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PAGE 1: Please complete this consultation paper in respect of your area of interest and/or expertise

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Q4: 1(a) What improvements can be made within existing resources

The Irish workforce is well regarded in terms of level of education and skills. While this points to a broadly successful education system there is an overemphasis on third level academic qualifications. Students at second level should be encouraged to consider apprenticeships and vocational career paths. The Department of Education's recent initiatives on reform of the apprenticeship model is welcome however the range of apprenticeships should be widened further. This would broaden the appeal of vocational career paths and allow second level students from certain socio-economic sectors to fully participate in the economy. Our experience is that management and teachers in second level schools are doing the best they can within the constraints of the existing resources.

Q5: 1(b) What improvements can be made through new provision

There should be a greater number of teachers with qualifications to teach STEM subjects. These teachers should have access to better funded laboratories and equipment to support students' learning.

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Q6: 2. Comment on work currently being undertaken by the Department in your area of interest and/or expertise. (What are we doing well, what could we do better)?

The increased points for mathematics at leaving certificate level and the focus on ensuring that teachers delivering maths are qualified and motivated to do so has resulted in an increased take up of the subject at higher level. There should be a better level of counselling for students so that students don't take the honours just for the points and potentially fail on the higher curriculum.

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Q7: 3. Are there opportunities (e.g. new areas of work) which the Department should consider when developing the 2016 - 2018 strategy which would advance the achievement of our mission, vision and objectives across the continuum of education and skills?

There should be a focus on greater engagement with career guidance counsellors and at an earlier stage (not just after Junior Certificate cycle).

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Q8: 4. How should success on achieving our strategies be measured.

There is a need for a clear set of measurable objectives rather than broad strategy as outlined e.g. the percentage of teachers with maths degrees, the number of students accessing career guidance counsellors at several points during the secondary cycle.

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Q9: 5. Comment on any issues relating to the continuum of education and skills, in addition to your particular area of interest and/or expertise

While the Department's focus is on engaging with pupils and students it is recognised that parents play a vital role in directing their child to particular careers often with little knowledge.
Given the rate of change in the nature of work the Department could consider including a campaign aimed at parents to make them aware of the range of opportunities that exist today so that they can guide their child in an informed manner.

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Q10: 6. Any other observations that you would suggest the Department should consider in the formulation of our strategy for education and skills 2016 - 2018

Recognising that even with immediate investment it will take a number of years to observe the benefit the Department should without delay seek ways of increasing the funding for equipping schools with laboratories and additional resources.

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Q11: 1(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

No response.

Q12: 1(b) How should progress on Prioritising Early Years be measured?

A review of early childhood education is required so that education at pre-school level is structured and delivers age appropriate outcomes.

Q13: 1(c) What would you consider to be the priority actions and outcomes in this area?

No response.

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Q14: 2(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

No response.

Q15: 2(b) How should progress on Tackling Disadvantaged be measured?

The Department should undertake a longitudinal study on those who go to third level /get jobs/ remain unemployed and use the study to devise and implement suitable interventions. Access programmes specifically targeted at the disadvantaged e.g. Trinity College Access Programmes (TAP) or the initiatives on recognition of prior learning (RPL) from the Institutes of Technology

Q16: 2(c) What would you consider to be the priority actions and outcomes in this area?

Increasing the school leaving age to 17 may prove to be of little benefit and simply result in a disengaged student staying in class to disrupt more engaged students for an additional year. The implementation of an apprenticeship /vocations scheme across more areas may prove the best mechanism to improved engagement among students that are not naturally academically engaged.

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Q17: 3(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

No response.

Q18: 3(b) How should progress on Diversity and Choice for Parents be measured?

No response.

Q19: 3(c) What would you consider to be the priority actions and outcomes in this area?

No response.

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Q20: 4(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

The move to introduce accelerate the digital agenda and introduce coding into the curriculum is a positive development. Technology comprises more than ICT and while ICT impacts on other areas of technology it is of itself limited use without reference to and development of an understanding of other STEM skills. Similarly, coding is a skill that relatively few people will need to use and the resources to deliver nationwide teaching of the subject by suitably qualified staff will be considerable and should not come at the expense of the delivery other STEM subjects. At a minimum, Engineers Ireland believes that teaching and examination of basic sciences should be compulsory to at least Junior Certificate level supported by investment in supporting laboratories, equipment and teaching resources. Engineers Ireland believes that STEM subjects should only be taught by teachers who hold qualifications in those specific areas. The introduction of coding/computing modules should align with mathematics curriculum for maximum learning benefit and should not be implemented at the expense of other subjects.

Engineers Ireland accredits engineering programmes at NFQ level 6,7,8,9 and our experience gained during on-site visits at over 20 HEIs is that the reduction in funding to that sector has had significant detrimental impact. In particular

- Laboratory equipment and facilities have become almost obsolete due to lack of investment. The ability to expose students to experiments using current world class equipment hampers our ability of our HEIs to be considered globally relevant.
- The recruitment of lecturing staff in engineering subjects has been impacted by the prevalence of temporary contracts and low starting salaries which considerably out of line with industry salaries.
- The widespread introduction of the new maths syllabus ('Project Maths') has increased the level of student engagement. Early indications from HEIs is that students are deficient in some areas of mathematics that are key to taking up third level engineering (and STEM) courses. This situation should be closely monitored by the Department and remedied before there is any adverse systemic impact.

Q21: 4(b) How should progress on Promoting Excellence and Innovation in Schools be measured?

There should be a set of clear measurable objectives to measure success. A longitudinal study over 5 years should be put in place to see if excellence in innovation concept is effective.

Q22: 4(c) What would you consider to be the priority actions and outcomes in this area?

There should be a focus on transferable skills for all students e.g. teamwork, communications skills, underpinned by a proper foundation in science and maths and its applicability of the knowledge gained. The 'soft skills' are important to enable students to engage and communicate their ideas and develop an understanding of the application of the subject matter specific concepts to a real world setting.

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Q23: 5(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

A key component of fostering and entrepreneurial capacity includes having an atmosphere where creativity can prosper and a tolerance of failure. Developing creative skills requires time and space for reflective learning.

Q24: 5(b) How should progress on Promoting Creativity and Entrepreneurial Capacity in Students be measured?

The true measure of entrepreneurial activity is measured by economic activity outside of the classroom. The OECD has developed a framework for assessing and measuring entrepreneurial activity and the main outcomes include increased economic activity and reduced unemployment. There are also many external factors which influence entrepreneurial activity and capacity (e.g. funding). The promotion of entrepreneurial activity among students while benefiting the wider economy may mean that they leave formal education to pursue entrepreneurial activity.

Q25: 5(c) What would you consider to be the priority actions and outcomes in this area?

Experience gained through our STEPS outreach programme indicates that there is strong engagement from pupils, students and teachers in the real world and creative application of STEM subjects and this could be an area for future curriculum development. Our engagement also highlights the need for greater resources to deliver STEM subjects. There should be increased investment for the provision of laboratory equipment, other tools and teachers so that all secondary schools are capable of delivering education in each of the basic sciences (Biology, Chemistry, Physics) and that no student can leave school without a basic understanding of these areas and their real world application.

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Q26: 6(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

There should be greater emphasis and resources placed on career guidance so that students are directed towards careers that best match their capabilities and leverage the components of the established curriculum. An increased focus on Further Education sector is desirable. Not every second level student needs to go to third level Universities or Institutes of Technology and implementation of a broad base of apprenticeship courses would improve engagement with students at risk of leaving school prior to gaining a State certificate.

Q27: 6(b) How should progress on Making Better use of Educational Assets within Communities be measured?

No response.

Q28: 6(c) What would you consider to be the priority actions and outcomes in this area?

No response.

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Q29: 7(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

No response.

Q30: 7(b) How should progress on Special Needs Education be measured?

No response.

Q31: 7(c) What would you consider to be the priority actions and outcomes in this area?

No response.

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Q32: 8(a) Comment on the approach contained in the Programme for a Partnership Government (are we capturing the essential issues, are there additional matters we should take into account).

No response.

Q33: 8(b) How should progress on Meeting the Skills Needs of the Future be measured?

No response.

Q34: 8(c) What would you consider to be the priority actions and outcomes in this area?

Students should be exposed maths and basic sciences at an earlier age. There needs to be greater integration of the primary and secondary curricula to provide a seamless continuum instead of a step change in subjects and academic environment which takes time and effort for pupils to adjust to just at a time when other aspects of their identities are being formed.

The inclusion of the study of arts alongside STEM subjects (STEAM) provides a more holistic educational perspective. Incorporating an arts perspective will generally increase the creative perspective of students and provide greater context to their academic studies.

If students can engage with STEM subjects early in the secondary cycle they will be less likely to inadvertently lock themselves out of career choices post junior certificate by virtue of having not taken a STEM subject or done honours maths etc.
