into
Irish National Teachers' Organisation
Cumann Múinteoirí Éireann

Draft Primary Mathematics Curriculum

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Introduction

The Irish National Teachers' Organisation (INTO), as the largest teacher union in Ireland, welcomes the opportunity to respond to the draft specification of the *Primary Mathematics Curriculum (PMC)* for junior infants to sixth class. Since the publication of the 1999 *Primary School Curriculum*, the INTO has been involved in ongoing engagement with members to seek feedback on the opportunities presented and challenges posed by that curriculum. The findings of an INTO survey of teachers and school leaders on mathematics in 2004 highlighted some of the constraints of the *1999 Mathematics Curriculum* including a lack of resourcing and content overload (INTO, 2005). Feedback from members as part of this survey also suggested that there was a large emphasis on the use of textbooks.

Similar findings emerged from a later survey on numeracy which was conducted by the INTO to help inform the organisation's Consultative Conference on Education in November 2013 which was based on the theme of *Numeracy in the Primary School*. The majority of respondents called for a skills-based curriculum that was both challenging and relevant and one that incorporated increased use of ICT (INTO, 2014). At the 2015 Education Conference on *Primary School Curriculum: Have Your Say* a number of challenges were identified including curriculum overload; lack of time; over-emphasis on standardised testing and accommodating the needs of children with SEN and EAL (INTO, 2017). An initial submission on the *Draft Specification of the Primary Mathematics Curriculum (PMC) for Junior Infants to Second Class* was produced by the INTO in March 2018 following engagement with members throughout the country.

Considering the significance of the teacher's voice in policy, the INTO supports the partnership approach to curriculum development. Teachers appreciate the opportunity to engage in consultation to ensure that their views and concerns regarding the draft specification are captured. In order to inform its position, the INTO organised a number of consultation focus groups with members. Three face-to-face focus groups were held in different parts of the country as well as two online focus groups. A number of INTO branches as well as individual members also provided feedback. Much valuable information was gathered from members during this consultation process despite the short time frame allowed and the scheduling of the consultation during an extremely busy final term of the school year. Concerns were also expressed by members regarding the limited time allowed to schools to engage with the draft curriculum documents having just emerged from the very challenging pandemic period.

Main findings

Curriculum content and structure

Learning outcomes and progression continua

Similar to views expressed by teachers regarding the initial draft of the PMC in 2018, participants in the INTO's consultation described the learning outcomes as being vague and lacking in detail. The broad and non-specific nature of the learning outcomes will place an additional burden on teachers as they attempt to interpret and develop ethereal learning outcomes into meaningful classroom practice. The vague and highly non-prescriptive nature of the learning outcomes poses a particular difficulty for newly qualified teachers (NQTs) and other inexperienced teachers who will find the new curriculum difficult to navigate and 'flesh out' for a particular class level in the absence of broader teaching experience. There is a widespread belief expressed by INTO members that the learning outcomes in their current form pose a significant risk of creating an even greater reliance on textbooks and accompanying planning templates provided by educational publishers.

The *Mathematical Concepts* in the *Primary Mathematics Toolkit* (PMT) are a welcome inclusion, and these are viewed as useful signposts to teachers in planning teaching and learning and translating the learning outcomes into practice but further and more detailed development of this would be viewed as helpful by teachers.

Teachers are also concerned about the move away from specific content being assigned to each class level as in the current mathematics curriculum. This lack of certainty makes it difficult for teachers to start planning with a new class as, in the absence of defined learning outcomes for specific classes, it is not immediately clear what exact content would have been covered by previous teachers during the first half of a particular 'stage.' This places much greater importance on the whole school plan to define what content should be covered at each class level as well as clear communication between teachers of different classes. The INTO highlights the importance of providing opportunities for school staffs to work together and plan collaboratively to ensure consistency and calls for the development of guidance on whole school planning to complement *Preparation for Teaching and Learning – Guidance for all Primary and Special Schools.*

Teachers feel very strongly that absolute clarity and consistency regarding the content to be covered are very important and the draft curriculum provides neither. Many teachers expressed the view that the nature of mathematics is such that it demands a structured, incremental approach rather than some other subjects such as history or geography which have traditionally been presented as a 'menu curriculum' with a large degree of choice and autonomy afforded to schools and individual teachers. Pupils must develop a clear understanding of foundational mathematical concepts before they can progress and engage in problem solving. It is important that pupils feel confident and competent in using basic mathematical skills as they will form the cornerstone of future learning in the area of STEM. As such, there should be no ambiguity around what content is to be covered at which class level otherwise some aspects of the curriculum could be overlooked. This would have a significant impact on pupils' mathematical development leaving them unable to engage with later aspects of the curriculum having potentially missed out on foundational learning.

Some respondents felt that the provision of learning outcomes across stages rather than for specific class levels would not be a significant challenge given that teachers are already differentiating within their classes based on current curriculum objectives. In schools with multi-class settings this will not be a new concept. However, teachers continue to report an uncertainty regarding the function and purpose of the Progression Continua. Many teachers indicated that their experience of using progression continua through their engagement with the *Primary Language Curriculum* (PLC) to date has not helped to clarify this, with some members describing them as "unclear" with little evidence of natural progression along the continuum. There is also a perception among teachers that there is a large amount of 'hidden content' within the progression continua with little obvious connection to the accompanying learning outcomes.

Teachers expressed unease at the extent and nature of the changes being proposed in the draft *PMC*. This curriculum signals significant pedagogical and cultural change not least regarding the move to a learning outcomes-based curriculum. Unfortunately, teachers' experiences of learning outcomes in implementing the *PLC* over recent years have not been positive. INTO members consistently report a high level of dissatisfaction with the *PLC*. It is seen as having added significant complexity to their planning and preparation without any discernible positive impact on teaching and learning. Teachers are frustrated by its cumbersome, text laden layout and the absence of clearly defined content for each class level. Further research is required on the meanings, understandings, and interpretations of learning outcomes in curriculum, particularly, for young children in junior in primary schools. It remains to be seen whether a learning outcomes approach will be appropriate to the Irish primary context.

Language

During the previous consultation process in 2018, teachers raised concerns regarding the inaccessible and unfamiliar nature of the language used throughout the curriculum documents. Unfortunately, these concerns are echoed by teachers in response to this latest draft of the curriculum. In particular, the terms used to describe the five key pedagogical practices in chapter six of the curriculum document are seen as overly complex and verbose. Members feel that the language used in the progression continua could also be more precise and succinct to avoid any possible misconceptions. The concerns about language point to a need for more careful consideration of language use and of the relevance of such language to the lived reality of practicing teachers. There is also a need to provide opportunities for teachers to engage in meaningful professional development regarding recent curricular and pedagogical developments.

The language used to explain the various aspects of the curriculum may also cause confusion as it does not reflect the language used in the *PLC*. In the *Primary Language Curriculum,* the term 'element' describes essential language learning, and each element has a set of learning outcomes (NCCA, 2015, p 30). Conversely, in the *PMC* the term 'elements' refers to mathematical processes/skills, and each learning outcome label has a set of learning outcomes (NCCA, 2018, p. 28). Teachers questioned why the more appropriate and familiar term 'mathematical skills' was not retained and used in place of the newly adopted term 'elements' thereby avoiding any confusion or mixed messaging between the maths and language curricula.

In addition to this, teachers felt that within the content of the curriculum there should be a much greater emphasis on the importance and centrality of mathematical language. The importance of mathematical language is not adequately reflected in the curriculum documents currently. Teachers wish to see specific content relating to mathematical language incorporated into the curriculum. Teachers referred to the helpful appendices contained in the teacher guidelines for the *1999 Curriculum* and require similar resources and supports for the *PMC* such as a glossary of mathematical terms relevant to the content. The glossary in the current draft of the *PMC* is for interpreting the curriculum rather than as a teaching resource. Teachers also referred to the overview of symbols, notation, and terminology relevant to each class level which was included with the *1999 Mathematics Curriculum* as a helpful feature which they wish to see replicated.

Play

Teachers broadly welcome the increased emphasis on play-based learning experiences and playful pedagogy for all primary school classes in the draft curriculum. Teachers recognise the value of such approaches in facilitating discovery-based, child-centred learning and to foster positive dispositions towards mathematics. Teachers again however expressed reservations about the lack of adequate training and professional development for *Aistear* which was never adequately funded or resourced to be fully implemented and embedded in all schools. The INTO recommends that professional development for all teachers on play-based pedagogy should take place either prior to the introduction of the *PMC* or as an integral part of the implementation process.

In addition to this, significantly increased funding is required for schools to purchase and develop the necessary resources and supports to enable play-based approaches for example to purchase concrete materials to move away from textbooks and fully embrace play-based pedagogy. The INTO has long highlighted the inadequate funding provided to primary and special schools in Ireland which leaves them unable to provide much needed resources and equipment to enhance children's learning experiences.

General issues

The *Draft Primary Curriculum Framework* proposes the grouping of mathematics with science, technology and engineering; teachers emphasise the importance of ensuring that sufficient, distinct time is allocated to Mathematics due to the crucial importance of the development of foundational numeracy and maths skills in the early years of primary school.

Teachers expressed the view that more foregrounding of calculator use in senior classes is necessary. This would be particularly helpful for students experiencing difficulty with number facts and operations who could engage more meaningfully with other mathematical concepts if released from such difficulties by calculator use.

Teachers welcome their acknowledgement as 'agentic professionals' in this draft PMC and in the *Draft Primary Curriculum Framework*. It would be preferable however if the curriculum sought to allow teacher agency in how to teach specified content rather than agency in choosing what to teach which is how this draft curriculum is perceived currently by teachers.

Resources

During the consultation focus groups, teachers were asked to identify essential resources and supports required for successful implementation of the curriculum. Despite their misgivings regarding learning outcomes and other aspects of the curriculum content, teachers generally felt that the concepts and ideas behind the new curriculum are good and well-intentioned but are not practical for implementation in the current conditions of Irish schools and classrooms – most notably class size, lack of appropriate resources especially for hands-on practical activities and not enough time to give to hands-on learning activities in an overloaded school day are seen as significant barriers to implementation.

The capacity of this curriculum to address the challenges and shortcomings of the *1999 Curriculum* is entirely dependent on appropriate funding, resources and supports being made available to schools. Teachers prioritised the following supports as essential for successful implementation of the *PMC*:

- Sufficient time allowed for high quality CPD (with the majority being face-to-face), planning and collaboration

Sustained support available to all schools within a much shorter timeframe than has been the experience heretofore

- Support service personnel modelling and demonstrating the curriculum in action in individual classrooms to make it real and meaningful for teachers.
- Support should be available locally, making greater use of local education centres, PDST associates and facilitators. Availability of such personnel would give schools a more accessible and local contact point for support.
- Use of teacher supply panels to release teachers from their class to engage with support services and collaborate with colleagues in exploring and implementing the curriculum – each school to be allowed an allocation of hours based on school size. (Similar to CLASS hours).
- More staff in schools to facilitate greater use of team teaching and collaborative approaches.

Curriculum rollout and CPD

Teachers articulated very clear views on the requirement for high quality and fit-for-purpose CPD to launch and rollout the new curriculum. Key demands in this regard include:

- CPD must not be delivered by solely online means, the majority must be face to face.
- Timely face-to-face inputs provided to all schools and teachers.
- Teachers require time and space for collaboration and engagement with colleagues in both their own and other schools. School based planning days must be a feature of CPD and sustained support for several years to facilitate the embedding of the new curriculum.

While online webinars are seen as useful for optional CPD and the development of teacher's own interests, teachers do not see them as being effective or appropriate for CPD required to advance national priorities or the facilitation of curriculum reform due to the limited engagement they allow. Reforms of the scale being proposed require engagement and buy-in from all teachers and this cannot be engendered by online webinars alone. Teachers, in the main, did not find online approaches utilised for the *PLC* a positive experience. The current model of online webinars for CPD as utilised for the rollout of the *PLC* is not effective for teachers and therefore, they demand that CPD for the redeveloped *Primary Maths Curriculum* be provided in a format similar to that of the *1999 Curriculum* i.e. planned school closures to give teachers the time, space and opportunity to engage with and reflect on the curriculum content and the wider changes in pedagogy and practice.

Teachers' views and experiences of online CPD as identified by our focus groups have many commonalities with international research (Lander, Lewis, Nahavandi, Amsbury & Barnett, 2020) on teachers' perspectives on and experiences of online professional development. The translation of content into practice is a particular challenge, not unique to CPD delivered by online methods, but potentially exacerbated by decontextualised and generic online approaches which take no account of the nuance of individual school contexts The limitations of online approaches in facilitating interaction and collaboration between teachers have also been identified as a significant disadvantage. This was highlighted by teachers in our focus groups who require more time and space to engage and collaborate with colleagues in their own and other schools to explore and develop understandings of curricular and pedagogical change.

In general, webinars for the *PLC* were deemed by teachers to be of poor quality and unhelpful. They are perceived as regurgitating the content of the curriculum book. Teachers want and need practical and concrete supports – something that illustrates what the curriculum looks like in practice in a real classroom context. Where online engagement is required, ideally a full day school closure should be sanctioned as teachers have not found the half-day closures effective. It is difficult to focus on the content when coming directly from the classroom, possibly dealing with issues which emerged in school that day, children left in school who were not collected, etc. Teachers also highlighted poor communication of the rationale behind the *PLC* and of the move to a learning outcomes-based curriculum with many teachers reporting continued uncertainty of what this means for their classroom practice.

Teachers conveyed an unequivocal demand for clear guidance, direction, and practical supports in developing fit-for-purpose whole school, yearly/termly and short-term plans for maths to take account of the *PMC*. Worked examples of planning documents for a variety of different contexts are seen as essential. Teachers cite negative experiences of attempting to navigate the planning involved in implementing the *PLC* and feel that more support in this regard is very important for *PMC*. Teachers expressed disappointment and frustration with a lack of adequate support from PDST in planning for and implementing the *PLC* and fear that schools will again be left to their own devices to implement and embed the *PMC* with every school having to 'reinvent the wheel.'

Principal teachers who participated in the consultation process identified a requirement for specific briefing/training for principals ahead of a wider roll out to the general teacher population – this tailored support would ensure that principals are informed and aware of the context and content of new curriculum and can help to prepare their school communities for the curriculum in conjunction with PDST and other supports.

Conclusion

Having considered the draft curriculum specification, and engaged with members the INTO makes the following recommendations regarding the content and implementation of the *PMC*:

- The learning outcomes and associated mathematical concepts should be reviewed and further developed as necessary to provide certainty and clear guidance to teachers enabling them to plan focused, appropriate, and enriching learning experiences for all children.
- Language used throughout the curriculum documents should be reviewed and revised in the interests of clarity, accessibility, and relevance to practising teachers.
- Specific curriculum content and resource materials must be developed to reflect the centrality of mathematical language and to promote a coherent approach to mathematical language across all classes.
- High quality, timely, and in-person initial CPD must be provided to all schools and teachers prior to the implementation of the curriculum together with ongoing and accessible sustained support. The majority of this support must be of a face-to-face nature
- School based planning days must be provided to schools for a number of years to allow schools the time and space to embed new curricula and new practices and pedagogies.
- Guidance on whole school planning to complement *Preparation for Teaching and Learning – Guidance for all Primary and Special Schools* must be developed to facilitate schools in planning for a new *Primary Mathematics Curriculum* and the subsequent roll out of the *Primary Curriculum Framework*.

A learning outcomes approach creates a significant shift in curriculum culture which will require investment and support for teachers to enable them to develop a curriculum that meets the needs of their individual contexts. Any curriculum process model which relies on teacher judgement is far more demanding on teachers and thus far more challenging to implement in practice (Stenhouse, 1975). Therefore, the INTO reiterates that teachers need more time, support, and professional development opportunities to allow them to engage with this new approach to curriculum.

In conclusion, the INTO reiterates that the wider issues of class size, resourcing, time and sustained CPD must be addressed to ensure effective implementation of any new curriculum.

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