



Monthly Labour Market Report

Welcome

The Monthly Labour Market Report from the Learning and Skills Observatory Wales (LSO) aims to provide the main headlines on the Welsh labour market and is based on the latest data available.

This month's issue puts the spotlight on STEM Skills and the Labour Market.

This report was produced by the Centre for Economic and Social Inclusion (known as *Inclusion*), commissioned by Welsh Government to blend Wales's available labour market information (LMI) (from the various sources) and produce a monthly analysis. Whilst the report is owned by Welsh Government it is not validated in terms of its specific content or interpretation.

Inclusion has an unrivalled understanding of the labour market based on over 28 years of experience of working with the range of stakeholders involved in delivering employment and skills services. We collect and analyse both national and local labour market data through our well developed Local Labour Market Information System, conduct research on employment and skills issues at the local level, run events that bring together policymakers and providers in the skills and employment sector, and produce weekly e-briefings that summarise what is new in employment and skills for our subscribers.

We currently supply monthly employment and skills data to the Greater London Authority, as well as providing labour market tools and analysis for Greater Manchester.

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Latest labour market trends

Employment

Employment data from the Labour Force Survey (LFS) – estimates obtained from a large sample quarterly rolling survey of households – show that Wales outperformed most though not all the other UK nations and regions in the rolling quarter June to August 2013.

The (seasonally adjusted) Labour Force Survey estimate of the number of people aged 16 and over in employment in Wales increased by 11,000 (+0.8%) compared to the previous quarter (March-May 2013) to a total of 1.374 million. The quarterly increase in employment in Wales is comprised of an increase in male employment of 9,000 (+1.2%) and an increase in female employment of 3,000¹ (+0.5%).

The total quarterly increase in employment in Wales compares to a corresponding increase in total UK employment of 155,000 (+0.5%). In addition to the increase in Wales employment increased by 108,000 (+0.4%) in England and 37,000 (+1.5%) in Scotland. However, in Northern Ireland employment fell by 1,000 (-0.1%). The net increase in England comprised an increase in employment in Yorkshire and Humberside (+25,000, +0.1%), the East Midlands (+5,000, +0.2%), the East of England (+36,000, +1.3%), London (+30,000, +0.7%), the South East (+69,000, +1.6%) and the South West (+11,000, +0.4%) and a decrease in employment in the North West (-1,000, -0.1%), the North West (47,000, -1.4%) and the West Midlands (-21,000, -0.8%).

The working age employment rate for Wales (i.e. the proportion of the population aged 16-64 in employment) increased in the quarter by 0.3 percentage points to 69.8%, compared with an increase of 0.2 percentage points in England and increases of 0.9 percentage points and 0.1 percentage points in Scotland and Northern Ireland respectively. The employment rate in Wales is 1.9 percentage points lower than the UK average (71.7%) and lower than the employment rate in both England (71.8%) and Scotland (72.8%) but higher than the rate in Northern Ireland (66.7%). Within the UK only Northern Ireland, North East England (66.5%), the North West (68.1%) and the West Midlands (68.5%) have a lower employment rate than Wales. The South East (76.3%) has the highest employment rate in the UK.

Figures are also now available for the annual change in employment by age in the year to June 2013 (Table 1). People aged 65 and over register by far the largest percentage increase in employment (almost 24%).

Table 1 Change in employment by age group, July 2012-June 2013 (Wales, not seasonally adjusted)

Age Band	Annual change 000s	Annual change %
16-17	-2	-12.9
18-24	+3	+2.2
16-24	+1	+0.7
25-34	+11	+4.2
35-49	-7	-1.6
50-64	+7	+1.9
65+	+10	+23.7

Source: ONS

¹ Male and Female do not sum due to rounding

Unemployment and economic inactivity

The number of people in Wales who are unemployed on the International Labour Organisation (ILO) Labour Force Survey definition fell by 1,000 to 120,000 between the quarters March-May 2013 and June-August 2013. Total unemployment fell by 3,000 in Scotland, by 5,000 in Northern Ireland and by 18,000 in England.

The quarterly fall in unemployment in Wales was much smaller than the corresponding 11,000 increase in the number of people in employment because of an offsetting increase of 10,000 in the number of people active in the labour market. The number of unemployed men decreased by 3,000 (-4.0%) to 65,000 but the number of unemployed women increased by 1,000 (+2.3%) to 55,000.

The ILO unemployment rate in Wales fell by 0.2 percentage points in the quarter to 8%. The UK average rate of ILO unemployment fell by 0.1% to 7.7%. Despite the quarterly relative improvement in the ILO unemployment rate in Wales there remains a gap between the ILO unemployment rate in Wales and that in England (7.7%), Scotland (7.3%) and Northern Ireland (7.3%). Within the UK nations and regions only North East England (10.3%), the West Midlands (9.4%), Yorkshire and Humberside (8.8%), the North West (8.6%) and London (8.6%) had a higher unemployment rate than Wales. South East England (6.0%) and South West England (6.2%) had the lowest unemployment rates.

The administrative count of people unemployed and claiming Jobseeker's Allowance (JSA) is somewhat lower (69,400 in Wales in September 2013, a JSA claimant count rate of 4.7%) than ILO unemployment because non-JSA claimant jobseekers are excluded. The number of JSA claimants in Wales decreased by 2,100 between July and August. However care should be taken in interpreting change in the claimant count since this can be influenced by changes to the benefit system as well as underlying change in the labour market.

The number of economically inactive people of working age in Wales fell by 3,000 (-0.6%) between March-May 2013 and June-August 2013. As the LMI scorecard shows the working age rate of economic inactivity in Wales (24.1%) is 1.8 percentage points higher than the UK average (22.2%). Within the UK regions and nations only Northern Ireland (27.9%), the North East (25.7%) and North West (25.3%) have higher inactivity rates. The lowest inactivity rates are in the South East (18.8%) and the East of England (19.5%).

16-24 year old NEET

Separate figures have also been published on the number of young people in Wales not in employment, education or training (NEET, see Table 2).

Table 2 Number, rates and change in young people NEET in Wales in year to end June 2013

Age Band	Level	As % age group	Annual change
16-18	13,400	12.1	-1,300
19-24	50,100	20.5	-8,600

Source: Welsh Government, Annual Population Survey

Note that the Welsh Government cautions against using these Annual Population Survey (APS) data as the definitive source of the number of young people NEET in Wales. The preferred source is the Statistical First Release on NEET, the latest of which currently provides final data for 2011 and provisional data for 2012, as discussed in an earlier Observatory report. The APS data are timelier and therefore useful as a guide to the direction of change but are less statistically robust because based on relatively small sample sizes of 16-18 year olds.

LMI scorecard



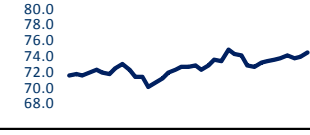
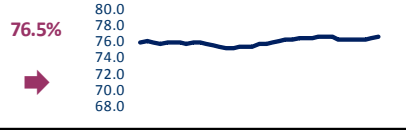
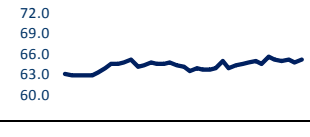
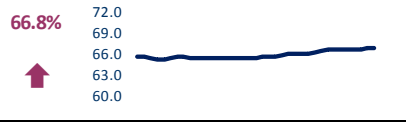
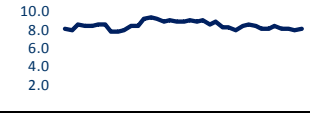
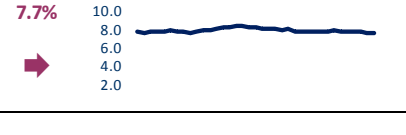
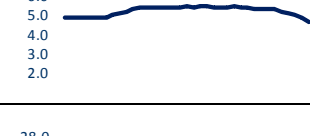
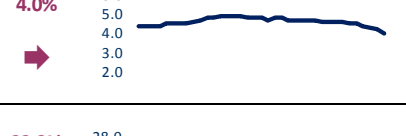
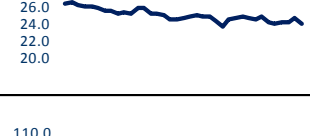
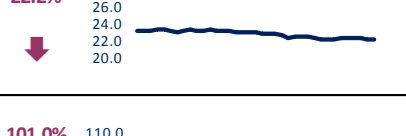
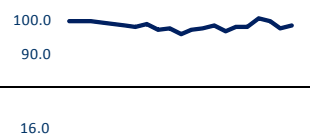
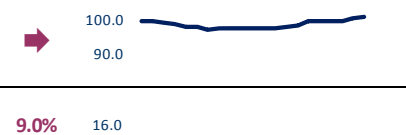
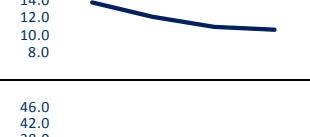
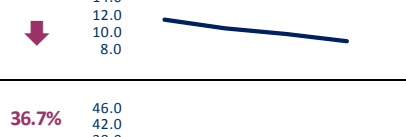
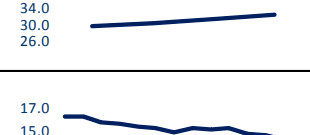
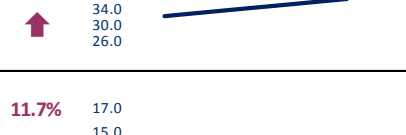
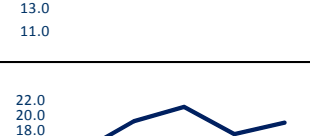
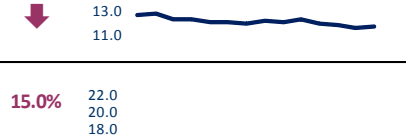
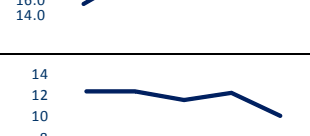
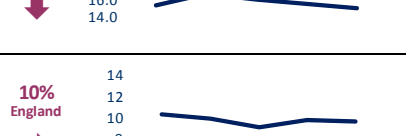


The scorecard presents recent trends and figures for a number of core labour market indicators, using a variety of different sources:

	Source
Working age employment rate	1
Working age male employment rate	1
Working age female employment rate	1
ILO unemployment rate 16+	1
Claimant count as a proportion of the working age population	2
Working age economic inactivity	1
Index of workforce jobs	3
Proportion of the working age population with no qualifications	4
Proportion of the working age population qualified to NQF4+	4
Proportion of the working age population who claim out of work benefits	5
Children living in workless households	6
Proportion of 16–18 year olds who are not in employment, education or training	7

- 1 LFS, ONS: subject to sampling variability and should be used with caution
- 2 Claimant count seasonally adjusted, NOMIS: trends can be affected by changes to benefit rules
- 3 Employer surveys, household surveys and administrative sources, ONS
- 4 Annual Population Survey/Annual Local LFS, ONS. Data is subject to sampling variability and should be used with caution.
- 5 Department for Work and Pensions, NOMIS
- 6 Household LFS, ONS: subject to sampling variability and should be used with caution
- 7 Source: ONS, Higher Education Statistics Agency, Welsh Government Lifelong Learning Wales Record, Pupil Level Annual School Census, Annual Population Survey.

LMI Scorecard

October 2013

		Wales		Difference between Wales and National (latest figures): Better Worse	NATIONAL (UK or GB depending on indicator)	
		Trend (Three to four years)	Latest result & trend		Latest result & trend	Trend (Three to four years)
Supply of Labour	Working age employment rate (%)		69.8% ↑	-1.9 Charts cover: Jun-Aug 10 to Jun-Aug 13	71.7% ↑	
	Working age male employment rate (%)		74.4% ↑	-2.2 Charts cover: Jun-Aug 10 to Jun-Aug 13	76.5% ➔	
	Working age female employment rate (%)		65.3% ↑	-1.5 Charts cover: Jun-Aug 10 to Jun-Aug 13	66.8% ↑	
	ILO Unemployment rate 16+ (%)		8.0% ➔	0.4 Charts cover: Jun-Aug 10 to Jun-Aug 13	7.7% ➔	
	Claimant Count as a proportion of the working age population, seasonally adjusted (%)		4.7% ➔	0.7 Charts cover: Sep 10 to Sep 13	4.0% ➔	
	Working age economic inactivity (%)		24.1% ↓	1.8 Charts cover: Jun-Aug 10 to Jun-Aug 13	22.2% ↓	
Demand	Index of workforce jobs. 2008 Q2=100		98.6% ➔	-2.4 Charts cover: 2008 Q2 to 2013 Q2	101.0% ➔	
Skill gaps	Proportion of the working age population with no qualifications (%)		10.6% ↓	1.6 Charts cover: Year to Dec 09 to year to Dec 12	9.0% ↓	
	Proportion of the working age population qualified to NQF4+ (%)		32.6% ↑	-4.1 Charts cover: Year to Dec 09 to year to Dec 12	36.7% ↑	
Worklessness & NEETS	Proportion of the working age population who claim out of work benefits		14.4% ↓	2.7 Charts cover: Nov 09 to Feb 13	11.7% ↓	
	Children living in workless households (%)		19.1% ↑	4.1 Charts cover: Apr-Jun 2008 to 2012	15.0% ↓	
	Proportion of 16-18 year olds who are NEET (%)		10% ↓	1 Charts cover: 2008 to 2012	10% England ➔	

STEM Skills and the Labour Market

Introduction

Science, technology, engineering and mathematics (STEM) subjects are integral to the UK's success - the UK is the world's sixth largest manufacturer, engineering turnover is around £800 billion per year, and whilst the UK makes up only 1% of the world's population, we produce 10% of the world's top scientific research².

Successive governments have recognised the importance of STEM skills to both Wales' and the UK's future economic growth and competitiveness, and has long identified STEM education as a major priority at both school and HE level, in order to develop a strong supply of scientists, engineers, technologists and mathematicians. These disciplines are bound by:

- both a body of skills and knowledge that is much sought after in a modern technological world. These include:
- analytical and evaluation skills – researching a topic, making reasoned judgements and drawing evidence-based conclusions
- problem-solving skills – breaking down a complex task to a small number of parts in order to advance a solution, recognising cause and effect relationships, and defending opinions using facts
- mathematical and computer skills – carrying out a range of measurements and calculations in order to model potential solutions to complex problems
- technical skills and know how – troubleshooting the source of a problem, advancing a solution or debugging an operating system
- communication and presentation skills – articulating ideas, presenting arguments and convincing audiences that findings are more than opinions.

(Source: Welsh Government, 2012)

This issue focuses on the labour market value of STEM qualifications, and looks at recent trends in the take up of STEM qualifications among Welsh learners.

The Labour Market Value of STEM qualifications

In 2011, the Royal Academy of Engineering published a report investigating the labour market value of Science, Technology, Engineering and Mathematics (STEM) qualifications, focusing specifically on vocational qualifications and the value of STEM degrees. The report also investigated the relationship between STEM qualifications held, the STEM occupation that the person may or may not be employed in and their associated wages.

The report posed three main questions:

1. What is the additional wage premium (or penalty) earned by individuals with STEM qualifications, over and above any return earned for the qualification irrespective of subject;
2. What is the additional wage premium (or penalty) earned by individuals working in STE occupations, irrespective of qualifications held (in the data used there were no occupations classified as being specifically in mathematics, therefore only science, technology and engineering (STE) occupations were considered)?

² <http://www.nationalstemcentre.org.uk>

3. What is the additional wage premium (or penalty) earned by individuals working in STE occupations who also hold STEM qualifications?

Analysing UK data from the Labour Force Survey from 2004 to 2010, the report found that on the first question:

- Many qualifications have higher labour market value if they are in a STEM subject.
- There are additional positive wage premia from holding a range of qualifications at all levels in a STEM subject (e.g. degrees, NVQ2, City and Guilds Foundation, NVQ3, HNC/HND).
- In general there are no wage premia for qualifications held in science bar BTEC National Certificates/Diplomas.
- NVQ5 and City and Guilds Part I/II attract a premium in technology.
- In mathematics, those with first degrees and diplomas in higher education do earn significantly more than those who hold these qualifications in other subject areas.
- In engineering, a larger number of qualifications do attract an additional wage premium if they are held in this subject area.
- Some qualifications in science, engineering or mathematics actually have a slightly lower wage premia than the same qualification in another subject area.

Considering the wages associated with STE occupations.

- 40% of individuals in higher managerial or professional jobs are in STE occupations.
- Just over one quarter of those in lower supervisory or clerical roles are in STE occupations.
- Those working in STE occupations earn a great deal more than those who are not in STE occupations (19%).
- Those in science occupations earn an additional wage premium of 10% whilst those working in technology, engineering and different combinations of these subjects earn much more than those in non STE occupations (14-34% more).
- The premium from working in a STE occupation is largely for those working at intermediate and lower level occupations (i.e. not at professional or managerial level).
- In many instances, including degrees, STEM qualifications attract a further additional premium if they are used in a STE occupation. Individuals earn a premium from having a STEM qualification and then a further premium from working in a STE occupation.
- At level 3 (intermediate) STEM qualifications tend to have greater value in STE occupations.
- There is a particularly sizeable premium if a STEM qualification is used in a STE occupation in the case of degrees, HNC/HND and City and Guilds Foundation/Part I.

The report concludes that many but not all qualifications have additional value in the labour market if they are in a STEM subject area, less so in science and more so in engineering. Most STE intermediate and lower level occupations attract additional wage premia though less so for science and more so for technology and engineering. Some but not all STEM qualifications have considerable additional value in the labour market if they are used in a STE occupation.

The main policy implication arising from these findings is that 'the advice given to young people needs to be far more nuanced than it currently is. It is not enough to urge young people to study STEM subjects: they also need to understand that some STEM qualifications are more valuable than others'. Working in science, engineering or technology occupations (particularly at intermediate level or below) often attracts a sizeable wage premia. Hence students need guidance that earnings in many STE occupations are higher than in non STE occupations.

Some qualifications that attract a premium if they are held in a STEM subject also attract an additional wage premium from being used in a STE occupation. For instance, degrees in STEM are valued by the labour market anyway but particularly so in STE occupations. Thus for some qualifications their maximum potential value is for use in STE occupations, another message for those making career decisions.

Employment Outcomes of Welsh STEM graduates

Data from the Higher Education Statistics Agency (HESA) allows us to look at the labour market value of STEM qualifications in terms of employment outcomes. For Welsh-domiciled HE students who graduated in 2011/12, Table 3 shows that the outcomes for STEM graduates overall are generally more positive than graduates in non-STEM graduates, with a higher proportion in full-time work (60.0% compared to 52.5%), and a lower rate of unemployment (4.4% compared to 4.7%).

Table 3: Destinations of Welsh-domiciled Degree Leavers, by STEM / non-STEM subjects, 2011/12

Activity	STEM Subjects	Non-STEM subjects
Full-time paid work	60.0%	52.5%
Part-time paid work	11.8%	15.7%
Primarily in work and also studying	4.5%	6.6%
Primarily studying and also in work	3.9%	4.1%
Full-time study	12.4%	11.2%
Part-time study	0.4%	0.7%
Due to start work	0.5%	0.4%
Unemployed	4.4%	4.7%
Other	2.2%	4.1%

Source: HESA Destinations of HE Leavers Statistics. Data for 2011/12 is not comparable with earlier years.

However, the data also shows that there is a wide variation between individual STEM subjects. Taking levels of full-time employment and unemployment as what could be deemed the most positive and negative destinations, Table 4 shows that the highest levels of full-time employment (aside from veterinary science, where there were only a small number of graduates) were in medicine and related subjects, which also had the lowest levels of unemployment. Less than half of graduates in biological, physical and mathematical sciences were in full-time work, while the highest rate of unemployment was in computer science, where 10% were not working or continuing studying 6 months after graduating.

Table 4: Destinations of Welsh-domiciled Degree Leavers, by individual STEM subject area, 2011/12

Activity	% in full time work	% unemployed	No. of Welsh-domiciled graduates*
Medicine & dentistry	95.2%	0.0%	420
Subjects allied to medicine	69.9%	1.6%	1,925
Biological sciences	40.9%	5.7%	1,480
Veterinary science	100.0%	0.0%	30
Physical sciences	48.1%	6.7%	675
Mathematical sciences	47.8%	4.3%	230
Computer science	57.5%	10.0%	600
Engineering & technology	65.5%	5.2%	970
All STEM Subjects	60.0%	4.4%	6,330

Source: HESA Destinations of HE Leavers Statistics. STEM subjects are based on HESA's JACS subject area classification. * denotes respondents to HESA's destinations survey.

This data should be taken as indicative only, as the statistics do not account for individuals' choices, and what they might deem to be a positive outcome for them.

Recent trends in take up of STEM qualifications

Having established the importance of STEM skills to the competitiveness of the economy, and the broadly positive labour market outcomes associated with gaining STEM qualifications, it may be useful to examine recent trends in the take up of related qualifications, and how this may impact the future supply of STEM skills in Wales.

GCSEs

Table 5 outlines the number of GCSE entries in STEM subjects. In Science, there has been a fairly strong trend towards taking the three main sciences (Biology, Chemistry and Physics) as separate GCSEs, while combined science GCSEs have seen falling numbers of entries. There have been significant falls in the take up of Design and Technology GCSEs, with almost 3,000 fewer entries in 2012 than in 2009, while the number of IT entries has fallen by more than half (almost 5,000 fewer entries).

The number of entries in vocational GCSEs has also fallen, across all STEM subjects, with no entries at all in IT or Manufacturing by 2012.

Table 5: GCSE entries by STEM subject, Wales, 2009-2012

STEM Subject	2009	2010	2011	2012	Change 2009-12	% change
Biological Sciences	4,346	4,486	5,000	5,520	1,174	27.0%
Chemistry	4,124	4,295	4,849	5,319	1,195	29.0%
Physics	4,088	4,279	4,728	5,251	1,163	28.4%
Science Single Award	0	7,743	0	0	0	-
Other Science	47,423	37,519	41,080	38,368	-9,055	-19.1%
Design and Technology	11,949	11,480	9,981	9,013	-2,936	-24.6%
ICT	9,670	9,056	7,050	4,742	-4,928	-51.0%
Mathematics	36,731	36,364	34,140	38,820	2,089	5.7%
Vocational subjects						
Additional Applied Science	2,107	2,255	2,190	1,850	-257	-12.2%
Engineering	592	520	548	503	-89	-15.0%
IT	904	688	412	0	-904	-100.0%
Manufacturing	44	0	0	0	-44	-100.0%
Science	3,368	3,830	3,770	2,310	-1,058	-31.4%
STEM Subjects	125,346	122,515	113,748	111,696	-13,650	-10.9%
All subjects	295,871	292,280	276,824	270,177	-25,694	-8.7%

Source: Welsh Government, Schools Statistics, Schools in Wales: Examination performance Bulletins 2009-2012
<http://wales.gov.uk/topics/statistics/theme/schools/?lang=en>

A Levels

Take up of STEM subjects at A Level has grown, with the number of STEM entries up by 4.6% between 2009 and 2012, compared to just 1.2% across all subjects (Table 6).

By individual subject, similar trends as in GCSEs are evident in the take up of STEM A Levels, with ICT entries down by more than 25% between 2009 and 2012, and Design and Technology down by almost 10%. On a positive note, the number of Mathematics entries has increased by 17.5%, with strong increase in vocational entries in IT and Science, largely offsetting the declines in the traditional A levels in these subjects. There were also modest increases in Biology and Chemistry.

Table 6: A Level entries by STEM subject, Wales, 2009-2012

STEM Subject	2009	2010	2011	2012	Change 2009-12	% change
Biological Sciences	2,173	2,552	2,403	2,350	177	8.1%
Chemistry	1,794	1,967	1,907	1,878	84	4.7%
Physics	1,236	1,368	1,238	1,233	-3	-0.2%
Other Science	268	320	266	110	-158	-59.0%
Design and Technology	950	1,005	993	857	-93	-9.8%
ICT	1,713	1,687	1,492	1,264	-449	-26.2%
Mathematics	2,747	3,135	3,039	3,228	481	17.5%
Vocational Subjects						
Engineering	0	0	2	0	0	-
IT	52	75	339	371	319	613.5%
Science	20	87	150	161	141	705.0%
Science: Electronics	0	0	0	135	135	-
STEM Subjects	10,953	12,196	11,829	11,452	499	4.6%
All Subjects	31,111	34,933	32,126	31,485	374	1.2%

Source: Welsh Government, Schools Statistics, Schools in Wales: Examination performance Bulletins 2009-2012
<http://wales.gov.uk/topics/statistics/theme/schools/?lang=en>

Higher Education

The broadly positive trends in STEM A Level entries translate into increasing levels of participation in STEM subjects in higher education. The number of Welsh first year HE students in STEM subjects has risen by more than 4% between 2009 and 2012, compared to a 10% fall in non-STEM subjects (Table 7). By subject, the biggest increase in take up has been in Engineering & technology, with more than 400 additional first year students over the same period, a rise of 18.4%. The number of Computer science students has fallen by around 10% since 2010, but still remain about 2009 levels.

Table 7: Welsh-domiciled first year HE students by STEM subject, 2008/09 - 2011/12

STEM Subject	2008/09	2009/10	2010/11	2011/12	Change 08/09 - 11/12	% change 08/09 - 11/12
Medicine & dentistry	710	730	750	765	55	7.7%
Subjects allied to medicine	5,935	6,435	5,600	5,895	-40	-0.7%
Biological sciences	3,085	3,345	3,115	3,175	90	2.9%
Veterinary science	60	50	60	55	-5	-8.3%
Physical sciences	1,585	1,710	1,510	1,610	25	1.6%

Mathematical sciences	465	505	520	485	20	4.3%
Computer science	1,540	1,810	1,695	1,625	85	5.5%
Engineering & technology	2,285	2,590	2,295	2,705	420	18.4%
STEM Subjects	15,665	17,175	15,545	16,315	650	4.1%
Non-STEM Subjects	35,075	33,550	32,860	31,585	-3,490	-10.0%
All Subjects	50,740	50,725	48,405	47,900	-2,840	-5.6%

Source: HESA

Summary

Research by the Royal Academy of Engineering estimates that 40% of jobs in higher managerial or professional jobs are in science, technology and engineering occupations. Employment in these 'higher' level occupations has grown by around 42,000 in Wales between 2009 and 2013 (source: Annual Population Survey), compared to just under 20,000 (1.5%) across all occupations, confirming their increasing importance to the economy.

This trend is forecast to continue through to at least 2020, according to forecasts published by the UK Commission for Employment and Skills (UKCES)³. These predict an overall expansion of around 71,000 additional jobs in Wales between 2010 and 2020, all of which can be accounted for by growth in higher occupations (managerial, professional and technical), while other occupations will account for approximately the same number of jobs in 2020 as in 2010.

This data only reinforces that the STEM agenda and the supply of relevant STEM skills will only become more important in the coming years. The brief analysis presented here suggests a broadly positive picture in terms of how this message about the way the labour market is changing is getting through to young people and influencing their choices. At GCSE level, there have been some significant declines in the take up of ICT and design and technology options in Wales, but the available data also suggests that those young people taking a greater number of STEM GCSEs are more likely to carry on studying STEM subjects through to A Levels and higher education.

References

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<http://wales.gov.uk/docs/dcells/publications/121008stemguidanceen.pdf>

³ Working Futures 2010-2020

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