

[National Assembly for Wales](#)

[Enterprise and Business Committee](#)

[Follow-up inquiry into Science, Technology, Engineering and Mathematics \(STEM\)](#)

Evidence from Coleg Cymraeg Cenedlaethol – STM 07

The Coleg Cymraeg Cenedlaethol welcomes the opportunity to participate in the follow-up inquiry into Science, Technology, Engineering and Mathematics (STEM) Skills and to comment upon and present evidence regarding the progress made in recent years on learning STEM skills through Welsh-medium education and training, specifically in the higher education sector. The Coleg was not invited to participate in this inquiry, but it was brought to our attention by a colleague in one of our partner institutions. We trust, however, that the Coleg's observations would also be useful and will be welcomed.

Despite numerous attempts on behalf of the Coleg to encourage and ensure its inclusion in the STEM agenda, both on a strategic planning level, and in contributing to the Welsh Government's strategy 'Science for Wales', the Coleg has had no direct involvement as a stakeholder in these schemes. As a result, there has been very little interaction between the Coleg's activities and any national strategy. The Coleg has worked determinedly in developing its own academic plans for the sciences in partnership with higher education institutions across Wales, and it has funded many activities to promote the sciences through the medium of Welsh. A summary of these schemes is outlined below.

What progress has been made on learning STEM skills through Welsh medium education and training?

1. We believe that the Coleg Cymraeg Cenedlaethol is in a strong position with regard to its networks across Wales to make a significant contribution to this objective. The Coleg works with and through higher education institutions in Wales in order to promote, maintain and develop Welsh-medium provision in higher education in Wales. Since the Coleg was established in 2011, a significant investment has been made in teaching and learning the sciences through the medium of Welsh.
2. One of the Coleg's main schemes is the Academic Staffing Scheme. The purpose of this scheme is to provide funding for universities to employ new lecturers to work in a wide range of academic disciplines through the medium of Welsh. These appointments are in

addition to staff who are already working through the medium of Welsh at the universities, and they have a specific responsibility to teach through the medium of Welsh, develop Welsh-medium resources to supplement teaching, undertake and publish research through the medium of Welsh, and to contribute to marketing and recruitment strategies designed to attract new students to the Welsh-medium provision. Several of these appointments have been made in STEM subjects since 2011, including:

- 2 Mathematics lecturers – Aberystwyth University and Cardiff University;
- 2 Physics lecturers – Aberystwyth University and Swansea University;
- 1 Chemistry lecturer – Bangor University;
- 1 Biosciences lecturer – Swansea University;
- 2 Computer Science lecturers – Aberystwyth University and Bangor University.

Other investments have been made in lecturers where their research fields lie on the boundary of STEM subjects, such as Environmental Science, Physical Geography, Ecology and Zoology.

3. The national Academic Staffing Scheme is having a positive effect on Welsh-medium provision in STEM subjects in Wales and it is now possible, in certain universities within Wales, to study at least 33% of subjects such as physics, mathematics, chemistry and the biosciences through the medium of Welsh.
4. The Coleg also places emphasis on nurturing a new generation of young researchers of international standard, who have the ability to apply their knowledge through the medium of Welsh. In this respect, the Coleg funds the Research Scholarships Scheme which provides funding for students who are studying for a doctorate. Thus far, 15 students have been funded through the Coleg's Research Scholarships Scheme undertaking their research in the academic fields outlined below. Some of these individuals have already completed their research successfully and have gained their doctorates, of whom the vast majority have since been appointed to Welsh-medium academic posts within the sector:
Engineering (2); Computer Science (3); Mathematics (2); Biosciences (5); Chemistry (2); Physics (1) with up to 9 other PhD students working in related subjects, e.g. Ecology; Sport Physiology; Animal Sciences; Physical Geography.
5. In addition to these aforementioned schemes, which represent a significant annual financial investment in STEM subjects (e.g. the Coleg will have invested nearly £500,000 in STEM subjects through the Academic Staffing Scheme and the Research Scholarships Scheme in 2014/15), the Coleg also supports numerous other projects and

activities in the sciences. The Coleg arranges an Annual Science Conference where leading scientists from Wales and further afield are invited to share their research findings through the medium of Welsh. A session is also held for research students in order to motivate the next generation of young researchers.

6. In an attempt to recruit undergraduate students to the Welsh-medium provision at the universities, the Coleg's Undergraduate Scholarships Scheme was established. Several science degree schemes at undergraduate level are eligible under the Incentive Scholarship Scheme, worth £1,500 over three years, and are available to students who intend to study at least 33% (or at least 40 credits a year) of their degree scheme through the medium of Welsh. Last year, 8 such Scholarships were awarded to students who began studying degree schemes such as mathematics, physics, biology and chemistry in September 2013.
7. Through the work of staff members employed at universities under the auspices of the Academic Staffing Scheme, a number of innovative ventures have been established. In 2013, in response to the shortage of people training to teach Mathematics through the medium of Welsh, an innovative module was introduced at Cardiff University's School of Mathematics in order to encourage undergraduate students into the teaching profession. This venture has the potential to positively influence the supply of education professionals able to teach mathematics through the medium of Welsh in the future.
8. Underpinning these schemes in the sciences is the Coleg Cymraeg Cenedlaethol's strong commitment to the need to improve study routes and promote higher education in STEM fields through the medium of Welsh. Through its Strategic Development Fund, the Coleg has appointed a development officer to work in association with lecturers teaching through the medium of Welsh to specifically develop the sciences, including supporting the marketing and promotional work. Activities are organised at the Urdd Eisteddfod in order to inspire youngsters, and as part of the Staffing Scheme programme of work, post-holders are also expected to contribute to promotional and outreach work in their institutions.
9. The Coleg acknowledges the importance of fostering connections between the education sector and employers. The Coleg works with employers to offer a period of work experience for students who have been awarded the Coleg's Scholarships. The environmental bodies that preceded Natural Resources Wales (NRW) collaborated with

the Coleg to promote work placement opportunities and scholarships to prospective students. This relationship has continued with about 8 students provided work placements with NRW annually, and other students being placed with employers such as accountants and within schools. As the number of STEM students receiving the Coleg's scholarships increases, we will be working with more organisations and employers in this field.

10. In order to acquire an overview of national and institutional priorities regarding Welsh-medium provision development, a number of academic subject development plans have been developed with the Coleg's principles and themes at the core of each one. Thus far, plans have been developed in the following fields: Mathematical and Physical Sciences; Natural Sciences (biosciences and chemistry); and a plan for Geography, Agriculture and Environmental Sciences. It is the Coleg's intention to address the need for a Computer Science and Engineering plan during the summer of 2014. In conjunction with these plans, groups of academics which represent these subject plans meet three times a year in subject panels in order to share good practice and develop opportunities to collaborate.
11. Since the establishment of the Coleg Cymraeg Cenedlaethol, much progress has been made in learning STEM skills through Welsh-medium education and training in the higher education sector. With the assistance of the Academic Staffing Scheme, the range and proportion of STEM provision through the medium of Welsh and the number of institutions offering this provision has increased. Simultaneously, institutional data shows an increase in the number of students studying STEM subjects through the medium of Welsh. That said, the task facing the Coleg is a long term one and the results of these efforts will not be fully realised in the short term. Progression from schools and colleges to the higher education sector is fundamental to the Coleg Cymraeg Cenedlaethol's success. Moving forward to review the Coleg's Strategic Plan, we will be paying further attention to progression and trying to inspire youngsters to study STEM subjects, whilst simultaneously promoting the opportunities that are already available to study these subjects through the medium of Welsh and bilingually in higher education.
12. For the sake of ensuring coherency and appropriate holistic planning, there is a need for a joined up approach in developing a STEM policy, and the Welsh language should be mainstreamed in any future strategy to promote the sciences. Without this the Welsh language will be marginal to central discussions and will continue to be treated in a tokenistic manner. It should be ensured that a certain proportion of STEM funding is

earmarked specifically for use to promote skills training through the medium of Welsh. In order that the Welsh language is given due attention within the Government's strategies for STEM, we believe that the Coleg should be included as a stakeholder in the process of planning and delivering that strategy. We emphasise that the Coleg, within its current resources, would be able to make an important contribution to ensure that the Welsh language is mainstreamed in a meaningful manner.

13. Having completed the current inquiry, the Coleg would be happy to discuss collaboration opportunities with the Government in order to move this agenda forward and to secure the Welsh language's position within future schemes.

Coleg Cymraeg Cenedlaethol
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