

## Cynulliad Cenedlaethol Cymru | National Assembly for Wales

### Y Pwyllgor Plant, Pobl Ifanc ac Addysg | Children, Young People and Education Committee

### Ymchwiliad i Addysg a Dysgu Proffesiynol Athrawon | Inquiry into Teachers' Professional Learning and Education

TT 24

Ymateb gan : Gymdeithas Gemeg Frenhinol

Response from : Royal Society of Chemistry

1. The Royal Society of Chemistry is the world's leading chemistry community with over 1500 members in Wales. We invest in supporting quality scientific education in Wales, including: a school support team operating across the country, our freely available Learn Chemistry Partnership connecting over 169 secondary schools in Wales to the chemistry community, online and face-to-face teacher professional development<sup>1</sup>, resources<sup>2</sup>, events, and the popular Spectroscopy in a Suitcase (SIAS) programme. We are expanding our educational support by working with Primary School Quality Mark (PSQM) hubs during 2017 in order to raise the confidence of primary school teachers to teach science.
2. Chemistry plays an important role in the Welsh economy. The nuclear, petroleum, polymer, chemical and pharmaceuticals industries employ over 40,000 people in the country<sup>3</sup>. In the whole of the UK the projected cumulative demand for staff entering science industries will be up to 260,000 by 2025, a high proportion of which are in technical and professional level chemistry-related jobs<sup>4</sup>. It is vital that young people in Wales are well equipped with a high quality science education and taught by a sufficient number of trained specialist teachers in order to take advantage of opportunities in Wales and the rest of the UK.
3. Whilst the new curriculum has not been finalised, the current reforms signal a substantial change to practice within schools as, for example, more emphasis is placed on cross-curricular teaching. It is vital that the teaching workforce is fully prepared through initial training and continuing professional development (CPD) to deliver the reformed curriculum in order to provide the best possible learning experience for pupils.
4. We welcome this inquiry from the Children, Young People and Education Committee about the readiness of the teaching workforce in Wales to implement the new curriculum. We have highlighted areas of risk to the Welsh Government achieving their ambitious education reform agenda.

#### **The role of initial teacher education (ITE)**

5. Furlong's independent review of teacher training in Wales concluded that existing ITE was not adequate to meet the current or future needs of learners<sup>5</sup>. Therefore, we

welcome Welsh Government's reform of ITE and the intention for schools and other bodies to have a greater involvement in ITE provision in future, working with Higher Education Institutes. We responded to the recent consultation on ITE accreditation to share these views with Welsh Government<sup>6</sup>.

6. The current proposals to reform the curriculum and ITE are ambitious and indicate that additional teaching skills will be needed by all teachers, particularly at secondary level<sup>7</sup> <sup>8</sup>. This includes in areas of assessment, pedagogical subject knowledge, working across subject boundaries, embedding wider skills and supporting the social and emotional aspects of learning.
7. It could be especially challenging for teachers of chemistry and science, as these subjects require progressive conceptual development. This must be maintained whilst also delivering more project and skills based learning with increased tailoring to individual needs. Strong subject knowledge and pedagogical content knowledge are fundamental to ensuring a solid foundation during ITE. It is vital that this solid foundation in the subject is maintained and not lost in ITE programmes as education reforms place more emphasis on this wider range of skills.
8. Overall the level of change and improvement is ambitious, and will require considerable investment of resources and skilled management to implement successfully. Timely implementation and coordination of the reforms to ITE and the curriculum is vital to ensure the workforce is fully prepared to teach the new curriculum.

### **The sufficiency of the future workforce**

9. Attracting and retaining high quality science teachers remains a challenge. Available data and information creates a picture of insufficient subject trained chemistry teachers in Wales.
10. Current school workforce data is inadequate and uncoordinated and does not give a full understanding of the teacher supply situation. We are pleased that this is acknowledged by Welsh Government who are consulting on proposals to improve the collection of this data<sup>9</sup>. Existing data that is available from the Education Workforce Council suggests that only 53% of chemistry teachers in Wales have had chemistry-specific training, and only 4.8% of primary school teachers have a science degree<sup>10 11</sup>.
11. Schools in our networks also consistently report unfilled chemistry teacher vacancies and ITE providers report a reduction in good quality applications to teacher training programmes.
12. Financial incentives to train to teach chemistry in Wales are not competitive with incentives available in England as they do not take into account postgraduate qualifications and some are set at a lower level. This disparity also exists in the incentives available for other subjects including physics, computing and languages. UCAS data from the past three years shows that approximately a third of Welsh domiciled acceptances onto teacher training courses were with providers outside of

Wales<sup>12</sup>. We have heard cases of individuals who have been put off training to teach chemistry in Wales because the incentives are not sufficient.

13. Action should be taken to improve the current teacher training incentives, making them at least equivalent to those that exist in England as there is a risk that there will not be sufficient teachers to effectively deliver the ambitious curriculum change. An announcement from Welsh Government on teacher training incentives is imminent<sup>13</sup>.

### **Arrangements for continuing professional development for the current workforce**

14. We welcome the Welsh Government's aim, as outlined in Qualified for Life, to strengthen the capacity of the existing workforce and its recognition of the need to ensure that sufficient and appropriate CPD opportunities are available.
15. We repeatedly hear that teachers have little opportunity to engage in meaningful external subject-specific CPD. The cost to the school is often cited as the deciding factor, not just cost of the course and travel, but also the cost of providing cover for teachers during training.
16. We are encouraged by statements from some regional consortia that they aim to provide a wider range of support to teachers with programmes that are based on practitioner research, encourage reflective practice and can enable impact to be evidenced.
17. The need for CPD will increase considerably as the reforms are implemented because it will be necessary to up-skill the workforce to the new requirements discussed above. This CPD should be high quality, and also affordable and accessible on a consistent basis across the whole of Wales.
18. Some of the additional CPD needs may be met by the new National Network of Excellence for science and technology recently announced by the Education Secretary<sup>14</sup>. It is important that this network can support practising teachers through effective subject-specific CPD to implement the new curriculum. As a professional body and expert provider of professional development and resources, we are well placed to provide chemistry-specific support in implementing these plans.

### **About the Royal Society of Chemistry**

With over 50,000 members and a knowledge business that spans the globe, the Royal Society of Chemistry is the UK's professional body for chemical scientists, supporting and representing our members and bringing together chemical scientists from all over the world.

A not-for-profit organisation with a heritage that spans 175 years, we invest in educating future generations of scientists, we raise and maintain standards and work with industry and academia to promote collaboration and innovation. We advise governments on policy and we promote the talent, information and ideas that lead to great advances in science.

Education Policy, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK, Tel: +44 (0) 1223 420066 Email: [EducationPolicy@rsc.org](mailto:EducationPolicy@rsc.org)  
[www.rsc.org](http://www.rsc.org)

- 
- <sup>1</sup> Further detail about our CPD offering is available on our website <http://www.rsc.org/careers/cpd/teachers/>
- <sup>2</sup> Our Learn Chemistry platform provides over 4000 resources to enhance the teaching and learning of chemistry <http://www.rsc.org/learn-chemistry>
- <sup>3</sup> COGENT factsheet on Wales (2011): <http://dev.cogent-lifescience.co.uk/media/227118/Wales.pdf>
- <sup>4</sup> Skills Strategy 2025, Science Industry Partnership (2016) [http://www.scienceindustrypartnership.com/media/529053/5202fd\\_sip\\_skills\\_strategy\\_2015\\_final\\_low.pdf?\\_cldee=aG9sbGlkYXlyQHJzYy5vcmc%3d&recipientid=contact-fc014143d0d1e61180ef000c29502450-3ea3dff577f4b4da598baa903eb547f&esid=29dfb365-65c7-e611-80ef-000c29502450&urlid=0](http://www.scienceindustrypartnership.com/media/529053/5202fd_sip_skills_strategy_2015_final_low.pdf?_cldee=aG9sbGlkYXlyQHJzYy5vcmc%3d&recipientid=contact-fc014143d0d1e61180ef000c29502450-3ea3dff577f4b4da598baa903eb547f&esid=29dfb365-65c7-e611-80ef-000c29502450&urlid=0)
- <sup>5</sup> Teaching Tomorrow's Teachers, Furlong (2015), <http://gov.wales/docs/dcells/publications/150309-teaching-tomorrows-teachers-final.pdf>
- <sup>6</sup> Initial Teacher Education accreditation consultation, Welsh Government (2016) <https://consultations.gov.wales/consultations/initial-teacher-education-accreditation>
- <sup>7</sup> Successful Futures, Donaldson (2015), <http://gov.wales/docs/dcells/publications/150225-successful-futures-en.pdf>
- <sup>8</sup> Qualified for Life, Welsh Government (2014) <http://gov.wales/topics/educationandskills/allsectorpolicies/qualified-for-life-an-educational-improvement-plan/?lang=en>
- <sup>9</sup> School Workforce data collection consultation, Welsh Government (2017) <https://consultations.gov.wales/consultations/school-workforce-data-collection>
- <sup>10</sup> General Teaching Council for Wales Annual Statistical Digest (2016): <file:///C:/Users/martinz/Downloads/Stats%20Digest%202016%20-%20English%20-%20EWC.pdf>
- <sup>11</sup> Written Assembly Questions tabled on 13 August 2014 for answer of 20 August 2014, question tabled by David Rees AM: <http://www.assembly.wales/en/bus-home/pages/plenaryitem.aspx?category=written%20question&itemid=2927&assembly=4&c=Written%20Question&startDt=01/08/2014&endDt=01/10/2014&keyword=david%20rees>
- <sup>12</sup> UCAS Teacher Training releases/End of Cycle reports (2014-2016) <https://www.ucas.com/corporate/data-and-analysis/ucas-teacher-training-releases> [last accessed 17/01/2016]
- <sup>13</sup> The Cabinet Secretary for Education said there would be an announcement on graduate incentives for science teaching when questioned on the 11/01/2017 <http://senedd.assembly.wales/ielIssueDetails.aspx?Ild=14960&Opt=3>
- <sup>14</sup> New national network of excellence for science and technology to be established, Welsh Government (2017) <http://gov.wales/newsroom/educationandskills/2017/new-national-network-of-excellence-for-science-and-technology-to-be-established/?lang=en>