



The Future of Science, Technology, Engineering and Maths (STEM) in Irish Education

Submission by the Irish Primary Principals' Network

Prepared for:

The Joint Committee on Education,
Further and Higher Education, Research,
Innovation and Science

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Introduction

IPPN is the officially-recognised professional body for the leaders of Irish primary schools. It is an independent, not-for-profit voluntary association with a local, regional and national presence. Recognised by the Minister for Education as an official Education Partner, IPPN works with the Department of Education, the National Parents' Council, the Ombudsman for Children, management bodies, unions, education agencies, academic institutions and children's charities towards the advancement of primary education. IPPN articulates the collective knowledge and professional experience of over 6,000 Principals and Deputy Principals.

This submission captures a number of key points relating to STEM education, as well as the issues and concerns of primary school leaders in relation to the sustainability of their role in system change. We would be happy to answer any questions the Committee may have.

Sustainable Leadership

It is important to note that any strategy that affects primary schools – whether related to child protection, literacy and numeracy, elements of the curriculum such as STEM, or bullying prevention - will largely be the responsibility of the school principal as the leader of learning in their school, supported by the Leadership & Management team, where such a team exists, and a voluntary Board of Management.

It is fair to say that the importance of school leadership as an influence on and key determinant of pupil learning has been clearly and irrefutably established. Put simply, effective school leadership leads to school effectiveness which, in turn, leads to better outcomes for children. It is therefore essential that school leaders should be empowered and supported to deliver that effective leadership in our schools, and facilitated to maintain their focus on their core purpose – leading teaching and learning. Anything that negatively impinges on or detracts from the potential effectiveness of school leaders has a detrimental impact on schools and, more importantly, on learners and must be addressed.

There is a largely unaddressed crisis relating to the sustainability of school leadership in Irish primary schools. In order to understand the extent, causes and impact of this crisis, IPPN explored how

leadership is practised and experienced in our primary schools, informed by the data we garnered from our member survey, to which over 1,000 school leaders responded.

We asked those school leaders to rate the current sustainability of their leadership role (0 being totally unsustainable and 10 being fully sustainable). Their responses tell us that:

- school leaders rate the level of sustainability of their leadership roles at just less than 4 (3.96)
- principals of **DEIS schools** rate the level of sustainability of their leadership roles at just 3.76
- **teaching principals** rate the level of sustainability of their leadership roles at just 3.53
- 26.3% of school leaders rated the sustainability of their leadership role at 0, 1 or 2.

In order to develop a deeper understanding of why school leaders experience their roles as unsustainable, we explored the context in which school leadership is practised in Ireland, which is characterised by:

- a lack of role clarity
- increasing role complexity
- the breadth of responsibilities
- inadequate infrastructural supports and
- the workload that arises from all of the above.

In order to ensure school leadership of the highest quality in our schools, and a leadership role that is sustainable and less likely to have a negative impact on the health and wellbeing of school leaders, consideration needs to be given to the following:

- the development of a shared understanding of what constitutes effective school leadership and the core purpose of that leadership
- the extent to which school leaders are deflected from their core purpose by having to take on responsibilities and tasks not related to that purpose and how that impacts on the sustainability of their roles
- the skills, knowledge and competencies school leaders require to enable them to be effective
- whether there is a need for a systematic process of preparation for leadership and what it might look like
- whether the process by which school leaders are recruited could be improved
- whether all school leaders are afforded sufficient time and space to exercise both the leadership and management dimensions to their roles
- how leadership can be shared and supported more effectively in schools

- how the current governance structure in primary schools is impacting on the sustainability of school leadership roles and how that structure could be reimagined.

IPPN's publication *Primary School Leadership: The Case for Urgent Action - A Roadmap to Sustainability* can be accessed by [clicking here](#).

General Points re. STEM Education

IPPN fully supports equitable access to STEM education for all children and welcomes the focus on integration across primary and post-primary sectors. If STEM is to be encouraged at both primary and post-primary levels, the foundations must be set at primary level, and the appropriate investment made.

Adequate resourcing and training need to be provided to enable primary schools to effectively embed STEM learning at an early age. Indeed, research has shown that if children, particularly girls, do not have an appreciation for STEM by the time they leave primary education, they are far less likely to take up STEM subjects at second level.

There is widespread agreement in primary education that, while STEM subjects are valuable, there should not be undue emphasis on them at the expense of other aspects of education, especially the Arts. Many other developed countries have adapted STEM to include the arts, known as 'STEAM'. There is an opportunity for the Department of Education and the NCCA to integrate the curricula to cover all of STEAM.

With the imminent launch of the new Primary Curriculum, there is an opportunity to further promote and develop the 'softer skills' – particularly communication and interpersonal skills - and pupils' creativity within the curriculum, alongside enhanced STEM education. These life skills are crucial to any organisation, including those in the technology industry. It also affords the opportunity to integrate the Department's ICT Strategy and investment in ICT with the STEM Strategy and a commitment to provide ongoing and adequate funding for both.

Teacher CPD

If a full appreciation of STEM subjects is to be realised at primary level, it must be recognised that the vast majority of teachers require significantly more training and ongoing professional development in what would be expected of them. Furthermore, in order to focus on STEM, all schools must have adequate Broadband access. Despite the roll-out of broadband infrastructure in recent years, this is still not the case in a significant number of primary schools in 2023 and must be achieved before any expectations are levelled on schools to enhance STEM teaching and learning.

Other barriers to teacher CPD need to also be addressed. For example, approved courses in STEM undertaken during the school year should qualify for EPV days. This would act as an incentive to teachers to undertake CPD and help them to put their learning to immediate use.

The education system must be careful not to embrace the 'Hero/Champion' teacher model as it tends to be short-lived when the 'heroes' go to pastures new. If STEM and STEM approaches are to become embedded in primary education, then every teacher needs to be a 'STEM teacher'. It may be worth exploring the identification of specific schools with strong STEM teaching approaches in different geographical areas and build clusters around them, through facilitated CPD. This might involve drawing on schools already proficient in STEM or asking schools to upskill in STEM with DE support. These schools could then be the 'magnet' or 'beacon' schools with a specific task of having planned interaction with the schools in their cluster. Additional teacher/teachers and equipment would be required to facilitate such an approach.

Optional placements are a good, if limited, idea. Industry talks a lot about STEM in education but businesses often tend to engage with primary schools at a very superficial level. There is also a danger of building further inequality into the system from a geographical perspective as technology companies operate in larger urban areas. Financial support from industry for STEM training/programmes that would be available to all schools might be more equitable and effective.

ICT Resources and STEM

As noted above, ongoing and adequate support for ICT and related expenditure must be provided to all schools equitably. Individual grants do not provide adequately for installation, upgrade and

maintenance of hardware, software and networking, nor for technical support in primary schools. Many schools are left to fundraise or seek local sponsorship to cover the cost of these essential requisites. This heightens inequity across schools, as those in better-off areas are far more likely to access such income streams than those in economically deprived areas.

STEM resources, outside of ICT equipment, are also expensive. All schools must be provided with regular finance to purchase science, engineering and maths equipment. An efficient approach to achieving this may be to adequately resource all the Education Centres, facilitating a system of sharing among schools.

In essence, if the aims of the STEM strategy are to be realised, financial supports to schools for ICT and curricula must be reviewed and enhanced, and backed up by access by all schools to skilled IT support.

Gender Equity and the Promotion of STEM

The biggest challenge to the promotion of STEM is the simplest one. If children – both girls and boys - are exposed to interesting, well thought-out, well-planned STEM lessons that build on their previous work, then they will be more interested in taking these subjects at second level. Research shows that, where interest is not developed by the end of primary, children do not take these subjects later.

In Conclusion

The key advantages of the primary curriculum must be maintained, particularly the focus on the holistic development of the child, rather than a narrow focus on subjects and skills. Creativity across a wide range of skills needs to be harnessed and nurtured. This can and should include STEM learning but not at the expense of other learning opportunities. Schools are developing children to become well-balanced individuals with the capacity for life-long learning and to contribute to society as a whole, not just to the workplace, and this needs to be borne in mind in any DE strategy. It will be crucial to ensure that there is adequate investment in professional development for all teachers, as well as curriculum resources, ICT infrastructure and resources, if the new curriculum, including STEM education, is to succeed.