student work (Kane & Wools, 2020).

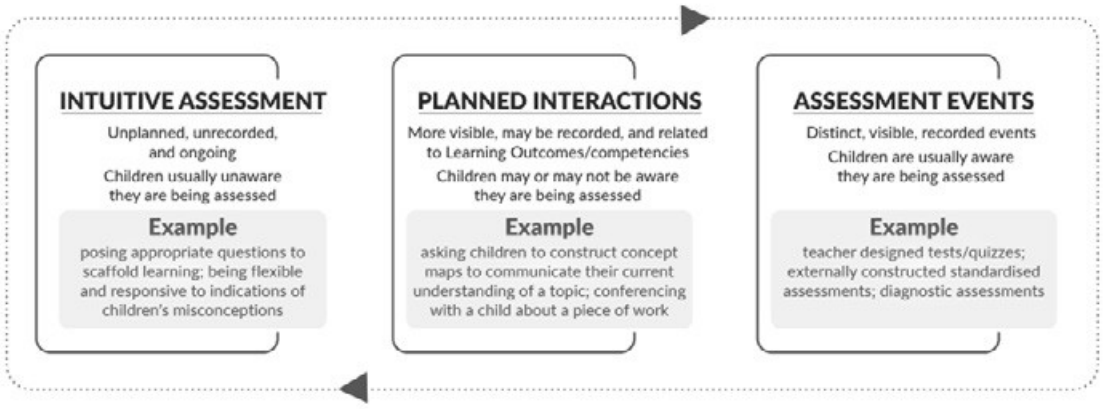
Taking these ideas into consideration, teachers' assessment practice can be distilled into three key questions to guide a teacher's approach to classroom assessment (Burke & Lehane, 2023b):

1. What do I want to know from the information I will gather?
2. Have I gathered enough information to have an accurate overview of the specific knowledge, skill or understanding of interest?
3. How well does the information that has been gathered justify my future actions?

Assessment approaches

Answering the previous questions should help teachers to design assessments that 'bridge the gap' between teaching and learning (Wiliam, 2013). Lysaght et al. (2019, p. 5) note that various types of assessment can also occur on a spectrum "ranging from 'organic' types of assessment to more 'planned' or 'visible' types of assessment". This idea, as discussed by Heritage (2007) and Shavelson et al. (2008) has also been adopted by Ireland's *Primary Curriculum Framework*, albeit with slightly different nomenclature (DE, 2023a, p. 22; see Figure 2). This representation of assessment in the *Primary Curriculum Framework* represents a significant 'shift' in how assessment is conceptualised in Irish curriculum documents and requires teachers to see assessment as something that is "contextualised, interactive and evolving" (Chen & Bonner, 2020, p. 3) rather than something that is static and divorced from pedagogy.

Figure 1: A Continuum of Assessment (DE, 2023a, p. 22)



According to this model, evidence about learning can be derived from various assessment approaches that differ in formality and frequency (but not importance). The assessment approaches currently advocated for use in Irish primary schools are outlined in the *Assessment in the Primary School Curriculum: Guidelines for Schools* (NCCA, 2007) and *Aistear: Guidelines for Good Practice* (NCCA, 2009). Except for some differences in terminology, the assessment methods outlined in these documents are still broadly supported by research literature. They are briefly outlined in alphabetical order in

Table 2. It is important to acknowledge that any of these approaches can also be supported by a range of digital tools, e.g. gamification software to support classroom tests (See et al., 2022), use of Generative Artificial Intelligence to provide feedback (Steiss et al., 2024).

Table 2: Assessment approaches, drawn from Burke and Lehane (2023b)

Approach	Definition
Classroom Tests	Any written or oral assignment that consists of a series of questions/problems that must be answered by individual learners within a limited time frame in a classroom context (Brookhart, 2015)
Feedback	Any information provided to a learner (e.g. from peers, from teachers) regarding their performance or understanding (Hattie & Timperley, 2007)
Observation	The action or process of closely monitoring something or someone in a particular context (Pyle & Danniels, 2017)
Oral Questioning/ Discussion	The ways in which students' thinking can be provoked or elicited and how teachers interact with the responses to guide teaching and learning (Coe et al., 2020b)
Performance Based Assessments	The demonstration of a skill or competency to represent learning (Brookhart, 2015)
Rubrics/Shared Success Criteria	A set of descriptions indicating standards of attainment for different levels of performance, success, or competency (Brookhart, 2015)
Self-Assessment	The evaluation of one's own work and making an informed judgement about it (Andrade, 2019)
Standardised Tests	Norm- or criterion-referenced tests that assess the knowledge or abilities of learners under controlled administrative and scoring guidelines (Murchan & Shiel, 2017)

There is a significant body of research to guide teachers on the 'when, what and how' of each of these approaches (Burke & Lehane, 2023b). However, no one approach should be considered 'superior' than another as they should all inform a "set of habits" (Lysaght et al., 2019, p. 5) for teachers. For example, Sanchez et al. (2017) found that students in 3rd-12th grade classrooms who engaged in self-grading (a form of self-assessment) performed better on subsequent assessments than those who did not. Indeed, there is growing evidence to suggest that engaging in self-assessment can support motivation, learning and metacognition (Chen & Bonner, 2020; Muijs & Bokhove, 2020). Nevertheless, self-assessment is not an approach that can automatically support effective assessment practice. Keane and Griffin (2018) examined self-assessment practices with Irish primary and post-primary learners. Eighty-five children from 2nd class, 5th class and transition year wrote an English essay and later self-assessed their work using rubrics. The findings illustrated an overall weak relationship between their self-assessed performance on a rubric and the actual scores that the researchers calculated. However, learners' self-assessment of their work became more accurate as they aged. Strong correlations also emerged between higher prior literacy attainment and children's accuracy in self-assessments. The findings suggest that primary school children with low literacy attainment display difficulty making accurate self-assessments of their academic work in literacy. The authors proposed that there may be a cumulative value to the process of self-assessment, i.e. practice effects may enhance the accuracy of students' self-assessments over time. Consequently, applying this particular assessment approach (or indeed any of those outlined in Table 2) requires

teachers to consider if and when that approach is most beneficial to the process of teaching and learning. While professional learning opportunities and systemic support (e.g exemplars) would develop teachers' capacities to make such decisions, time to adapt to these practices is also needed.

From research to reality: what now for integration, pedagogy and assessment?

As we move towards the enactment of a new *Primary Curriculum Framework*, it is crucial that we build on what is known from scholarly and empirical considerations of integration, pedagogy and assessment. A number of meaningful innovations and potential issues can be charted at this juncture, which we now outline in turn. We then highlight implications for the coming period of curriculum reform and related professional learning.

Meaningful innovations

The introduction of a new curriculum is a relatively rare occurrence in Ireland. However, it should be evident from the forerunning review of the literature that many of the key tenets of the 1999 *Primary School Curriculum* have stood the test of time. Though there are unmistakable changes in the lives of children in and outside of school, many of the high level principles for pedagogy and assessment imbued in the 1999 curriculum and related documentation (e.g. NCCA *Assessment Guidelines*, 2007) remain relevant. This provides a firm foundation on which to build and extend teachers' knowledge and practice in the coming period. The underpinning focus on agency in the *Primary Curriculum Framework* is an ambitious yet justified aspiration. If supported by a shared sense of what agency actually means (and the system-level and local-level support it demands), it has the potential to provide a common vision that has meaningful import for how we view children and teachers in the classroom.

Many of the upcoming curricular changes are logical and are in alignment with current ideas about 'good practice' for primary education. For example, the new curriculum reaffirms the idea that integration is a worthy educational exercise. Many of the most pressing issues of our time – like climate breakdown – may be best addressed in a cross-curricular manner. The relatively new focus on playful pedagogy, brought to the fore in Aistear (DES, 2009) will be more firmly folded into the curriculum framework itself. Where deployed appropriately, play holds potential for rethinking how children engage with the curriculum throughout the primary school years. Consolidating the curricular guidance for the early primary years will avoid the duplication and potential divergence experienced in referring to both the 1999 curriculum and the *Aistear* framework. The inclusion of relationships as one of the principles of learning, teaching and assessment (DE, 2023a, p. 6) reflects the growing evidence that appropriate teacher-children relationships have an important impact on a range of dimensions including motivation, engagement and achievement (Wang et al., 2022). Signalling the importance of relationships in the curriculum documents provides a clear message to schools about the importance of climate and culture and the necessity to take the time necessary to develop these areas. The *Primary Curriculum Framework's* (DE, 2023) deliberate move away from the rigid dichotomisation of assessment practices into 'summative' and 'formative' is also a positive

one that represents current recommendations from the field of educational assessment (Black & Wiliam, 2018). This approach should support more flexible and appropriate assessment practices that can effectively inform a teacher's classroom practice.

Extensive reviews of the literature have been conducted to inform the new curriculum (Burke & Lehane, 2023a, 2023b; Murphy et al., 2023; Nohilly et al., 2023; O'Sullivan et al., 2023; Pike et al., 2023). These reviews provide a strong starting point for new innovations in the curriculum, as long as serious attention is given to the intricacies and nuances they outline.

Potential issues

The literature on integration, pedagogy and assessment also charts potential issues that will need concerted attention and action in the coming period.

Notwithstanding the potential benefits of a more **integrated curriculum**, proposals for its enactment must acknowledge that "cross-curricular teaching is substantively, temporally and organisationally much more complex than traditional separate-subject teaching" (Volk et al., 2017, p.5). The previous research makes clear that most instances of high quality curriculum integration have occurred in particular circumstances. It is not uncommon for integrated units of work in areas like literacy and STEM to involve significant professional learning supports for teachers, for example, in the form of partnerships with university researchers or professional development coaches (Hourigan et al., 2021; Saraniero et al., 2014). Furthermore, successful integration is often premised on the provision of extensive exemplars or instructional materials (e.g. Brugar, 2012; Duke et al., 2021; Follong et al., 2022); teachers in such studies were rarely left entirely to their own devices to generate units of work or resources to enact integrated teaching. The enactment of a newly integrated curriculum will face significant roadblocks in the absence of appropriate resourcing and exemplification. Relatedly, while integration is sometimes framed as a way of managing curriculum time pressures, the evidence would suggest that it requires greater time investment from teachers in its planning, at least in earlier stages (e.g. Bravo & Cervetti, 2014; Brugar, 2012; Casady, 2015; Gomez Zwiep, 2016; Gray et al., 2022; Hubbard et al., 2020). One of the common motives in integrating the curriculum is to avoid redundancies and overlap across curriculum subjects. The problem of curriculum overload has been well documented in the Irish context (NCCA, 2010). Though integrated curriculum areas (language, STEM, SEE, wellbeing, arts) are now in train, this, alone, is unlikely to prove a panacea on this front. There is also a risk that the ostensible aim of reducing overload through integration will lead to **additional** overload if subjects must be taught separately **and** integrated in order to fulfil curriculum learning outcomes. All involved in primary schooling should understand that integration has benefits, but that these are not universally applicable. Integration also has downsides.

Looking to research and curriculum beyond our shores provides illustrations of critical challenges that might be expected in integrating the curriculum. Some of these challenges relate to how the curriculum is presented; insufficient clarity on how connections might be made reduces the likelihood that they will be made. This issue is highlighted in the *Scottish Curriculum for Excellence* (Harvie, 2018). Challenges also exist if the connections are too

intricate and hard to navigate, as presented in the Australian national curriculum (Moss et al., 2019). There is also a particular need to ensure that focussing on integration does not undermine the clear specification of subject content knowledge. This is needed to support a shared understanding of curriculum progression in all areas. The *Scottish Curriculum for Excellence* provides a cautionary tale of the unintended consequences experienced when new knowledge is not clearly agreed and very broad learning outcomes require excessive teacher interpretation (Priestley et al., 2024; Priestley & Sinnema, 2014). The final curriculum specifications will need to very carefully outline progression in disciplinary knowledge and how cross-disciplinary connections can be made.

Turning to **pedagogy**, a number of potential obstacles present themselves at this juncture. A 'one size fits all' approach is likely to do a disservice to children. A curriculum (or policy) that does not acknowledge the need for a continuum of pedagogical approaches also does a disservice to teachers. Teaching is a complex activity. It would be unwise for overly reductive messages about pedagogy to take hold (e.g. that the new curriculum means everything is taught through play), as these would be a drastic oversimplification of what the breadth of the literature on pedagogy holds. The dichotomous positioning of a teacher as either the 'guide on the side' or the 'sage on the stage' must be avoided, as nuanced understandings of pedagogy are necessary. This requires concomitantly nuanced professional learning and development for teachers. Developing teacher agency in the context of a new curriculum will require support at macro-, meso-, and micro-levels, giving due attention to the development of teacher pedagogical knowledge (Ó Breacháin, 2022).

The role of **assessment** when integrated learning occurs is particularly complex to consider. Curriculum integration involves multiple disciplines or subjects, each with their own unique features and conceptual progressions. While it may seem appropriate to suggest that learning in each subject should be assessed separately, it is not so straightforward. For example, in many studies examining curriculum integration, the outcome measures often pay little attention to the impact of integration on subjects other than literacy or numeracy. There is little emphasis on the impact of curriculum integration on, for example, the development of artistic skills or on historical knowledge. A 'curriculum hierarchy' exists in many subjects, something which teachers themselves acknowledge (Kneen et al., 2020). Consequently, it can be challenging to outline what core learning should be assessed to ascertain if learners have developed the requisite knowledge and competences across **multiple** disciplines. Furthermore, without any precise specifications on the meaningful cross-disciplinary/cross-curricular links that may exist in a particular integrated unit, it will be difficult for teachers to design and use assessments that assess **integrated** learning. Even if clear learning objectives and criteria for integrated contexts can be achieved, other difficulties may arise, for example how well teachers can gather and interpret the data necessary to judge how well disciplinary and cross-disciplinary learning is demonstrated. Notwithstanding the specific challenge of engaging in assessment within an integrated curriculum, the 'standard' challenges associated with classroom assessment remain. Teachers need to have access to a suite of assessment practices and methods. In line with the foundational ideas of validity, reliability and fairness, teachers should be deliberate about matching their selected assessment methods to their specific instructional goals. They should also then be able to interpret the evidence gathered to draw valid conclusions

about their learners' achievement and progress. Doing this successfully requires a high level of teacher assessment literacy and support for enactment at a school and system level (Heitink et al., 2016; Schildkamp et al., 2020).

Key implications: learning from previous curriculum reform

In moving from theory, research and curriculum documents to actual teaching and learning in classrooms, it is important to consider the broader context. We can be guided to at least some extent by our previous experience of curriculum on this front. One of the most substantial contributions to the enactment of the 1999 curriculum came in the form of curriculum seminars, which involved the closure of schools to enable teacher professional development and learning. The Murchan et al. (2005) evaluation of the Primary Curriculum Support Programme (PSCP) noted broad support for these seminars, while also noting the need for more locally contextualised forms of professional learning. An over-reliance on seminars would not find favour in the more recent literature on professional learning (Cordingley et al., 2015; Darling-Hammond et al., 2017; Timperley et al., 2007). The evaluation also flagged an issue that is particularly pertinent at this juncture - the need to support integration through professional development that is not subject-based alone (Murchan et al., 2005, p.9):

> Where possible, support for individual subjects in isolation from other subjects should be avoided. Instead, programmes of support should reflect the integrated nature of the Primary School Curriculum. Special training should be provided for support personnel to enable them to fulfil this role.

This, among other findings from the Murchan et al. (2005) review, must be borne in mind in the coming period (e.g. the need to balance professional development conducted during and outside school time; the need to ensure that an excessive focus on curriculum planning does not come at the expense of actual teaching and learning).

Unfortunately, no formal review has been conducted on the most recent curriculum change at primary level, the *Primary Language Curriculum* (DES, 2015; 2019), despite the fact that we are close to ten years since curriculum seminars commenced in November 2015. The available research highlights difficulties in its early enactment (Mac Domhnaill & Nic an Bhaird, 2022; McGarry, 2017), with challenges also noted by the Inspectorate (Department of Education Inspectorate, 2022). The consultation on the draft *Primary Language Curriculum* for 3rd to 6th class (NCCA, 2018) identified challenges in the use of broad learning outcomes in the 2015 version of the document (junior infants to second class), particularly for teachers' planning. Yet, a more forensic evaluation of this curriculum change has not been carried out in advance of a wholescale move to a learning outcome structure. It is crucial that the system does not experience roll-out amnesia when moving towards enactment of the new curriculum; we ignore lessons learned from the 1999 and *Primary Language Curriculum* to our detriment.

The NCCA (2022) has set forth a vision for the conducive conditions needed for systemwide curriculum change, with a focus on timing and pacing, communications,

resourcing, alignment and coherence. The need for "ongoing, flexible and sustained systemwide professional learning" (p.10) is made clear. These conditions are a necessary starting point if there is to be a shared vision from the teaching population. Buy-in is a necessary precursor to enactment. As the advisory panel for the curriculum framework outlines: "we know only too well from research and from practice that enactment is the ultimate testing ground, the reality, and the day-to-day essence of primary education." (Hayward et al., 2022, p.27). Curriculum is enacted in context. The current context for primary education must be borne in mind as we move from consultation to confirmed curriculum, and from there to the classroom. Notable pressures on the system at present include: shortages of primary school teachers (Harford & Fleming, 2023); inadequate availability of supports for children with special educational needs (Phelan, 2023; O'Brien, 2024); a wide sense of burnout amongst teachers (Irish National Teachers' Organisation, 2022); administrative burdens on school leaders (Irish Primary Principals' Network, 2022); and the possible long-term impact of the COVID-19 pandemic on children's learning (e.g. Kinsella et al., 2024). The *Primary Curriculum Framework* and its associated specifications arrive to classrooms that are far busier than those that received the box of curriculum books in 1999. True engagement with teachers will need to meaningfully grapple with the prevailing conditions in classrooms.

In moving towards a new curriculum, there is a need to build responsiveness into the system. The level of 'check-in' during previous curriculum enactment has been patchy at best. The primary curriculum reviews published during the implementation of the 1999 curriculum focused on English, visual arts and mathematics (NCCA, 2005), followed by Gaeilge, science and SPHE (NCCA, 2008). Though chief inspectors' reports published during this period provide some level of insight into broader curriculum enactment, the remaining subjects of the curriculum (e.g. music, drama, geography) were never afforded the same level of evaluative attention and review. As noted, this lack of evaluation extends to the more recently published *Primary Language Curriculum* (DES, 2015; 2019). This poses challenges for the thoughtful enactment of a new curriculum. The preceding research on integration, pedagogy and assessment outlines what we know from primarily international literature on how each idea can be put into practice in a worthwhile manner. However, we have limited information to paint a picture of what is currently happening in Irish schools. Relatively limited data exists to answer questions such as: '*To what extent is the curriculum already integrated in practice?' 'To what extent do teachers balance explicit teaching with more exploratory approaches?' 'How do teachers deploy different assessment strategies?'* While some efforts to address this lack of data have been made thanks to the Children's Schools Lives Study (Devine et al., 2023), more is needed to ensure that we adopt a robust approach to the evaluation of our approaches in the Irish education system (see Gilleece & Clerkin, 2024). In the absence of this high level data, it is very difficult to ascertain just how far (or how short) schools will need to travel in putting the new primary curriculum into practice. This has ramifications for the prioritisation and design of professional learning at a national level.

Recommendations

It is important that the process of curriculum renewal looks backwards as well as outwards, before looking forwards. Some of the potential sticking points in the enactment of the new curriculum may be addressed by:

- Formally reviewing the enactment of the *Primary Language Curriculum* (the first learning outcomes-focused specification at primary level) and building on the successes and challenges identified therein.
- Meaningfully enacting the feedback and recommendations of teachers expressed during the consultation on draft specifications.
- Systematically piloting new curriculum specifications before expecting more widespread enactment.
- Giving serious attention to some of the difficulties experienced in other jurisdictions, e.g. challenges in identifying knowledge progression in the *Scottish Curriculum for Excellence*, another curriculum that prioritises 'interdisciplinary' learning in an outcomes-based structure (OECD, 2021).
- Ensuring that the ecological nature of teacher agency is genuinely acknowledged; broader issues in the education system will inevitably influence how a new curriculum is received and enacted.

Taking into account current research and past experiences regarding Irish curricular reform, some key actions need to be taken to support the enactment of this latest curricular evolution:

- Time and space will be crucial for a newly shared understanding of integration, pedagogy and assessment to be built; it is important that enactment in practice is not equated with enactment in planning documents.
- Professional learning for the curriculum must pay due attention to what has worked (and not worked) in previous curriculum reform; the research underpinnings for this professional learning should be made transparent.
- The fact that resourcing is a significant barrier to curriculum integration must be addressed; appropriate exemplification and instructional materials will be crucial; these can provide a starting point for teachers and schools.

The research on integration, pedagogy and assessment does not provide simple solutions. Therefore, nuanced understandings and applications should be embraced as we move forward with a new curriculum.

Conclusion

The forthcoming changes to the Irish primary school curriculum signify a landmark in the history of Irish primary education. The 2023 redevelopment of the curriculum has been guided by extensive consultation and reviews of empirical and theoretical literature. While some may think we are closing the book on the 1999 curriculum, it is more prudent to think that we are turning the page and learning from what has gone before. The success of the *Primary Curriculum Framework* will depend heavily on the extent to which teachers are

empowered to practise integration, pedagogy and assessment in a research-informed way. The system at large owes it to children, teachers and broader school communities to ensure that both the history of the old and evidence of the new is used to guide our progress.

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References

Alexander, R (Ed.). (2010). *Children, their world, their education: Final report and recommendations of the Cambridge Primary Review.* Routledge.

Alexander, R. (2018). Developing dialogic teaching: Genesis, process, trial. *Research Papers in Education*, 33(5), 561-598. Available at: https://doi.org/10.1080/02671522.2018.1481140

Alexander, R.J. (2000). *Culture and pedagogy: International comparisons in primary education*. Blackwell Pub.

Alfieri, L., Brooks, P.J., Aldrich, N.J., & Tenenbaum, H.R. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology*, 103(1), 1-18. Available at: https://doi.org/10.1037/a0021017

An, S.A., Tillman, D.A., Boren, R., & Junjun, W. (2014). Fostering elementary students' mathematics disposition through music-mathematics integrated lessons. *International Journal for Mathematics Teaching & Learning*, 1-19. Available at: https://www.cimt.org.uk/journal/an.pdf. (Accessed on: 26 April 2024)

Andrade, H.L. (2019). A critical review of research on student self-assessment. *Frontiers in Education*, 4, 87. Available at: https://doi.org/10.3389/feduc.2019.00087

Ayers, W., Quinn, T.M., & Stovall, D. (Eds.). (2009). *Handbook of social justice in education* (0 ed.). Routledge. Available at: https://doi.org/10.4324/9780203887745

Badley, K. (2009). Resisting curriculum integration. *Issues in Integrative Studies*, 137(27), 113-137. Available at: https://interdisciplinarystudies.org/wp-content/issues/vol27_2009/08_Vol_27_pp_113_137.pdf. (Accessed on: 26 April 2024)

Beane, J.A. (1997). *Curriculum integration: Designing the core of democratic education*. Teachers College Press.

Benick, M., Dörrenbächer-Ulrich, L., Weißenfels, M., & Perels, F. (2021). Fostering self-regulated learning in primary school students: Can additional teacher training enhance the effectiveness of an intervention? *Psychology Learning & Teaching*, 20(3), 324-347. Available at: https://doi.org/10.1177/14757257211013638

Biesta, G. (2015). Improving education through research? From effectiveness, causality and technology to purpose, complexity and culture. *Policy Futures in Education*, 14(2), 194-210. Available at: https://doi.org/10.1177/1478210315613900

Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. *Assessment in Education: Principles, Policy & Practice*, 25(6), 551-575. Available at: https://doi.org/10.1080/0969594X.2018.1441807

Bogotch, I., Mirón, L., & Biesta, G. (2007). "Effective for what; effective for whom?" Two questions SESI should not ignore. In T. Townsend (Ed.), *International Handbook of School Effectiveness and Improvement* (Vol. 17, pp. 93-110). Springer Netherlands. Available at: https://doi.org/10.1007/978-1-4020-5747-2_6

Bravo, M.A., & Cervetti, G.N. (2014). Attending to the language and literacy needs of English learners in science. *Equity & Excellence in Education,* 47(2), 230-245.

Bresler, L. (1995). The subservient, co-equal, affective, and social integration styles and their implications for the Arts. *Arts Education Policy Review,* 96(5), 31-37. Available at: https://doi.org/10.1080/10632913.1995.9934564

Brookhart, S.M. (2015). *Performance assessment: Showing what students know and can do.* Learning Sciences International.

Brookhart, S.M. (2018). Learning is the primary source of coherence in assessment. *Educational Measurement: Issues and Practice,* 37(1), 35-38. Available at: https://doi.org/10.1111/emip.12190

Brough, C.J. (2012). Implementing the democratic principles and practices of student-centred curriculum integration in primary schools. *Curriculum Journal,* 23(3), 345-369. Available at: https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1080/09585176.2012.703498. (Accessed on: 26 April 2024)

Brugar, K. (2012). *What Difference Does Curricular Integration Make? An Inquiry of Fifth Graders' Learning of History through the Use of Literacy and Visual Arts Skills* (Unpublished Doctoral Thesis). Michigan State University.

Burke, P., & Lehane, P. (2023a). *Conceptualising Curriculum Integration: A Synthesis of Theory, Research and Practice.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6370/conceptualising-curriculum-integration.pdf. (Accessed on: 26 April 2024)

Burke, P., & Lehane, P. (2023b). *Weaving the Literature on Integration, Pedagogy and Assessment: Insights for Curriculum and Classrooms.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6371/weaving-the-literature-on-integration-pedagogy-and-assessment.pdf. (Accessed on: 26 April 2024)

Calder, N., & Brough, C. (2013). Child-centred Inquiry Learning: How Mathematics Understanding Emerges. *International Journal for Mathematics Teaching & Learning,* December, 1-15. Available at: https://cimt.org.uk/journal/calder.pdf. (Accessed on: 26 April 2024)

Casady, V. (2015). *Integrated Curriculum and Subject-based Curriculum: Achievement and Attitudes* (Unpublished Dissertation). Missouri Baptist University.

CAST. (2018). *Universal Design for Learning Guidelines version 2.2.* Available at: http://udlguidelines.cast.org. (Accessed on: 26 April 2024)

Chen, P.P., & Bonner, S.M. (2020). A framework for classroom assessment, learning, and self-regulation. *Assessment in Education: Principles, Policy & Practice,* 27(4), 373-393. Available at: https://doi.org/10.1080/0969594X.2019.1619515

Coe, R., Rauch, C.J., Kime, S., & Singleton, D. (2020a). *Great Teaching Toolkit: Evidence Review.* Cambridge Assessment: International Education. Available at: https://2366135.fs1.hubspotusercontent-na1.net/hubfs/2366135/Great%20Teaching%20Toolkit%20Evidence%20Review.pdf. (Accessed on: 26 April 2024)

Coe, R., Rauch, C.J., Kime, S., & Singleton, D. (2020b). *Great Teaching Toolkit: Evidence Review.* Evidence Based Education. Available at: https://evidencebased.education/great-teaching-toolkit-evidence-review/ (Accessed on: 26 April 2024)

Collins, J., & Quigley, A. (2021). *Teacher Feedback to Improve Pupil Learning: Guidance Report*. Education Endowment Foundation. Available at: https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/feedback. (Accessed on: 26 April 2024)

Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L., & Coe, R. (2015). *Developing great teaching: Lessons from international reviews into effective professional development*. Teacher Development Trust. Available at: https://durham-repository.worktribe.com/output/1631202/developing-great-teaching-lessons-from-the-international-reviews-into-effective-professional-development. (Accessed on: 26 April 2024)

Creemers, B.P.M., & Kyriakidēs, L. (2012). *Improving quality in education: Dynamic approaches to school improvement*. Routledge.

Cremin, T., & Chappell, K. (2021). Creative pedagogies: A systematic review. Research Papers in Education, 36(3), 299-331. Available at: https://doi.org/10.1080/02671522.2019.1677757

Darling-Hammond, L., Hyler, M.E., & Gardner, M. (2017). Effective teacher professional development. *Learning Policy Institute*. Available at: https://doi.org/10.1016/j.fusengdes.2007.07.052

Department of Education. (1971). *Primary School Curriculum: Teacher's Handbook Part 1*. Department of Education.

Department of Education. (2023a). *Primary Curriculum Framework*. Department of Education. Available at: https://www.curriculumonline.ie/getmedia/84747851-0581-431b-b4d7-dc6ee850883e/2023-Primary-Framework-ENG-screen.pdf. (Accessed on: 26 April 2024)

Department of Education. (2023b). *Primary Mathematics Curriculum*. Department of Education Available at: https://www.curriculumonline.ie/getmedia/484d888b-21d4-424d-9a5c-3d849b0159a1/PrimaryMathematicsCurriculum_EN.pdf. (Accessed on: 26 April 2024)

Department of Education and Science. (1999). *Primary School Curriculum: Introduction*. The Stationery Office. Available at: https://www.curriculumonline.ie/getmedia/c4a88a62-7818-4bb2-bb18-4c4ad37bc255/PSEC_Introduction-to-Primary-Curriculum_Eng.pdf. (Accessed on: 26 April 2024)

Department of Education and Skills. (2015). *Primary Language Curriculum: Junior Infants to 2nd Class*. Department of Education and Skills.

Department of Education and Skills. (2019). *Primary Language Curriculum*. Department of Education and Skills. Available at: https://www.curriculumonline.ie/getmedia/2a6e5f79-6f29-4d68-b850-379510805656/PLC-Document_English.pdf. (Accessed on: 26 April 2024)

Department of Education and Skills. (2009). *Aistear: The Early Childhood Curriculum Framework*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6306/guidelines-for-good-practice.pdf. (Accessed on: 26 April 2024)

Department of Education Inspectorate. (2022). *Chief Inspector's Report: September 2016-December 2020*. Department of Education. Available at: https://assets.gov.ie/219402/d70032eb-efdf-4320-9932-7f818341afe6.pdf. (Accessed on: 26 April 2024)

Devine, D., Fahie, D., & McGillicuddy, D. (2013). What is 'good' teaching? Teacher beliefs and practices about their teaching. *Irish Educational Studies*, 32(1), 83-108. Available at: https://doi.org/10.1080/03323315.2013.773228

Devine, D., Martinez-Sainz, G., Symonds, J., Sloan, S., Moore, B., Crean, M., Barrow, N., Grieves, M., Donegan, A., Samonova, E., Davies, A., Farrell, E., O'Giobúin, R., & Farrell, J. (2023). *Primary Pedagogies: Children and Teachers' Experiences of Pedagogical Practices in Primary Schools in Ireland 2019-2022*. National Council for Curriculum and Assessment. Available at: https://cslstudy.wpenginepowered.com/wp-content/uploads/2023/06/CSL_Report5_ForPublication.pdf. (Accessed on: 26 April 2024)

Dewey, J. (1900). *The school and society*. University of Chicago Press.

Dezuanni, M., & Jetnikoff, A. (2011). Creative pedagogies and the contemporary school classroom. In J. Sefton-Green, P. Thomson, K. Jones, & L. Bresler (Eds.), *The Routledge International Handbook of Creative Learning*. Routledge. Available at: https://doi.org/10.4324/9780203817568.ch28

Dowden, T. (2014). Challenging, integrated, negotiated and exploratory curriculum in the middle years of schooling: Designing and implementing high quality curriculum integration. *Australian Journal of Middle Schooling*, 14(1), 16-27. Available at: https://research.usq.edu.au/item/q26x5/challenging-integrated-negotiated-and-exploratory-curriculum-in-the-middle-years-of-schooling-designing-and-implementing-high-quality-curriculum-integration. (Accessed on: 26 April 2024)

Drake, S., & Reid, J. (2018). Integrated Curriculum as an Effective Way to Teach 21st Century Capabilities. *Asia Pacific Journal of Educational Research*, 1(1), 31-50. Available at: https://doi.org/10.30777/apjer.2018.1.1.03

Duke, N.K., Halvorsen, A.L., Strachan, S.L., Kim, J., & Konstantopoulos, S. (2021). Putting PjBL to the test: The impact of project-based learning on second graders' social studies and literacy learning and motivation in low-SES school settings. *American Educational Research Journal*, 58(1), 160-200. Available at: https://doi.org/10.3102/0002831220929638

Education Endowment Foundation. (2023). *Play-based learning*. Available at: https://educationendowmentfoundation.org.uk/education-evidence/early-years-toolkit/play-based-learning. (Accessed on: 26 April 2024)

Fazio, X., & Gallagher, T.L. (2019). Science and Language Integration in Elementary Classrooms: Instructional Enactments and Student Learning Outcomes. *Research in Science Education*, 49(4), 959-976. Available at: https://doi.org/10.1007/s11165-019-9850-z

Fitzpatrick, J., O'Grady, E., & O'Reilly, J. (2018). Promoting student agentic engagement through curriculum: Exploring the Negotiated Integrated Curriculum initiative. *Irish Educational Studies*, 37(4), 453-473. Available at: https://doi.org/10.1080/03323315.2018.1512882

Fletcher, J.M., & Vaughn, S. (2009). Response to Intervention: Preventing and Remediating Academic Difficulties. *Child Development Perspectives*, 3(1), 30-37. Available at: https://doi.org/10.1111/j.1750-8606.2008.00072.x

Florian, L., & Black-Hawkins, K. (2011). Exploring inclusive pedagogy. *British Educational Research Journal*, 37(5), 813-828. Available at: https://doi.org/10.1080/01411926.2010.501096

Fogarty, R. (1991). Ten Ways to Integrate Curriculum. *Educational Leadership*, October, 61-65. Available at: https://files.ascd.org/staticfiles/ascd/pdf/journals/ed_lead/el_199110_fogarty.pdf. (Accessed on: 26 April 2024)

Follong, B.M., Prieto-Rodriguez, E., Miller, A., Collins, C.E., & Bucher, T. (2022). Evaluating an integrated nutrition and mathematics curriculum: Primary school teachers' and students' experiences. *Public Health Nutrition*, 1-12. Available at: https://doi.org/10.1017/S1368980022000386

Freire, P. (1970). *Pedagogy of the Oppressed*. Continuum.

García, O., & Flores, N. (2012). Multilingual pedagogies. In M. Martin-Jones, A. Blackledge, & A. Creese (Eds.), *The Routledge Handbook of Multilingualism* (pp. 232-246). Routledge.

Gilleece, L., & Clerkin, A. (2024). Towards more robust evaluation of policies and programmes in education: Identifying challenges in evaluating DEIS and Reading Recovery. *Irish Educational Studies*, 1-29. Available at: https://doi.org/10.1080/03323315.2024.2334704

Giroux, H.A. (2011). *On critical pedagogy*. Continuum International Publishing Group.

Gomez Zwiep, S. (2016). *Integrated STEM-Problem-Based Learning Curriculum: Implications for Conceptualization and Practice from an Interdisciplinary Professional Development Program*. Annual Meeting of the American Educational Research Association, Washington, DC. Available at: https://eric.ed.gov/?id=ED595538. (Accessed on: 26 April 2024)

Gray, A.M., Sirinides, P.M., Fink, R.E., & Bowden, A.B. (2022). Integrating Literacy and Science Instruction in Kindergarten: Results From the Efficacy Study of Zoology One. *Journal of Research on Educational Effectiveness*, 15(1), 1-27. Available at: https://doi.org/10.1080/19345747.2021.1938313

Gulikers, J.T.M., Bastiaens, T.J., & Kirschner, P.A. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development*, 52(3), 67-86. Available at: https://doi.org/10.1007/BF02504676

Harford, J., & Fleming, B. (2023). Teacher supply in Ireland: anatomy of a crisis. *Irish Educational Studies*, 1-14. Available at: https://doi-org.dcu.idm.oclc.org/10.1080/03323315.2023.2222709

Hartzler, D.M. (2000). *A meta-analysis of studies conducted on integrated curriculum programs and their effects on student achievement* (Unpublished Doctoral Thesis). Indiana University.

Harvie, J. (2018). *Interdisciplinary Learning: A Chimera of Scottish Education?* (Unpublished Doctoral Thesis). University of Stirling.

Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81-112. Available at: https://doi.org/10.3102/003465430298487

Heitink, M.C., Van der Kleij, F.M., Veldkamp, B.P., Schildkamp, K., & Kippers, W.B. (2016). A systematic review of prerequisites for implementing assessment for learning in classroom practice. *Educational Research Review*, 17, 50-62. Available at: https://doi.org/10.1016/j.edurev.2015.12.002

Heritage, M. (2007). Formative Assessment: What Do Teachers Need to Know and Do? *Phi Delta Kappan*, 89(2), 140-145. Available at: https://doi.org/10.1177/003172170708900210

Herrera, S.G., Cabral, R.M., & Murry, K.G. (2013). *Assessment accommodations for classroom teachers of culturally and linguistically diverse students (2nd ed)*. Pearson.

Hinde, E. (2015). The theoretical foundations of curriculum integration and its application to social studies instruction. In L. Bennett & E. Hinde (Eds.) *Becoming integrated thinkers: Case studies in elementary social studies* (pp. 21-29). National Council for the Social Studies.

Hirsh-Pasek, K. (2009). *A mandate for playful learning in preschool presenting the evidence*. Oxford University Press.

Hourigan, M., O'Dwyer, A., Leavy, A.M., & Corry, E. (2021). Integrated STEM – a step too far in primary education contexts? *Irish Educational Studies,* 1-25. Available at: https://doi.org/10.1080/03323315.2021.1899027

Hubbard, J., Fowler, M., & Freeman, L. (2020). PreK-5 Teacher Views of Professional Development Integrating Common Core Language Arts with Science and Social Studies. *Journal of Educational Research and Practice*, 10(1), 1-25. Available at: https://doi.org/10.5590/JERAP.2020.10.1.01

Hwang, H., Cabell, S.Q., & Joyner, R.E. (2021). Effects of integrated literacy and content-area instruction on vocabulary and comprehension in the elementary years: A meta-analysis. *Scientific Studies of Reading*, 26(3), 1-27. Available at: https://doi.org/10.1080/10888438.2021.1954005

Irish National Teachers' Organisation. (2022). *Teacher Workload: INTO Research Report.* Available at: https://www.into.ie/app/uploads/2019/07/Teacher-Workload-Report-December-22_Web.pdf. (Accessed on: 26 April 2024)

Irish Primary Principals' Network. (2022). *Primary School Leadership: The Case for Urgent Action and a Roadmap to Sustainability.* Irish Primary Principals' Network. Available at: https://issuu.com/ippn/docs/sustainable_leadership_-_the_case_for_urgent_actio. (Accessed on: 26 April 2024)

Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., & Stevens, A. (2017). *Dialogic teaching evaluation report and executive summary.* Education Endowment Foundation. Available at: www.educationendowmentfoundation.org.uk. (Accessed on: 26 April 2024)

Jia, Y., Zhou, B., & Zheng, X. (2021). A Curriculum Integrating STEAM and Maker Education Promotes Pupils' Learning Motivation, Self-Efficacy, and Interdisciplinary Knowledge Acquisition. *Front Psychol,* 12, 725525. Available at: https://doi.org/10.3389/fpsyg.2021.725525

Kane, M.T., & Wools, S. (2020). *Perspectives on the validity of classroom assessments* (S.M. Brookhart & J.H. McMillan, Eds.; pp. 11-26). Routledge.

Kim, J.S., Burkhauser, M.A., Relyea, J.E., Gilbert, J.B., Scherer, E., Fitzgerald, J., Mosher, D., & McIntyre, J. (2023). A longitudinal randomized trial of a sustained content literacy intervention from first to second grade: Transfer effects on students' reading comprehension. *Journal of Educational Psychology*, 115(1), 73-98. Available at: https://doi.org/10.1037/edu0000751

Kincheloe, J.L. (2008). *Knowledge and critical pedagogy.* Springer.

Kinsella, W., Senior, J., Symonds, J., O'Donnell, G., Sloan, S., Martinez-SAINZ, M., Devine, D., Downey, S., Bhreathnach, L., Hayes, D., Osborne, K., Jones, D., Maynard, A., Tobin, E., & Mahon, Á. (2024). *The Impact of the COVID-19 Pandemic on the Education of Children with Special Educational Needs.* National Council for Special Education. Available at: https://ncse.ie/wp-content/uploads/2024/09/NCSE-2024_Impact-of-COVID19-Pandemic_Students_SEN.pdf. (Accessed on: 26 April 2024)

Kneen, J., Breeze, T., Davies-Barnes, S., John, V., & Thayer, E. (2020). Curriculum integration: The challenges for primary and secondary schools in developing a new curriculum in the expressive arts. *Curriculum Journal*, 31(2), 258-275. Available at: https://doi.org/10.1002/curj.34

Ko, J., Sammons, P., & Bakkum, L. (2013). *Effective teaching: A review of research and evidence.* CfBT Education Trust. Available at: https://files-eric-ed-gov.dcu.idm.oclc.org/fulltext/ED546794.pdf. (Accessed on: 26 April 2024)

Kyriakides, L., Christoforou, C., & Charalambous, C.Y. (2013). What matters for student learning outcomes: A meta-analysis of studies exploring factors of effective teaching. *Teaching and Teacher Education*, 36, 143-152. Available at: https://doi.org/10.1016/j.tate.2013.07.010

Ladson-Billings, G. (1995). But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy. *Theory Into Practice*, 34(3), 159-165.

Lewin, C., Smith, A., Morris, S., & Craig, E. (2019). *Using Digital Technology to Improve Learning: Evidence Review.* Education Endowment Foundation. Available at: https://files.eric.ed.gov/fulltext/ED612157.pdf. (Accessed on: 26 April 2024)

Lillard, A.S., Lerner, M.D., Hopkins, E.J., Dore, R.A., Smith, E.D., & Palmquist, C.M. (2013). The impact of pretend play on children's development: A review of the evidence. *Psychological Bulletin*, 139(1), 1-34. Available at: https://doi.org/10.1037/a0029321

Little, D., & Kirwan, D. (2019). *Engaging with linguistic diversity: A study of educational inclusion in an Irish primary school.* Sydney.

Lundy, L. (2007). 'Voice' is not enough: Conceptualising Article 12 of the United Nations Convention on the Rights of the Child. *British Educational Research Journal*, 33(6), 927-942. Available at: https://doi.org/10.1080/01411920701657033

Lysaght, Z., Scully, D., Murchan, D., O'Leary, M., & Shiel, G. (2019). *Aligning Assessment, Learning and Teaching in Curricular Reform and Implementation.* Available at: https://ncca.ie/media/3925/aligning-assessment-learning-and-teaching-in-curricular-reform-and-implementation.pdf. (Accessed on: 26 April 2024)

MacDomhnaill, E., & Nic an Bhaird, M. (2022). Teachers' opinions on the supports they have received and require to aid the implementation of the Primary Language Curriculum, with implications for future curricular implementation in primary schools. *Irish Teachers' Journal*, 10, 39-55. Available at: https://www.into.ie/app/uploads/2022/11/ITJ2022_Web.pdf. (Accessed on: 26 April 2024)

Mardell, B., Ryan, J., Krechevsky, M., Baker, M., Schulz, T.S., & Liu-Constant, Y. (2023). *A pedagogy of play: Supporting playful learning in classrooms and schools.* Project Zero. Available at: https://pz.harvard.edu/sites/default/files/PoP%20Book.pdf. (Accessed on: 26 April 2024)

McGarry, C. (2017). *In between the lines of the Primary Language Curriculum: Teacher involvement in the process of curriculum change* (Doctoral dissertation). Mary Immaculate College, University of Limerick.

Moll, L.C., Velez-Ibanez, C., & Rivera, C. (1990). *Community knowledge and classroom practice: Combining resources for literacy instruction.* University of Arizona College of Education and Bureau of Applied Research in Anthropology.

Moss, J., Godinho, S., & Chao, E. (2019). Enacting the Australian Curriculum: Primary and Secondary Teachers' Approaches to Integrating the Curriculum. *Australian Journal of Teacher Education*, 44(3), 24-41. Available at: https://doi.org/10.14221/ajte.2018v44n3.2

Muijs, D., & Bokhove, C. (2020). *Metacognition and Self Regulation: Evidence Review.* Education Endowment Foundation. Available at: https://educationendowmentfoundation.org.uk/education-evidence/evidence-reviews/metacognition-and-self-regulation. (Accessed on: 26 April 2024)

Muijs, D., Kyriakides, L., van der Werf, G., Creemers, B., Timperley, H., & Earl, L. (2014). State of the art – teacher effectiveness and professional learning. *School Effectiveness and School Improvement*, 25(2), 231-256. Available at: https://doi.org/10.1080/09243453.2014.885451

Murchan, D., Loxley, A., Johnston, K., Quinn, M., & Fitzgerald, H. (2005). *Evaluation of the Primary Curriculum Support Programme (PCSP).* Education Department, Trinity College Dublin.

Murchan, D., & Shiel, G. (2017). *Understanding and Applying Assessment in Education.* SAGE Publications.

Murphy, C., Venkat, H., Leahy, M., Broderick, N., Kelly, O., Harbison, L., Lawlor, C., & Naughton, Y. (2023). *STEM Education: Curriculum & Literature Overview & Primary Science Education: Systematic Literature Review.* National Council for Curriculum and Assessment. Available at: https://doras.dcu.ie/29064/1/stem-education_curriculum-literature-overview-and-primary-science-education_systematic-literature-review.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2005). *Primary Curriculum Review, Phase 1 Final Report with recommendations.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/1497/primary_curriculum_review_phase_1_final_report_with_recommendations_8.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2008). *Primary Curriculum Review, Phase 2 Final report with recommendations.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/2267/primary_curriculum_review-_phase_2_final_report_with_recommendations.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2009). *Aistear: Guidelines for Good Practice.* National Council for Curriculum and Assessment. Available at: https://www.aistearsiolta.ie/en/curriculum-foundations/aistear-and-siolta-documents/all-guidelines-for-good-practice.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2010). *Curriculum Overload in Primary Schools - An overview of national and international experiences.* NCCA. Available at: https://ncca.ie/media/2052/curriculum_overload_in_primary_schools_an_overview_of_national_and_international_experiences.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2016). *Proposals for structure and time allocation in a redeveloped primary curriculum: For consultation.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/1349/exec_summary_proposals_structure_and_time.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2018). *Primary Language Curriculum: Report on the consultation on the draft curriculum for Stage 3 and 4.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/3626/plc_consultation-report.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2020). *Draft primary curriculum framework for consultation*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/4456/ncca-primary-curriculum-framework-2020.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2024a). *Draft arts education curriculum specification for all primary and special schools: For consultation*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/ihsmkm40/draft_primary_artseducation_specification_2024.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2024b). *Draft science, technology and engineering education specification for all primary and special Schools: For consultation*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/2vvcabyb/draft_ste_specification_2024.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2024c). *Draft social and environmental education curriculum specificiation for all primary and special Schools: For consultation*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/5vjp4f2w/draft_see_specification_2024_pdf.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2024d). *Draft wellbeing specification for all primary and special schools: For consultation*. National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/csmh55uo/draft_primary_wellbeing_specification_2024.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment. (2024e). *Primary language curriculum—Including draft modern foreign languages (MFL) for all primary and special schools: For consultation.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/5pcpf4je/draft_plc_modernforeignlanguages.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment (NCCA). (2007). Assessment guidelines for *schools*. Stationary Office. Available at: https://ncca.ie/media/1351/assessment-guidelines.pdf. (Accessed on: 26 April 2024)

National Council for Curriculum and Assessment (NCCA). (2022). *Supporting systemwide primary curriculum change.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/5990/supporting-systemwide-primary-curriculum-change-1.pdf. (Accessed on: 26 April 2024)

Nohilly, M., Tynan, F., Martin, R., Pope, J., Bowles, R., Dillon, M., Farrelly, G., Harmon, M., Kitching, N., La Cumber, G., Ní Chróinín, D., & O'Sullivan, L. (2023). *A systematic literature review to support the curriculum specification development for the area of wellbeing.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6229/ncca_a-systematic-literature-review-to-support-the-curriculum-specification-development-for-the-area-of-wellbeing.pdf. (Accessed on: 26 April 2024)

Ó Breacháin, C. (2022). *Peeling the Curriculum-reform Onion: How to Avoid Teachers Ending Up in Tears? A multi-phase, multi-method study exploring teachers' agency in the context of engagement with Ireland's new 'Primary Language Curriculum'* (Unpublished Doctoral Dissertation). University College Dublin.

Organisation for Economic Cooperation and Development (2021). *Scotland's Curriculum for Excellence: Into the Future*. OECD. Available at: https://www.oecd.org/en/publications/scotland-s-curriculum-for-excellence_bf624417-en.html. (Accessed on: 26 April 2024)

Osher, D., Cantor, P., Berg, J., Steyer, L., & Rose, T. (2020). Drivers of human development: How relationships and context shape learning and development. *Applied Developmental Science,* 24(1), 6-36. Available at: https://doi.org/10.1080/10888691.2017.1398650

O'Brien, C. (2024, August 11). 'They are being robbed of their potential': Thousands of children with special needs waiting years for vital therapy. *The Irish Times.* Available at: https://www.irishtimes.com/ireland/education/2024/08/10/they-are-being-robbed-of-their-potential-thousands-of-children-with-special-needs-waiting-years-for-vital-therapy/ (Accessed on: 26 April 2024)

O'Sullivan, C., Clotworthy, E., Nugent, M., Colleary, S., Keane, E., Piazzoli, E., Gubbins, E., Krakaur, L., Kerin, M., McCormick, S., & Heeran Flynn, L. (2023). *Arts Alive: A literature review to support curriculum specification development for the area of Arts Education.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6543/literature-review-for-arts-education.pdf. (Accessed on: 26 April 2024)

Paris, D. (2012). Culturally sustaining pedagogy: A needed change in stance, terminology, and practice. *Educational Researcher,* 41(3), 93-97. Available at: https://doi.org/10.3102/0013189X12441244

Parker, R., & Thomsen, B.S. (2019). *Learning through play at school: A study of playful integrated pedagogies that foster childrenâs holistic skills development in the primary school classroom.* LEGO Foundation. Available at: https://research.acer.edu.au/learning_processes/22/ (Accessed on: 26 April 2024)

Peppler, K.A., Powell, C.W., Thompson, N., & Catterall, J. (2014). Positive impact of arts integration on student academic achievement in English language arts. *The Educational Forum*, 78(4), 364-377. Available at: https://doi.org/10.1080/00131725.2014.941124

Phelan, C. (2023, 1 August). More than 100,000 children waiting for first-time primary care assessments. *Irish Examiner.* Available at: https://www.irishexaminer.com/news/arid-41196130.html. (Accessed on: 26 April 2024)

Pike, S., Ní Cassaithe, C., McGuirk, N., Usher, J., Mallon, B., & Whelan, P. (2023). *Social and Environmental Education: A Review of Research and Scholarship in Geography, History and Education about Religions and Beliefs in the Context of the Redeveloped Irish Primary School Curriculum.* National Council for Curriculum and Assessment. Available at: https://ncca.ie/media/6401/literature-review-for-social-and-environmental-education.pdf. (Accessed on: 26 April 2024)

Priestley, M., Biesta, G., & Robinson, S. (2015). *Teacher agency: An ecological approach.* Bloomsbury Academic.

Priestley, M., & Sinnema, C. (2014). Downgraded curriculum? An analysis of knowledge in new curricula in Scotland and New Zealand. *The Curriculum Journal*, 25(1), 50-75. Available at: https://doi.org/10.1080/09585176.2013.872047

Priestley, M., Smith, J., & Rushton, L. (2024, April 23). *The position of knowledge in Curriculum for Excellence – a response to the paper tabled at CAB*, 30/01/2024. Available at: https://mrpriestley.wordpress.com/2024/04/23/the-position-of-knowledge-in-curriculum-for-excellence-a-response-to-the-paper-tabled-at-cab-30-01-2024/ (Accessed on: 26 April 2024)

Pyle, A., & Danniels, E. (2017). A continuum of play-based learning: The role of the teacher in play-based pedagogy and the fear of hijacking play. *Early Education and Development*, 28(3), 274-289. Available at: https://doi.org/10.1080/10409289.2016.1220771

Resnick, L.B., Asterhan, C.S.C., & Clarke, S.N. (2018). *Accountable talk: Instructional dialogue that builds the mind*. The International Academy of Education and the International Bureau of Education. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000262675. (Accessed on: 26 April 2024)

Roorda, D.L., Jak, S., Zee, M., Oort, F.J., & Koomen, H.M.Y. (2017). Affective teacher-student relationships and students' engagement and achievement: A meta-analytic update and test of the mediating role of engagement. *School Psychology Review,* 46(3), 239-261. Available at: https://doi.org/10.17105/SPR-2017-0035.V46-3

Sáez-López, J.-M., Román-González, M., & Vázquez-Cano, E. (2016). Visual programming languages integrated across the curriculum in elementary school: A two year case study using "Scratch" in five schools. *Computers and Education*, 97, 129-141. Available at: https://doi.org/10.1016/j.compedu.2016.03.003

Sanchez, C.E., Atkinson, K.M., Koenka, A.C., Moshontz, H., & Cooper, H. (2017). Self-grading and peer-grading for formative and summative assessments in 3rd through 12th grade classrooms: A meta-analysis. *Journal of Educational Psychology*, 109(8), 1049-1066. Available at: https://doi.org/10.1037/edu0000190

Saraniero, P., Goldberg, M.R., & Hall, B. (2014). 'Unlocking my creativity': Teacher learning in arts integration professional development. *Journal for Learning through the Arts*, 10(1), 1-22. Available at: http://escholarship.org/uc/item/1dt4k6ns. (Accessed on: 26 April 2024)

Schildkamp, K., van der Kleij, F.M., Heitink, M.C., Kippers, W.B., & Veldkamp, B.P. (2020). Formative assessment: A systematic review of critical teacher prerequisites for classroom practice. *International Journal of Educational Research*, 103, 101602. Available at: https://doi.org/10.1016/j.ijer.2020.101602

See, B.H., Gorard, S., Lu, B., Dong, L., & Siddiqui, N. (2022). Is technology always helpful?: A critical review of the impact on learning outcomes of education technology in supporting formative assessment in schools. *Research Papers in Education*, 37(6), 1064-1096. Available at: https://doi.org/10.1080/02671522.2021.1907778

Shavelson, R.J., Young, D.B., Ayala, C.C., Brandon, P.R., Furtak, E.M., Ruiz-Primo, M.A., Tomita, M.K., & Yin, Y. (2008). On the impact of curriculum-embedded formative assessment on learning: A collaboration between curriculum and assessment developers. *Applied Measurement in Education*, 21(4), 295-314. Available at: https://doi.org/10.1080/08957340802347647

Shulman, L.S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.

Siraj, I., Taggart, B., Melhuish, W.E., Sammons, P., & Sylva, K. (2014). *Exploring Effective pedagogy in primary schools: Evidence from research*. Pearson. Available at: https://www.pearson.com/content/dam/one-dot-com/one-dot-com/global/Files/about-pearson/innovation/open-ideas/ExploringEffectivePedagogy.pdf. (Accessed on: 26 April 2024)

Skene, K., O'Farrelly, C.M., Byrne, E.M., Kirby, N., Stevens, E.C., & Ramchandani, P.G. (2022). Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta analysis. *Child Development*, 93(4), 1162-1180. Available at: https://doi.org/10.1111/cdev.13730

Steiss, J., Tate, T., Graham, S., Cruz, J., Hebert, M., Wang, J., Moon, Y., Tseng, W., Warschauer, M., & Olson, C.B. (2024). Comparing the quality of human and ChatGPT feedback of students' writing. *Learning and Instruction*, 91, 101894. Available at: https://doi.org/10.1016/j.learninstruc.2024.101894

Stockard, J., Wood, T.W., Coughlin, C., & Rasplica Khoury, C. (2018). The effectiveness of direct instruction curricula: A meta-analysis of a half century of research. *Review of Educational Research*, 88(4), 479-507. Available at: https://doi.org/10.3102/0034654317751919

Tenenbaum, H.R., Winstone, N.E., Leman, P.J., & Avery, R.E. (2020). How effective is peer interaction in facilitating learning? A meta-analysis. *Journal of Educational Psychology*, 112(7), 1303-1319. Available at: https://doi.org/10.1037/edu0000436

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration* (Vol. 33, Issue 8). New Zealand Ministry of Education. Available at: http://www.educationcounts.govt.nz/publications/series/2515/15341. (Accessed on: 26 April 2024)

Tomlinson, C.A., Brighton, C., Hertberg, H., Callahan, C.M., Moon, T.R., Brimijoin, K., Conover, L.A., & Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal for the Education of the Gifted*, 27(2-3), 119-145. Available at: https://doi.org/10.1177/016235320302700203

UNESCO. (2023). *Global Education Monitoring Report 2023: Technology in education: A tool on whose terms?* (1st ed.). UNESCO. Available at: https://doi.org/10.54676/UZQV8501

United Nations. (1989). *United Nations Convention on the Rights of the Child*. Available at: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child

Van De Pol, J., Volman, M., & Beishuizen, J. (2010). Scaffolding in teacher-student interaction: A decade of research. *Educational Psychology Review*, 22(3), 271-296. Available at: https://doi.org/10.1007/s10648-010-9127-6

van Leeuwen, A., & Janssen, J. (2019). A systematic review of teacher guidance during collaborative learning in primary and secondary education. *Educational Research Review*, 27, 71-89. Available at: https://doi.org/10.1016/j.edurev.2019.02.001

Volk, M., Cotic, M., Zajc, M., & Starcic, A.I. (2017). Tablet-based cross-curricular maths vs. Traditional maths classroom practice for higher-order learning outcomes. *Computers & Education*, 114, 1-23. Available at: https://doi.org/10.1016/j.compedu.2017.06.004

Wang, S., Wang, X., Liang, L., & Xie, H. (2022). Teacher-child interaction domains measured by the CLASS and children's pre-literacy skills: A systematic review and meta-analysis. *Early Education and Development*, 1-23. Available at: https://doi.org/10.1080/10409289.2022.2159259

Wiliam, D. (2013). Assessment: The bridge between teaching and learning. *Voices from the Middle*, 21(2), 15-20. Available at: https://doi.org/10.58680/vm201324461

Wright, T.S., & Gotwals, A.W. (2017). Supporting kindergartners' science talk in the context of an integrated science and disciplinary literacy curriculum. *Elementary School Journal,* 117(3), 513-537. Available at: https://doi.org/10.1086/690273

Young, M., & Muller, J. (2010). Three educational scenarios for the future: Lessons from the sociology of knowledge. *European Journal of Education*, 45(1), 11-27. Available at: https://doi.org/10.1111/j.1465-3435.2009.01413.x