

**A Review of the Statistical Issues  
Underlying Welsh Medium Initial  
Teacher Training Intake Planning**

**Contract: ETL-09-17-005**

**Final Report**

**for**

**Department of Education, Lifelong Learning  
and Skills**

**Welsh Assembly Government**



**In association with:**

**Professor Peter Dolton**

**Professor Geraint Johnes**

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# 1 Introduction

1. This report is submitted by LE Wales to the Department of Education, Lifelong Learning and Skills of the Welsh Assembly Government as part of Contract ETL-09-17-005. Under this contract LE Wales has undertaken a review of the statistical issues underlying Welsh medium initial teacher training intake planning.

## 1.1 Terms of reference

2. The general objectives of the review were to examine and make recommendations on:
  - the development of clearer figures on the current and future demand for Welsh medium teachers in maintained schools in Wales; and
  - the production of robust modelling methods to assist with better planning and help set the intake targets for Welsh medium ITT courses to more effectively meet this demand.
3. More specific requirements were to examine:
  - what currently constitutes a defined “Welsh medium ITT course”;
  - the existing statistical resources covering Welsh medium ITT and Welsh medium teachers;
  - how statistical information and course definitions might be used in a robust modelling method to assist in planning for future Welsh medium ITT;
  - on what basis realistic and achievable indicative ITT course intake targets might be produced for Welsh medium ITT as part of the overall intake target setting process.

## 1.2 Structure of this report

4. Chapter 2 of this report presents some information on the context for this study, relating to Welsh medium schools, pupils and teachers. In Chapter 3 the main modelling options are reviewed in the context of relevant data sources. Issues relating to target setting and the definition of a Welsh medium ITT course are discussed in Chapter 4. Our main recommendations are presented in Chapter 5.

5. The report also includes a number of Annexes, which set out our approach to this study (Annex 1); outline some of the principal relevant data sources (Annex 2); describe the DfES Teacher Supply Model (Annex 3); and discuss some of the wider UK evidence relating to teacher supply (Annex 4).

### 1.3 Acknowledgements

6. LE Wales would like to thank a wide array of interested parties for the useful contributions made during the course of this study. They include representatives of Practitioners Division 1 at the Department of Education, Lifelong Learning and Skills and of the Statistical Directorate at the Welsh Assembly Government; the Welsh Language Board for their contributions and for their organisation of a useful and interesting workshop on these topics; attendees at that workshop; and other stakeholders who agreed to meet us and discuss these issues with us and who wrote to us with their views. Some more details of these stakeholders are provided in Annex 1. Finally we would like to thank our study partners, Professors Peter Dolton and Geraint Johnes for giving us the benefits of their experience and insights.

## 2 Context

7. In this section we present some information on the background to the education sector in Wales. In particular, we present administrative data on the extent to which education is provided through the medium of Welsh at school level, the proportion of pupils that are able to speak Welsh and to what extent, as well as information on the capacity of the teaching profession to provide teaching through the medium of Welsh. The information presented is derived from the annual STATS1 and STATS3 data collection exercises<sup>1</sup>.

### 2.1 Welsh medium provision

8. Information from the *2006 Schools in Wales General Statistics* indicates that the number of secondary schools in Wales has fallen marginally since 1980/81 though there has been a significant reduction in the number of primary schools over the same period. In particular, there has been a reduction in the number of primary schools from over 1,900 in 1980/81 to 1,555 in 2004/05.

**Table 1: The number of schools in Wales and the provision of Welsh medium education 1980/81 – 2005/06 by level**

	1980/81	1990/91	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Total number of schools in Wales									
Nursery	69	54		41	41	37	34	34	33
Primary	1,908	1,717	-	1,631	1,624	1,602	1,588	1,572	1,555
Secondary	230	230	-	229	227	227	227	227	224
Percentage of schools having classes where Welsh is the sole or main medium of instruction (primary)									
Percentage of schools where Welsh is taught as both a first and second language (secondary)									
Primary	-	25.9	-	27.0	27.2	28.0	28.2	28.9	29.5
Secondary	34.5	29.6	-	22.3	22.5	22.5	22.0	22.0	22.8
Percentage of schools having classes where Welsh is used as a medium of teaching for part of the curriculum (primary)									
Percentage of schools where Welsh is taught as a first language only (secondary)									
Primary	-	2.1	-	5.3	4.9	4.5	3.7	2.9	2.7
Secondary	2.1	4.8	-	9.2	9.3	9.3	9.7	9.7	9.8

[Continued overleaf]

<sup>1</sup> We present some additional information on the STATS1 and STATS3 in section 8 of this report.

Percentage of schools having classes where Welsh is taught as a second language only (primary)									
Percentage of schools where Welsh is taught as a second language only (secondary)									
Primary	-	50.7	-	67.7	67.9	67.5	68.1	68.2	67.8
Secondary	48.7	56.1	-	68.8	68.3	68.3	68.3	68.3	67.4
Percentage of schools having classes where: no welsh is taught (primary)									
Percentage of schools where no Welsh is taught (secondary)									
Primary	-	14.2	-	0.0	0.0	0.0	0.0	0.0	0.0
Secondary	14.7	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Schools in Wales General Statistics 2005 and 2006

9. The reduction in the number of schools does not imply that there has been a reduction in the number of pupils attending schools in Wales. Since 1990/91 there has been a 9.4% reduction in the number of primary schools, but a 2.9% increase in the number of pupils aged between 5 and 15 in schools in Wales.
10. At primary level, there has been an increase in the proportion of schools where Welsh is the sole or main medium of instruction. In 1990/91, less than 26% of primary schools provided education entirely or predominantly through the medium of Welsh – equivalent to 445 primary schools. By 2005/06, the proportion of primary schools providing education through the medium of Welsh had increased to 29.5% (equivalent to 459 schools) of all primary schools in Wales.
11. The increase in the number of schools teaching the National Curriculum solely or predominantly through the medium of Welsh affects an additional 2,164 primary school pupils in 2005/06 (total 53,251) compared to 2000/01 (total 51,087). In addition to these schools, an additional 2.7% of schools now exist where Welsh is used as a medium of teaching for part of the curriculum. The statistical trend indicates that the overall proportion of schools offering at least some part of the curriculum through the medium of Welsh has remained relatively stable since 1990/91, though at the same time there has been a marginal move towards the entire curriculum being provided through the medium of Welsh (rather than partially).

12. The number of secondary schools<sup>2</sup> where Welsh is taught as both a first and second language has fallen since 1990/91 (68 schools in 1990/91 to 51 schools in 2005/06). In a similar trend to that illustrated in the primary school sector, although there has been a reduction in the proportion of schools where Welsh is taught as both a first and second language, this has coincided with an increase in the proportion of schools where Welsh is taught as a first language only. In terms of the numbers of pupils, in 1990/91, there were 19,242 pupils taught Welsh as a first language compared to 28,264 pupils in 2005/06). There has also been an increase in the proportion of secondary schools where Welsh is taught as a second language and the elimination of secondary schools where no Welsh is taught. In essence, the data appear to indicate that schools have become more specialised in their provision of Welsh or Welsh medium teaching.

## 2.2 Pupils in Wales

13. There is also information on the numbers of pupils according to their ability to speak Welsh. In 1990/91, approximately 6.9% of pupils over the age of 7 i speak Welsh at home, while this proportion (of pupils aged between 5 and 15) had fallen to 6.1% by 2001/02. Over this period the data are based on head teachers' assessments. From 2003, however, the data are based on parental assessments. The discontinuity in the data at this point means that it is not possible to draw clear conclusions about changes in pupils' ability to speak Welsh over the whole period to 2005/06. By 2005/06, 8.6% of pupils are recorded as speaking Welsh at home.
14. The most recent estimates of Welsh proficiency indicate that 35.9% of the primary school population have some capacity to speak Welsh. As will be discussed in a later section, the proportions of pupils with some ability to speak Welsh might provide an indication of the maximum potential demand for Welsh medium education going forward.

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<sup>2</sup> Welsh speaking secondary schools as defined in Section 105 of the Education Act 2002. A Welsh speaking secondary school is one where more than a half of foundation subjects, other than English or Welsh and Religious Education are taught wholly or partly in Welsh

**Table 2: Percentage of maintained primary school pupils, aged 5 - 15, by ability to speak Welsh**

	1990/91	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Speak Welsh at home	6.9	6.3	6.3	6.3	6.2	-	-	8.1	8.6
Do not speak Welsh at home but who can speak Welsh fluently	7.0	9.7	10.0	9.8	10.5	-	-	4.3	4.2
Can speak Welsh but not fluently	14.1	32.2	32.4	32.8	31.2	-	-	21.6	23.1
Cannot speak Welsh at all	72.0	51.8	51.3	51.1	52.0	-	-	62.3	64.1

Source: Schools in Wales General Statistics 2005 and 2006

## 2.3 Teachers in Wales

15. The 2006 *Schools in Wales General Statistics* volume also contains information on the extent to which teachers actually undertake teaching through the medium of Welsh. There are slightly different categorisations of the type of teaching undertaken through or using the Welsh medium depending on whether the primary school or secondary school sectors are under consideration.
16. At primary school level, the data indicate that approximately 20% of primary school teachers actually teach through the medium of Welsh, though this proportion has decreased marginally over the last 5 years as the number of primary school teachers (as a total) has increased in absolute terms with no proportionate increase in the numbers of teachers teaching through the medium of Welsh.
17. Over 60% of teachers teach Welsh as a second language – corresponding to a 3 percentage point increase in the proportions teaching Welsh as a second language or 400 full time equivalent (FTE) teachers in absolute terms.
18. Most interestingly, in 2005/06 there were more than 600 FTE teachers who indicated that they were qualified or considered able to teach through the medium of Welsh but did not do so. This corresponds to almost 4% of the population of primary school teachers.



19. To put these estimates of the latent pool of Welsh medium teachers in perspective, the 617 FTE teachers in this category in 2005/06 is greater than the entire cohort of completers of nursery and primary level initial teacher training in Welsh establishments staying in Wales in the same year.<sup>3</sup>
20. This information is presented in the Table below.

**Table 3: Teaching of Welsh in maintained primary schools<sup>4</sup>**

Teachers (Full Time Equivalents) <sup>5</sup>	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Teacher in Wales	13,517	13,636	13,623	13,569	13,474	14,018
Teachers teaching through the medium of Welsh	2,616	2,629	2,843	2,448	2,426	2,546
Teachers teaching Welsh as a second language only <sup>6</sup>	8,022	8,091	8,198	8,384	8,437	8,543
Teachers considered able/qualified to teach welsh but not doing so	278	358	521	674	513	617

Source: Schools in Wales General Statistics 2005 and 2006

21. At secondary level, there is a remarkable degree of stability in the proportions of the school workforce either teaching Welsh as a first language (2.1%-2.3%), as a second language (5.0%-5.2%) or teaching other subjects through the medium of Welsh (11.1%-11.7%). Unlike the primary schools sector the number of teachers in each category has increased in line with the aggregate increase in the number of secondary school teachers overall.
22. As with the primary school sector, there is a small but significant pool of teachers that are either qualified or considered able to teach through the medium of Welsh. In absolute terms this corresponds to approximately 375-400 teachers (out of a total teacher population of approximately 14,300). This information is presented in the Table overleaf.

<sup>3</sup> But see discussion of this issue at the end of the section.

<sup>4</sup> The number of teacher in Wales is expressed as a full time equivalent. In Schools in Wales: General Statistics 2006, the information on teachers teaching through the medium of welsh etc is the number of teachers. In the Table above, we have assumed that 1 part time teacher is 0.5 full time equivalent in order to present the information consistently in the form of full time equivalency

<sup>5</sup> LE Wales have estimated FTE numbers using the data for full time and part time teachers as follows: 1\* FTE = Full Timers\*1 + Part timers\*0.5.

<sup>6</sup> Note that teachers teaching Welsh as a second language in primary schools may not have sufficient Welsh language skills to teach any other subjects through the medium of Welsh.

**Table 4: Teaching of Welsh in maintained secondary schools<sup>7</sup>**

Teachers (FTE)	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Teacher in Wales	13,031	13,291	13,439	13,519	13,767	13,592
Teaching Welsh as a first language	312	301	325	317	328	327
Teaching Welsh as a second language only	737	728	706	755	735	689
Teaching other subjects through the medium of Welsh	1,533	1,581	1,661	1,655	1,711	1,657
Considered able/qualified to teach welsh but not doing so	414	436	292	323	426	440

Source: Schools in Wales General Statistics 2005 and 2006

23. For primary and secondary school teachers, it is important to note that although there appears to be a significant minority of teachers in the system that are recognised as being able to teach through the medium of Welsh but do not currently do so, this does not necessarily mean that all might actually wish to or be in a position to do so. Some of these teachers may currently teach specialist subjects through the medium of English, or have been teaching through the medium of English for many years, and require booster classes to teach through the medium of Welsh (assuming there is a demand for them to do so). Others might teach in schools or regions that are predominantly English medium and there is no opportunity or necessity to change the medium of provision.
24. The experience of a limited interest from teachers in the Welsh medium sabbatical scheme may suggest that there is limited interest from this pool of teachers in switching to Welsh medium provision, though there may also be other factors more specific to the scheme itself that contribute to this experience.

## 2.4 Initial Teacher Training/ New Entrants

25. In this section we consider some of the recent trends in initial teacher training and new entrants to the teaching profession by geographical location and teaching sector. These data do not provide separate information for new teachers teaching through the medium of Welsh.

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<sup>7</sup> The number of teacher in Wales is expressed as a full time equivalent. In Schools in Wales: General Statistics 2006, the information on teachers teaching through the medium of welsh etc is expressed by the number of full time teachers and the number of part time teachers. In the Table above, we have assumed that 1 part time teacher is 0.5 full time equivalent in order to present the information consistently in the form of full time equivalency

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26. The data illustrate that the number of completers of initial teacher training provided by establishments in Wales has ranged between 1,960 (in 2000) and 2,140 (in 2004). Of these, the data in the table illustrate that a significant proportion were not in service, in either England or Wales, in March of the year following completion – 41% (820 teachers) in 2000 and 38% (820 teachers) in 2004.
27. It is likely that by March of the year following ITT completion there are still many graduates that are looking for permanent or suitable positions in the teaching profession (and might be employed as supply teachers in the meantime). Though these graduate teachers may become part of the teaching profession later, they are not identified as being in the teaching profession in these data.<sup>8</sup>
28. The figures in Table 5 suggest that for 2004, the latest year for which data are available, of those who successfully completed their ITT in establishments in Wales, 38% were working as teachers in Wales, 23% were working as teachers in England or elsewhere and 38% were not in a permanent teaching position by March of the following year.

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<sup>8</sup> The total in service figures from the Database of Teacher Records, from which these data derive, do not include those for whom details are not recorded, principally those not in the Teacher Pension Scheme (TPS). This is likely to include teachers who have qualified and are on short term supply work because they cannot find permanent posts.

29. As suggested above, some of those not in a permanent teaching position by March of the following year, may still be looking for a permanent teaching post and may be working in temporary teaching positions. The Higher Education Statistics Agency (HESA) Student Record and Survey of the Destinations of Leavers from Higher Education are further sources of relevant data. Information for Wales<sup>9</sup> is based on response rates of 69% of PGCE completers in 2004/05 and 85% for first degree ITT completers in 2004/05. This makes these figures difficult to reconcile with the figures presented in Table 5, which are based on the whole population of ITT completers.<sup>10</sup> The HESA data suggest that, in January 2006, for those 2004/05 completers whose destinations were known, 90 per cent of PGCE completers were in a teaching post (59% in a teaching post in Wales), 5 per cent were seeking a teaching post and only 5 per cent were not seeking a teaching post. In addition, 82 per cent of first degree qualifiers were in a teaching post (61% in a teaching post in Wales), 11 per cent were seeking a teaching post and only 7 per cent were not seeking a teaching post.<sup>11</sup>

**Table 5: New entrants to teaching: successful ITT completers, by country and sector of service and percentage in Wales on 31 March on the following year**

	2000	2001	2002	2003	2004
Total number of successful ITT completers from Welsh ITT establishments (a)+(b)+(c)+(d)	1,970	2,090	2,050	2,120	2,140
Successful nursery and primary ITT completers from Welsh ITT establishments working in England and <b>Wales</b> the following year	470	510	440	440	410
Number and (percentage) in Wales on 31 March on the following year	230 (49%)	250 (48%)	250 (57%)	300 (69%)	260 (63%)
Successful secondary ITT completers from Welsh ITT establishments working in England and <b>Wales</b> the following year	610	760	720	840	830
Number and (percentage) in Wales on 31 March on the following year	410 (66%)	510 (67%)	530 (73%)	570 (68%)	560 (67%)
Successful nursery, primary and secondary ITT completers from Welsh ITT establishments working in <b>Wales</b> the following year (a)	640	760	770	860	820

<sup>9</sup> See the analysis by the WAG Statistical Directorate at:

<http://new.wales.gov.uk/topics/statistics/headlines/post16ed-2007/post16ed-2006/hdw200607262/?lang=en>

<sup>10</sup> The definitions and sizes of the whole populations are also different. The total number of ITT completers in 2004/05 from the HESA data is 2,045 whilst the total number of ITT completers in 2004 from the Schools in Wales data is 2,140.

<sup>11</sup> HESA is also currently in the process of undertaking a survey of current destinations of a sample of graduates from the 2002/03 leaving cohort.

Successful nursery, primary and secondary ITT completers from Welsh ITT establishments working in <b>England</b> the following year (b)	440	520	390	410	410
Successful nursery, primary and secondary ITT completers from Welsh ITT establishments working elsewhere the following year (c)	60	50	70	70	90
Total not in service (d)	830	760	820	780	820
Percentage of successful nursery, primary and secondary ITT completers from Welsh ITT establishments who are in service on 31 March in the following year	58%	63%	60%	63%	62%
Percentage of successful nursery, primary and secondary ITT completers from Welsh ITT establishments who are in service in Wales on 31 March in the following year	33%	36%	38%	40%	38%

Source: Schools in Wales General Statistics 2005 and 2006

30. There are a number of sources of potential wastage between the point when an individual enters an initial teacher training course and entering the profession. There are some indications from the published data of the extent of this wastage at the various stages:

- Using data from the HESA Student Record,<sup>12</sup> it is possible to note that in December 2004/05 there were 1,525 first year students enrolled on PGCE courses in Wales, however only 1,465 students were recorded as having completed a PGCE in Wales in 2004/05. Assuming that all PGCE courses are one year in length, this suggests a wastage rate of 4% at this stage.<sup>13</sup>
- Using the same data sources it can be seen that 640 students completed a first degree course leading to QTS in 2004/05 in Wales. In 2002/03, however, 815 first year students were recorded on first degree courses leading to QTS in Wales. Assuming that all first degree courses leading to QTS are three years in length, this suggests a wastage rate of 22%.<sup>14</sup>
- The HESA data quoted earlier, also suggests that for those ITT completers in 2004/05, whose destinations are known, in January 2006 only 59% were in a teaching post in Wales, with most of the remainder teaching elsewhere, mainly in England. It is likely however that some of those ITT completers whose destinations were not known (26%) will end up in a teaching post in Wales.

<sup>12</sup> Based on the WAG Statistical Directorate's Statistical Bulletin SB 17/2006, 16 March 2006.

<sup>13</sup> The figures for 2003/04 and 2002/03 were 8% and 7% respectively.

<sup>14</sup> It is important to note that some first degree courses leading to QTS are 2 years or 4 years in length.

## 3 Modelling Supply and Demand

### 3.1 General modelling options

31. For this study we considered three general options for modelling the supply and demand of Welsh medium teachers.
32. The context for the consideration of these options was the plan by DELLS to develop a teacher supply-demand model for Wales, similar to the models used in England and Scotland, as the basis for modelling the demand and supply of teachers in Wales for use in intake planning. Thus, in our consideration of practical options for modelling the demand and supply of Welsh medium teachers, we needed to take account of the fact that the teacher supply-demand model would be used as the basis for intake planning more generally in Wales.
33. At the time of completion of this report, planning for the wider work on modelling supply and demand for intake planning in Wales was underway but decisions about the structure of the model and the data sources had not yet been taken. We are aware that the current expectation is that Welsh specific data will be used in a model that is similar to the teacher supply models used in England and in Scotland but which does not, initially at least, introduce some of the complexities of the English model, particularly in relation to the econometric elements.
34. In this context, the three general modelling approaches we considered are outlined below.
  - i. **Teacher supply-demand model using existing data sources.** It was envisaged that this approach would involve a similar structure to the models used in England and Scotland and be based on existing Welsh data, supplemented if necessary by data from elsewhere. Some simple adjustments would be made in order to reflect some of the key Welsh medium issues. Given pressure on resources, this would be the option most likely to be practical in the short run (over the next 6-12 months).
  - ii. **Teacher supply-demand model using new data sources.** It was envisaged that this approach would be taken forward under the same modelling framework but that more extensive modifications would be made in order to reflect Welsh medium issues. This approach would involve the collection of new data and might be practical to implement in the medium term (12-24 months).

- iii. **‘Greenfield’ modelling.** This would involve developing a new model structure that was directly aimed at modelling Welsh medium supply and demand. There are various alternative possibilities – it might, for example, involve a more disaggregated approach with a more detailed regional and subject based structure. Given the planned use of a teacher supply-demand model with a similar structure to the English and Scottish models as a basis for intake planning more generally, it was agreed not to consider a greenfield approach for Welsh medium modelling in any further detail as the other two options were likely to be much more practical in the short and medium term.<sup>15</sup>

35. In the remainder of this Chapter, we discuss first demand modelling and then supply modelling in the context of the available data on Welsh medium factors. We make some proposals for the way forward in the context of our discussion above of modelling options 1 and 2. We then review how estimates of the demand for Welsh medium teachers and the supply of Welsh medium teachers can be used for intake planning.

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<sup>15</sup> Approaches to teacher supply-demand modelling in other countries are described elsewhere. Some examples include:

Scottish Executive Statistics Publication Notice, Results of Teacher Workforce Planning for 2005/06, 15 February 2005.

Centre for National Education Statistics, Modelling Teacher Supply and Demand, with Commentary, June 1993, USA.

Institute of Education Sciences, Using Teacher Supply and Demand Analysis in Policy Making, November 2003, USA.

Higher Education Authority, Supply & Demand for Second Level Teachers, December 2002, Ireland.

Auditor-General Victoria, Teacher Workforce Planning, November 2001, Australia.

Some academic work seeks to model, in a fully dynamic framework, the decision made by individuals in each period to work as a teacher or not to work as a teacher. This type of modelling framework examines how individuals, who may have different characteristics when they start their careers, make choices in each period, these choices themselves affecting the characteristics that the individuals subsequently have to offer in the labour market. People are assumed to make these choices rationally, taking full account of the returns that are yielded throughout their working lives, but there is recognition in the model that not everything is deterministic - in other words individuals are bombarded with random shocks throughout their careers. A great advantage of this kind of modelling is that the empirical work is done by estimating the parameters of a dynamic theoretical model. This means that it is easy, in principle, to evaluate the effects on teacher supply of a variety of policy options using this kind of model. In practice however these models are computationally very burdensome, and also very labour intensive to set up. See, for example:

Stinebrickner, Todd R. “A Dynamic Model of Teacher Labor Supply,” *Journal of Labor Economics* 19(2001): 196-230

Stinebrickner, Todd R. “Compensation Policies and Teacher Decisions,” *International Economic Review* 42(2001): 751-779.

## 3.2 Modelling the demand for Welsh medium teachers

### 3.2.1 General considerations

36. The demand side of the teacher supply-demand model is relatively straightforward conceptually with the projection of demand being based on the projection of pupil numbers combined with a projection of the desired teacher-pupil ratio. We propose the same structure for modelling the demand of Welsh medium teachers.
37. The main additional difficulty in a Welsh medium context is the estimation of the proportion of projected pupil numbers that will receive, or want to receive, their education through the medium of Welsh.
38. The size of this proportion is affected by a number of factors:
  - It will depend to some extent on the language skills of the pupils – how many can learn Welsh as a first language subject, how many can learn Welsh as a second language, or need immersion language teaching, and how many can learn other subjects through the medium of Welsh.
  - Preferences, of pupils and their parents, are another factor that may be different to skills. Not all pupils with strong Welsh language skills necessarily want to learn every subject through the medium of Welsh. Preferences will in turn be driven by a number of factors including the wider policy environment, social and cultural attitudes and the perception of the potential future demand for Welsh language (and English language) skills in the workplace.
  - There may also be barriers to take up that have an impact on perceived demand. One barrier that was mentioned several times during our discussions with stakeholders was travel distances to Welsh medium schools. There was a feeling by some that, in South East Wales in particular, there would be more demand for places in Welsh medium schools if there were more schools, such that travel distances for pupils were shorter.
  - The proportion of pupils in any one year group wishing and able to learn through the medium of Welsh will also be affected by the extent to which they have had access to Welsh medium provision in previous years.

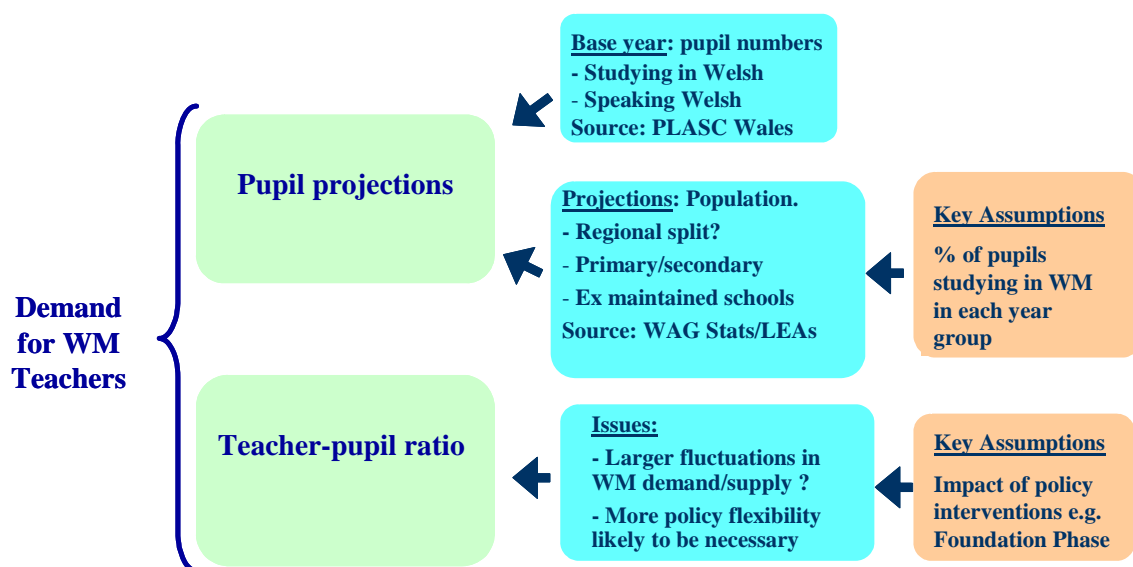


39. There may also be important differences in the proportion of pupils learning, or wanting to learn, through the Welsh medium by geographical region and by subject or type of schooling (e.g. primary or secondary). In general, a higher proportion of pupils have strong Welsh language skills in South West and North West Wales. There may also be a perception that higher education and workplace demands mean that English is a more appropriate medium for some subjects (such as the sciences).

### 3.2.2 Data availability and demand modelling

40. In order to make projections of numbers of pupils learning through the medium of Welsh a base year estimate of these pupils is required, together with a means for projecting forward changes to the current base year numbers. Figure 3.1 illustrates some of the demand modelling and data issues that are discussed in this section.

**Figure 3.1: The demand for Welsh medium teachers**



Source: LE Wales

#### Base year pupil numbers

41. Data on the number of pupils currently studying through the medium of Welsh and the number of pupils able to speak Welsh are available from the Pupil Level Annual Schools Census for Wales (PLASC Wales).

42. PLASC Wales provides data on the number of pupils who study Welsh as a first language; the number of pupils who study Welsh as a second language; and the number of pupils who study one or more other subjects through the medium of Welsh.<sup>16</sup> It also provides data on the number of pupils who speak Welsh fluently; the number of pupils who can speak Welsh, but not fluently; and the number of pupils who cannot speak Welsh. There are also data on the number of pupils who speak Welsh at home.
43. There does not appear to be any clear information currently available on the extent to which there are pupils who would like to receive Welsh medium education but who are not in receipt of Welsh medium education.<sup>17</sup> Our consultations with stakeholders certainly suggested that there are barriers to the take up of Welsh medium education and that there may well be unmet demand. Barriers include the limited number of schools providing Welsh medium education in some areas. Even where existing Welsh medium schools have spare capacity, pupils who would otherwise take up Welsh medium education may not be willing to travel long distances in order to avail of this capacity.

#### **Projections of pupil numbers**

44. The Welsh Assembly Government Statistical Directorate have recently published the latest pupil projections for Wales, based on the school population of Wales at January 2006 and the general population trends indicated by the 2005 based population projections for Wales produced by the Government Actuary's Department.<sup>18</sup>
45. The projections are for the period to 2014/15 and are provided at a national level for Wales and include separate projections for pupils in maintained nursery schools, maintained primary schools and maintained secondary schools. They assume that participation rates for all age groups and types of school remain constant over the period.

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<sup>16</sup> Note that, as it stands, this data would not enable the modelling of demand for Welsh medium education by subject. We suggest that this is an area where the data could be improved for the future. As the data is collected at the school level and is available at the LEA level it would enable the modelling of demand by different geographical areas.

<sup>17</sup> Though see discussion of the LEA Welsh Education Schemes below.

<sup>18</sup> Schools in Wales: General Statistics 2006, Appendix 1.

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46. We considered whether it would be beneficial to develop regional projections of demand for Welsh medium pupils. In 2005 the WAG Statistical Directorate published regional population projections for Wales, using 2003 demographic data as a baseline.<sup>19</sup> These projections extend to 2023 and are provided for four regions of Wales: North Wales, Mid Wales, South West Wales and South East Wales. Whilst the published age bands for these projections (0-4; 5-15; 16-24 etc.) do not match those that would be most appropriate for pupil projections, we presume that it would be relatively straightforward to derive projections with more appropriate age bands.<sup>20</sup>
47. These regional population projections are driven by demographic factors only. They do not attempt to take account of the local population impacts of policy changes and other factors such as the development of new housing etc. Statistical Bulletin SB 40/2005 refers to local population projections produced by each of the LEAs that do aim to take account of policy and planning factors, in addition to demographic trends.
48. Whilst we considered whether there was scope to develop regional demand and supply projections for Welsh medium teachers, we concluded that it would not be practical to do so at this stage. We drew this conclusion mainly on the basis of supply side factors, though it is also clear that were regional demand forecasts to be developed, there would be more uncertainty over the regional projections than over national projections because of the scope for migration between regions. On the supply side there are plans to reconfigure ITT provision based on fewer providers, and it is likely that a reasonable geographic spread of providers would be sought. Nevertheless it is highly unlikely that after any reconfiguration all centres would offer the same range of Welsh medium ITT courses. It is more likely that each centre would tend to 'specialise' in some types of provision, and that they would each become a national supplier of teachers for those specialisms, rather than be only a regional supplier of teachers for all specialisms. This would make adding a regional element to supply-demand projections less relevant for intake planning purposes.
49. Together with the overall pupil projections for Wales an assumption needs to be made about how the proportion of school age children that wish to learn through the medium of Welsh will change over time. The relevant data that are available include:

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<sup>19</sup> Statistical Bulletin SB 40/2005, 2003-Based National and Sub-National Population Projections for Wales, 23 June 2005.

<sup>20</sup> Small adjustments may also need to be made to reflect the numbers of school age children who do not study at maintained schools, because they study elsewhere e.g. private schools, at home.

- The current proportions of pupils in each year group who study Welsh as a first language; Welsh as a second language; and at least one other subject through the medium of Welsh.
  - The current proportions of pupils in each year group who speak Welsh fluently; the number of pupils who can speak Welsh, but not fluently; and the number of pupils who cannot speak Welsh. There are also data on the number of pupils who speak Welsh at home.
50. We propose that assumptions about the proportion of pupils learning through the medium of Welsh used in the demand modelling reflect two elements. First, the nature of demand as reflected by current take up of Welsh medium classes in each category; and second, the extent to which policy measures or other changes in the education environment may stimulate further take up, or reduce barriers to further take up.
51. The actual take up can be measured by the proportions of pupils in each year group who study Welsh as a first language; Welsh as a second language; and at least one other subject through the medium of Welsh (PLASC Wales). For the purposes of projecting forward it could be assumed initially that the same proportion of all pupils studies Welsh in each of these three categories, or that past trends continue in future. Adjustments would then need to be made to this core projection to reflect the impact of policy measures or other changes in the education environment. In assessing the potential impacts on Welsh medium take up from these factors, account would need to be taken of the proportions of pupils able to speak Welsh. These may act as ceilings for take up unless policy measures, or other factors, also increase the proportions of pupils able to speak Welsh.
52. The LEAs are also a further source of information on potential future changes in Welsh medium pupil numbers. They are required by statute to produce Welsh Education Schemes. These schemes set out current practice and plans in relation to Welsh medium education and are agreed with the Welsh Language Board. The schemes tend to follow a similar format and they include an indication of LEA views on the development of demand for Welsh medium education in their areas.
53. The timing of the publication of Welsh Education Schemes by the LEAs varies and also the detail of the content varies, such that the information in relation to future demand for Welsh medium education differs. In some cases it is largely qualitative and in others there is a higher quantitative element. These inconsistencies mean that the Welsh Education Schemes are not currently suitable as a source of information that can be used directly in the demand modelling. Consideration could be given to the scope for introducing some more consistency in respect of views on demand across the Schemes, though any benefits from this would only be seen in the longer term and might be most relevant where regional demand-supply modelling is being undertaken.
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### The Teacher-Pupil Ratio

54. The Teacher Supply Model assumes that the teacher-pupil ratio does not decline (ie the number of pupils per teacher does not increase) and seeks to incorporate expectations about the impacts of policy initiatives on the teacher- pupil ratio. In respect of demand for Welsh medium teachers, the introduction of the Foundation Phase, for example, may have impacts on the appropriate teacher pupil ratio.
55. The potential for mismatches in the supply and demand of Welsh medium teachers, particularly when disaggregated by region or by subject, means that some policy flexibility with respect to the teacher pupil ratio may be necessary. A relaxation of this constraint is one mechanism that can contribute to the matching of supply and demand.<sup>21</sup>

## 3.3 Modelling the supply of Welsh medium teachers

### 3.3.1 General considerations

56. The supply side of the teacher supply-demand model is considerably more complex than the demand side. As it is not yet clear how the WAG will develop a teacher supply-demand model specific to Welsh circumstances,<sup>22</sup> it is difficult to provide detailed advice at this stage on how the Welsh medium elements of teacher supply in Wales can be taken into account in the modelling for Wales.
57. Nevertheless, it is possible to make a number of useful points. In parallel with the main problem on the demand side, the main additional difficulty for modelling supply in a Welsh medium context is the estimation of the proportion of projected teacher numbers that will be able to provide, or want to provide, education through the medium of Welsh.
58. The size of this proportion is affected by a number of factors:
- It will depend to some extent on the language skills of the teachers – how many can teach Welsh as a first language subject, how many can teach Welsh as a second language, or as an immersion language, and how many can teach other subjects through the medium of Welsh. This will be determined in part by the extent of their own education both through the Welsh medium and in the Welsh language.

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<sup>21</sup> Clearly, the educational consequences of this would also need to be considered.

<sup>22</sup> We understand for example that, initially at least, the wastage element of the model in Wales is unlikely to involve econometric analysis.

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- Teacher preferences are another factor that may be different to skills. Not all teachers with Welsh language skills necessarily want to teach through the medium of Welsh. Even some with strong general Welsh language skills may have limited subject-specific language skills and may not be confident in teaching their subject through the medium of Welsh. This may be a result of limited access to Welsh medium provision in their own education, e.g. in first degrees or in ITT. It may in particular be influenced by whether a trainee is able to achieve a Welsh medium induction. In the context of Scotland's programme of guaranteed induction places,<sup>23</sup> the Scottish Executive aim to ensure that trainees who express a preference for induction in a Gaelic medium school are usually able to do so. In Wales, the Welsh Assembly Government plans to consider options for detailed examination of a guaranteed induction scheme once the supply of newly qualified teachers (NQTs) in Wales is more closely aligned with demand.<sup>24</sup> In that context consideration of whether similar Welsh medium provisions in Wales might contribute to raising the proportion of teachers willing to teach through the medium of Welsh would be useful.
- There is also scope for 'leakage' of Welsh medium teachers to English medium provision. Teachers who are qualified to teach through the medium of Welsh are also qualified to teach through the medium of English. Whilst stakeholders tended to suggest that career progression was likely to be better for Welsh medium than for English medium teachers, there are still many opportunities for leakage of this kind.<sup>25</sup>

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<sup>23</sup> The Scottish Executive's Teacher Induction Scheme guarantees a one-year training post to every eligible student graduating with a Teaching Qualification from a Scottish Higher Education Institution. This includes a matching system which allocates probationers to local authorities; it is then the local authorities' responsibility to allocate probationers to schools within their area. Local authorities' prime responsibility is to ensure they meet their statutory responsibilities to provide every child of school age with school education. This means that the allocation of students to authorities and schools must take full account of the needs of the service as well as the preferences of students. As part of this matching process, students are asked to indicate if they speak Gaelic fluently and wish to teach in the medium of Gaelic. Whilst every effort is made to allocate probationers to one of five preference authorities they specify, there is no absolute guarantee. If an NQT is allocated outside their five preferences, they become eligible for a £6,000 Preference Waiver Payment.

<sup>24</sup> This commitment was made by the Welsh Assembly Government in their response to the Furlong Report on the Review of Initial Teacher Training Provision – presented on 29 March 2006 to the National Assembly of Wales Education and Lifelong Learning Committee (ELLS Committee Paper ELLS(2) 06-06(p2).

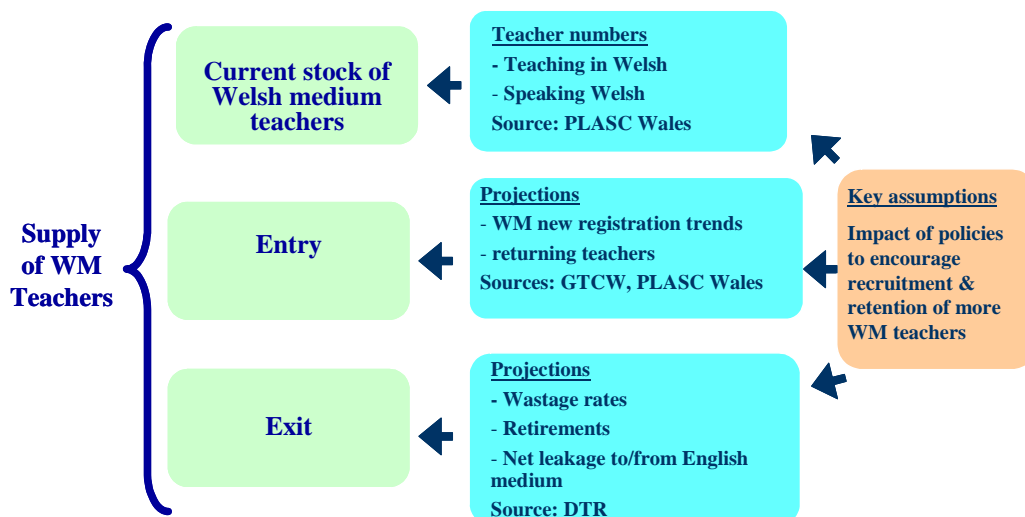
<sup>25</sup> For example where a Welsh medium teacher moves to a location where there is limited Welsh medium provision and teaching vacancies are for English medium provision.

59. There may also be important differences in the proportion of Welsh medium teachers by geographical region and by subject or type of schooling (e.g. primary or secondary). The extent to which these factors are important depends on the extent to which there is flexibility in the workforce, e.g. to move location, to switch teaching subjects, or to switch between primary and secondary teaching. In all three cases, there is likely to be some flexibility, but this flexibility is limited.

### 3.3.2 Data availability and modelling

60. The simplest way to consider the Teacher Supply Model is to view it as an estimate of the current stock of teachers combined with a projection of entry into the profession and a projection of exit from the profession.<sup>26</sup> Complexities are introduced by considering the alternative means of entry and of exit. Available data on Welsh medium aspects of the three principal elements are discussed below. Figure 3.2 illustrates some of the supply modelling and data issues that are discussed in this section.

**Figure 3.2: The supply of Welsh medium teachers**



Source: LE Wales

<sup>26</sup> See Annex 3 for more details of the Teacher Supply Model.



**Current stock of Welsh medium teachers**

61. Data on the current stock of teachers in Wales are available from the Pupil Level Annual Schools Census for Wales (PLASC Wales).
62. PLASC Wales provides data on the number of teachers who teach Welsh as a first language; the number of teachers who teach Welsh as a second language; the number of teachers who teach other subjects through the medium of Welsh;<sup>27</sup> and the number of teachers who can teach Welsh or other subjects through the medium of Welsh but who do not do so.
63. The PLASC Wales data are collected at the school level and so, unlike the Database of Teacher Records, it does not provide data on individual teachers enabling a link with data on gender, qualifications, salary and other personal information. This link is useful because it enables these variables to be used in the econometric analysis that estimates exit from the profession in the wastage model that is used in England. The Database of Teacher Records does collect information on teachers in Wales, but it does not collect any information relating to Welsh language or Welsh medium teaching.
64. For the future, plans for an annual census of teachers in Wales could resolve this problem, enabling a link between data on individual teacher characteristics generally and data on Welsh medium teaching.<sup>28</sup> In the meantime, the PLASC Wales data would need to be used instead of the Database of Teacher Records in order to obtain Welsh medium data.

**Entry into the profession**

65. The main sources of entry into the profession are newly qualified teachers and previously qualified teachers who are returning to the profession after a period outside the profession (or a period teaching in non-maintained schools).<sup>29</sup>

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<sup>27</sup> Data is not collected on which subjects these are.

<sup>28</sup> The Scottish Executive Annual Teacher Census, for example, collects data on individual teachers, including information on teaching through the medium of Gaelic. See Annex 2.

<sup>29</sup> In our discussion below of exit from the profession and the scope for Welsh medium teachers to switch to English medium provision, we also discuss the scope for English medium teachers to switch to Welsh medium provision. This is another source of entry.

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66. The General Teaching Council for Wales maintains a register of all qualified teachers working in maintained schools in Wales. Qualified teachers working in non-maintained schools are also eligible to register if they wish.<sup>30</sup> Whilst the register does not hold full details in relation to Welsh medium teaching for the stock of teachers, data in relation to the Welsh medium are available for newly qualified teachers. Data are collected about whether the newly qualified teacher is a Welsh speaker; whether they are able to teach through the medium of Welsh; and whether they are able to teach Welsh as a second language.
67. This means that the GTCW register can provide information about new entry into the stock of teachers who are able to teach through the medium of Welsh, but that it does not distinguish between those who do teach through the medium of Welsh and those who do not. For modelling purposes we propose that it is assumed that this proportion is the same as it is for the stock of teachers (derived from the PLASC Wales data).
68. The DfES Teacher Supply Model uses data collected for England by the Training and Development Agency for Schools on the re-entry into the profession of previously qualified teachers. It is not clear at this stage how data for this element will be collected for the modelling in Wales. In the absence of any specific Welsh medium data, we suggest that, initially, the rate of re-entry for Welsh medium teachers is assumed to be the same as for English medium teachers.

### **Exit from the profession**

69. The Teacher Supply Model focuses on exit from the profession through retirement and, separately, through ill health and other reasons.
70. Exit through retirement is estimated through the detailed data on teacher age profiles that are available from the Database of Teacher Records (DTR). As noted above, the DTR includes records for Wales, but does not include any indicators of Welsh medium teaching or ability.
71. We are not aware of any currently available data that links personal data, such as age, on individual teachers with Welsh medium ability.<sup>31</sup> In the absence of such data, we propose that the modelling assumes that Welsh medium teachers have the same age profile as other teachers in Wales. During the course of our study we have not seen any indication (e.g. from stakeholders) that the age profile of Welsh medium teachers is likely to be significantly different from other teachers in Wales.

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<sup>30</sup> See Annex 2 for more details about the register.

<sup>31</sup> The GTCW register is an exception, but this data is only available for newly qualified teachers. It is not available for the whole stock of teachers in Wales.

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72. For the medium term it would be useful to collect data that links age with Welsh medium teaching ability for individual teachers. This would enable the modelling to reflect any differences in age profile that there may be, or which may develop in future. The proposed Annual Census of Teachers in Wales is likely to be the most appropriate method of collection.
73. The DfES wastage model projects the numbers of teachers leaving the profession for ill health or other reasons, based on an econometric analysis of the factors that drive wastage.<sup>32</sup> We understand the WAG Statistical Directorate work for the wider teacher supply-demand modelling is unlikely to use econometric analysis for the wastage model initially, the focus will be on developing a simple model using relevant data sources.
74. Again, the absence of information that links personal data on individual teachers with Welsh medium ability, would make the development of a Welsh medium specific wastage model difficult. In consequence we propose that the initial modelling assumes that Welsh medium teachers are subject to the same wastage rates as other teachers in Wales. For the medium term, the collection of data that link Welsh medium ability with other personal characteristics for teachers, through the Annual Teacher Census for Wales, should enable more robust wastage modelling for Welsh medium teachers specifically.
75. In the course of our discussions with stakeholders, some issues did arise that might suggest that the wastage rates for Welsh medium teachers may be different to wastage rates for other teachers in Wales. It was suggested for example, that Welsh medium teachers, whilst not earning higher salaries at any given point in the salary scale, did experience faster career progression than other teachers in Wales. It was also suggested that Welsh medium primary school teachers are more likely to have a B.Ed. qualification than other primary school teachers in Wales.<sup>33</sup> Both these factors could suggest the possibility of lower wastage rates for Welsh medium teachers. Some of the evidence linking relative pay, which is affected by faster career progression, and the propensity to become and remain a teacher is discussed in Annex 4. Those who hold an undergraduate ITT qualification are also more likely to become and remain teachers.<sup>34</sup>

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<sup>32</sup> Factors such as age, gender, qualifications, relative pay etc.

<sup>33</sup> In their response to the Furlong Report, the Welsh Assembly Government also noted that “the possibility of ending undergraduate ITT.....would severely damage Welsh medium intake to ITT” (paragraph 15.2, ELLS Committee Paper ELLS(2) 06-06(p2), 29 March 2006).

<sup>34</sup> See for example Dolton, P.J. (1990) “The Economics of UK Teacher Supply – the Graduate’s Decision”. *Economic Journal* 100(400): 91-104..

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76. The additional exit factor that is relevant for Welsh medium teacher supply, is movement from the stock of Welsh medium teachers into the stock of English medium teachers. It is important to note that this flow may be a two-way flow, with some teachers currently teaching in the English medium able to switch to Welsh medium teaching and some teachers teaching in the Welsh medium willing to teach in the English medium. The position may also be complicated by the fact that some teachers may teach some classes through the medium of Welsh and some classes through the medium of English.
77. Data about these flows between Welsh and English medium provision are limited. PLASC Wales collects information on the number of teachers who are able to teach Welsh, or through the medium of Welsh, but are not doing so. For the initial modelling, we suggest that it is assumed that this proportion remains constant over time.<sup>35</sup>
78. As for other elements of the supply modelling, the proposed Annual Teacher Census for Wales could provide a better picture of the extent of movements between Welsh and English medium provision if it enables the tracking over time of Welsh and English medium teaching, by teacher.

### **3.4 Estimating the number of Welsh medium ITT places required**

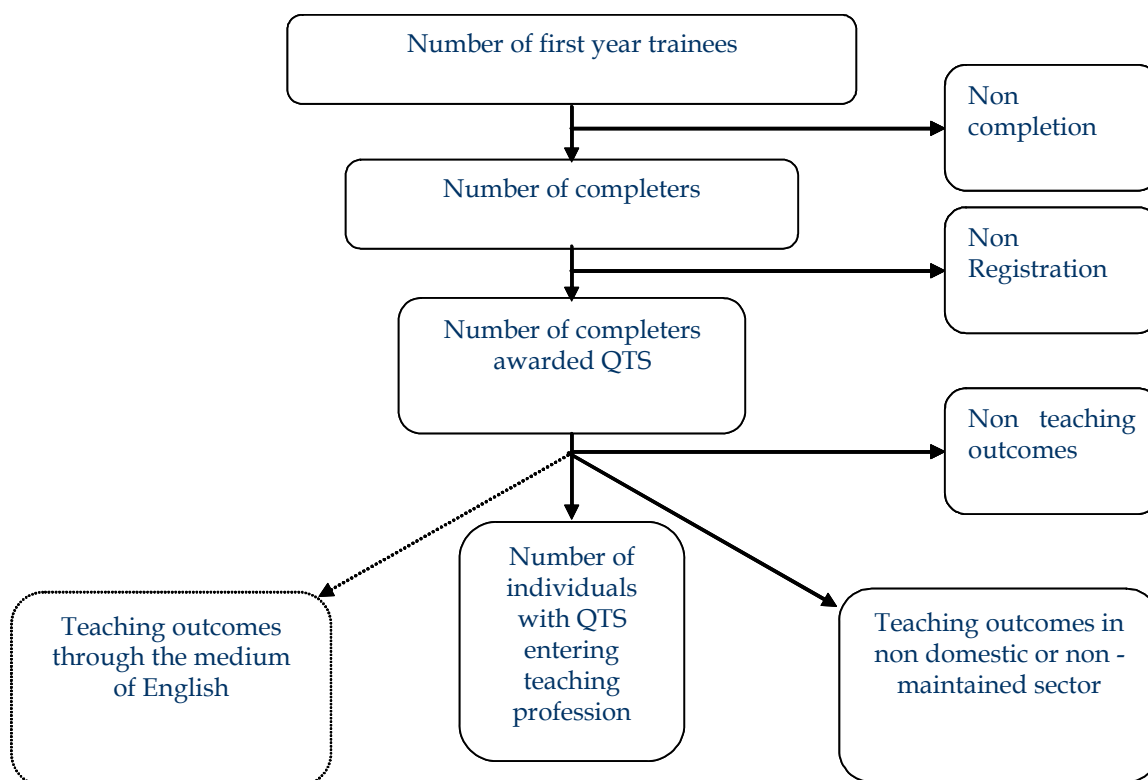
79. In order for the supply and demand modelling discussed in previous sections to be relevant for Welsh medium ITT intake planning, then the link between the supply of Welsh medium teachers and the intake of trainees into Welsh medium ITT needs to be modelled.
80. It can be expected that the number of first year Welsh medium ITT trainees will be larger than the number of newly qualified teachers with QTS who become Welsh medium teachers. There are a number of possible alternative avenues for these individuals as illustrated in Figure 3.3.

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<sup>35</sup> Unless policy measures are introduced which are aimed at encouraging these teachers to move back to Welsh medium provision.

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**Figure 3.3: The link between ITT intake and entry into Welsh medium teaching**



Source: LE Wales

81. Since some students may drop out, the numbers completing their initial teacher training may be smaller than those that started the ITT course. In addition, some of those who complete the course may not move on to achieve Qualified Teacher Status (QTS).

82. Not all Welsh medium teachers who have achieved QTS will start teaching in the Welsh medium in maintained schools in Wales. Some will leave the profession altogether.<sup>36</sup> Some will teach in Wales, but outside the maintained sector, and some will teach outside Wales. Others may teach in Wales, but through the medium of English.

<sup>36</sup> Though a proportion of these may contribute to the Welsh medium workforce in Wales more widely.

83. The main difference that the Welsh medium element introduces is the potential for 'leakage' into English medium provision. Whilst the HESA Survey of Destinations of Leavers from Higher Education collects information about the place of employment of new graduates, with some questions specifically for those who have undergone initial teacher training, no data are collected on the language medium of teaching or the subjects taught. The GTCW register does collect information on newly qualified teachers' ability to teach through the medium of Welsh, but not about whether they are actually teaching through the medium of Welsh.
84. For the initial modelling we suggest that the extent to which newly qualified Welsh medium teachers teach through the medium of English, rather than Welsh, is assumed to be the same as the proportion of teachers, from the stock of all teachers in maintained schools in Wales, who are able to teach Welsh, or through the medium of Welsh, but who do not do so. This information is available from PLASC Wales.
85. It is also possible that the proportions of students/teachers dropping out at other stages in the process will be different for Welsh medium and other teachers. We are not aware of any data that are currently collected that would shed light on this. There was no suggestion from our discussions with stakeholders that Welsh medium students/teachers were any more or less likely to drop out at any stage. We suggest that, initially, the modelling assume that these drop out rates are the same for Welsh medium and other students and teachers in Wales.
86. The final stage for intake planning will be to take account of policy objectives, funding constraints and policy developments that may change the extent of demand or supply of teachers in future. These might include, for example, new policies such as the introduction of the Foundation Phase and the impacts that may have on the demand for Welsh medium teachers; and any measures that could be introduced to encourage existing English medium teachers to move to Welsh medium provision. In the early phase of Welsh medium intake planning we would expect adjustments such as this to be based on separate analysis and judgement rather than on incorporation into the more formal modelling process for teacher demand and supply.

## 4 Other Issues

### 4.1 Defining Welsh Medium ITT

#### 4.1.1 Welsh medium definitions

87. Discussions with stakeholders suggested that there is no universal agreed definition of Welsh medium ITT. It was felt that for their own purposes HEIs used different definitions, depending on the nature of their provision.
88. It was also widely agreed that achieving a universal agreed definition would be difficult because of the complex nature of the issue. There are several different types of Welsh medium teaching provision, provided by teachers with different Welsh language and teaching skills and being provided to pupils with a range of different language skills and needs. Types of provision include teaching of Welsh as a first language; teaching of Welsh as a second language, including immersion teaching; and teaching other subjects through the medium of Welsh. ITT courses are provided through a variety of means including taught elements and placements, all of which have the potential to be in the medium of Welsh or English, and sometimes both.
89. Some stakeholders were attracted to the idea of developing a universal agreed definition, in spite of the difficulties, because of the clarity it could bring to data and the consequent benefits for policy development. Others expressed concerns about the potential adverse consequences of fixing on a specific definition. It was noted that in order to maintain and improve the overall level of Welsh medium teaching provision, Welsh medium ITT providers needed to make a range of alternative learning pathways available to students. It was possible that any chosen definition, if linked to a target, or funding, could adversely affect incentives to provide a suitable range of learning pathways.

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90. As an example, HEFCW have set a Welsh medium threshold for the purposes of defining primary undergraduate Welsh medium intake targets. The threshold is set at the level where a student is taking 60% or more of their course through the Welsh medium.<sup>37</sup> Aside from issues around the difficulty of achieving consistent measurement of the Welsh medium percentage this target quickly raises the issue of what happens where students are in receipt of Welsh medium provision but it is less than 60%. As students taking 25% of their courses through the medium of Welsh, for example, do not contribute to the Welsh medium intake targets is there any other advantage to the provider in continuing to provide this lower level of Welsh medium provision? If not, the provider might cease provision at that level, potentially reducing the overall level of Welsh medium provision. An alternative could be to increase the level of provision for these students to 60%, but this may be costly, and there may not be sufficient demand from students for provision at this level.
91. The definition of 'Welsh medium' is also an issue in schools. Secondary schools are defined in Section 105 of the Education Act 2002 as Welsh medium schools if more than one half of the following subjects are taught wholly or partly in Welsh:
92. Mathematics, Technology, Religious Education, Science, Music, Modern Foreign Languages, History, Art, Geography, Physical Education
93. For the purposes of collecting statistics, Welsh medium primary schools are described as follows:
- Category A: if the school contains classes where Welsh is the main medium *and* if at least half pupils are in such classes;
  - Category B: *either* the school contains a class/classes where Welsh is the main medium but fewer than half the pupils are in such classes, or the school contains a class/classes where Welsh is used as a medium for teaching part of the curriculum.

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<sup>37</sup> In response to the WAG requirement to focus, in amongst other things, on protecting Welsh medium provision overall, HEFCW analysed Welsh medium primary undergraduate provision for 2004/05. This showed that there is wide variation in the proportion of courses (5% - 100%) that students take through the medium of Welsh. HEFCW chose intake planning targets for Welsh medium provision based on thresholds of 60% or more of the course modules being undertaken through the medium of Welsh on the basis that this could be said to signify a serious engagement.

94. The Welsh Assembly Government have also recently consulted on a definition of schools according to Welsh medium provision.<sup>38</sup> Whilst the issues around defining schools and defining courses are different, there are similarities. The consultation paper recognises the difficulty of achieving a useful universal definition for schools.

#### 4.1.2 Welsh medium qualifications

95. The issue of most direct policy interest is not the content of Welsh medium ITT courses but the availability of teachers who are able to teach through the medium of Welsh. One alternative approach to defining the Welsh medium nature of an ITT course might be more closely linked to the training of teachers who are able to teach through the medium of Welsh. This is in contrast to the current approach, which is based on percentages of Welsh medium course content.
96. If there were a widely accepted qualification linked to a teacher's ability to teach through the medium of Welsh, then it might simplify Welsh medium course definitions. Any course that enabled the achievement of the relevant Welsh medium qualification could be defined as a 'Welsh medium' course. This type of approach does not remove the problem of definition. The problem changes from being one of attempting to define appropriate percentages of Welsh medium course content to being one of attempting to define an appropriate qualification and accompanying requirements and/or standards. It may be more possible to resolve the latter problem in a clear, acceptable way.
97. Some stakeholders regarded the Welsh language skills of some teachers that teach through the medium of Welsh, or teach Welsh as a second language, as being poor. The wider use and acceptance of some form of Welsh medium teaching qualification might in the long term also contribute to improving the Welsh language standards of teachers.
98. One option is to incorporate an optional Welsh medium element into current ITT course requirements and/or QTS standards. These could indicate in which language(s) a teacher was competent to teach.

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<sup>38</sup> Welsh Assembly Government, Defining Schools according to Welsh Medium Provision, January 2006. Decisions in response to this consultation have not yet been taken.



99. As part of its consultation on revised QTS standards and requirements for the provision of ITT courses during 2005, the Welsh Assembly Government raised the possibility of introducing a requirement that those entering Welsh medium ITT courses should have achieved a standard equivalent to a GCSE Grade C or above in Welsh (as a first language); and that providers should satisfy themselves that all entrants to courses run through the medium of Welsh were able additionally to communicate clearly and accurately in spoken and written Welsh. These would have matched English language requirements.
100. Following consideration of the consultation responses, these measures were not adopted. Whilst the principle of Welsh medium entry requirements was welcomed by respondents, concerns were raised about the practical aspects of the proposals. It was felt that the proposed requirements would discriminate against those who had learnt Welsh as a second language at school and who had pursued subsequent learning through the medium of Welsh; and that there was no consistent definition of what constitutes a 'Welsh medium course' which would make insistence upon high level language skills on entry difficult to justify or implement. The Welsh Assembly Government has subsequently pursued the question of improving standards through the issues raised in the review of Welsh medium ITT.
101. A second option could be an independent language test (which may not have any elements relating to teaching competencies). Stakeholders pointed to the example of applicants for public sector posts, including teaching posts, in other countries<sup>39</sup> achieving more 'points' in relation to their job application if they were able to do well in an optional language test. Some stakeholders suggested however, that language-specific teaching skills are required in addition to language skills alone.
102. A third option could be the achievement of greater recognition and wider acceptance of the language competency certificates that are currently issued by individual Welsh medium providers. In addition to these formal certificates of bilingual education, providers also record whether a course enables a student to teach bilingually. We suggest that the criteria used to assess the latter should also be included any work undertaken as part of this option, with consideration given to amalgamation of the two elements into one approach..<sup>40</sup>

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<sup>39</sup> Catalonia in respect of Catalan and Ireland in respect of Irish.

<sup>40</sup> HESA, currently collects data on the numbers of trainees that follow a course that enables bilingual teaching or leads to a formal certificate of bilingual education. An advantage of this option would be that it would lead to this data reflecting a common standard, giving it more relevance.

103. Making this option operational would probably need to involve some convergence of standards and cooperation between the providers so that a common standard was used to enable recognition of a Welsh medium course and of teachers competent to teach through the medium of Welsh.
104. An advantage of this option is that it is based on existing practices, involving the achievement of greater convergence of practices across providers, rather than on the introduction of new types of test or qualification. Unlike Option 1, it is not envisaged that it would involve the introduction of any formal requirements for Welsh medium teaching. Instead, it is envisaged that it would involved the development of a more widely accepted form of recognition of Welsh medium teaching skills that schools will be able to, but not be required to, take into account in their recruitment of Welsh medium teachers. Unlike Option 2, it would be flexible enough to incorporate requirements with respect to Welsh medium teaching skills as well as Welsh language skills. One of the key challenges is likely to be the achievement of widespread voluntary acceptance of any resulting certificates/qualifications as a relevant standard for Welsh medium provision.
105. We suggest that the three qualification based options for a Welsh medium definition be considered further by WAG. However, for the reasons outlined above, we believe that the third option is the most likely to be both achievable and beneficial.

## 4.2 Setting Targets

106. We were asked to consider the implications of introducing indicative targets for the provision of Welsh medium initial teacher training in Welsh establishments.
107. The introduction of targets is clearly a contentious issue in many areas of public service provision. Whilst setting targets can be a useful tool for the achievement of objectives, inappropriate target setting can lead to unexpected behavioural changes with unintended and negative consequences.

108. Our discussions with stakeholders suggested that there were mixed views on the desirability of introducing targets specific to Welsh medium provision.<sup>41</sup> Some saw them as a way of ‘forcing’ the provision of more Welsh medium teaching capacity. Others, however, felt that targets were unlikely to have any significant impact. There was a view that the constraining factor for the numbers of Welsh medium ITT students was not the availability of places on Welsh medium ITT courses, but the availability of potential students who wished to take up a place. Setting a target would not influence the number of potential Welsh medium ITT students.

109. If there are no ‘carrots’ or ‘sticks’ associated with an ‘indicative’ target, then this type of target may effectively be a monitoring tool rather than a policy mechanism aimed directly at achieving a particular objective. The Higher Education Institutions had concerns about the funding implications of targets if they were not merely indicative. The concern was that if an institution underperformed against a target because there were not a sufficient number of applicants of reasonable quality, then funding could be lost if it were not possible to transfer the funding to English medium applicants. It was also noted that such a transfer would undermine the purpose of the target in the first place.

110. In order to operate effectively, and irrespective of the public service area, any target needs to be

- specific;
- measurable;
- achievable;
- realistic; and
- time related.<sup>42</sup>

111. Consideration also needs to be given to the positive and negative incentive effects that a target might provide.

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<sup>41</sup> It should be noted that intake targets for Welsh medium ITT undergraduate primary provision have recently been introduced by HEFCW.

<sup>42</sup> SMART is a widely used acronym for describing the characteristics of good targets.

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112. In the case of the provision of initial teacher training through the medium of Welsh, the principal question is whether the provision of initial teacher training through the medium of Welsh can be accurately and consistently measured. As discussed in the previous section, there is no clear and unambiguous definition of Welsh medium initial teacher training. Without a firm and agreed definition, there appears little point in introducing any target to assess changes in provision.
113. The second point relates to whether any target should relate to inputs or outputs. The data presented and discussed in Section 2.4 gives some indication of the potential for differences between the numbers of first year ITT students in Wales and those actually in permanent teaching posts in Wales a short time after completion of ITT, though inconsistencies in the data make it difficult to draw a clear picture. Some students do not complete their ITT courses, and many others are not in full time teaching posts in Wales immediately after completion of their courses, though some of these may well become teachers in Wales at a later stage.
114. In Figure 3.3, we presented a diagram illustrating the reasons why individuals entering initial teacher training in establishments in Wales do not end up teaching in schools in Wales, irrespective of the medium through which the initial teacher training is received. The implication of these findings are that a significant proportion of those entering initial teacher training either:
- do not complete initial teacher training; or
  - do not register for QTS immediately following completion; or
  - do not enter the teaching profession in Wales immediately following QTS; or
  - do not teach in the maintained schools sector in Wales.
115. Simply introducing targets related to inputs (i.e. the number of initial teacher training places provided through the medium of Welsh) may on its own have a limited impact on outputs (the number of Welsh medium teachers). With this input target alone, there are limited incentives for providers to ensure that trainees complete their studies and even more limited incentives to ensure that those trainees completing their studies end up teaching in the Welsh medium, or even in Welsh schools.<sup>43</sup>

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<sup>43</sup> There may of course be other factors that ameliorate this lack of incentives, such as negative funding impacts from low levels of course completion.

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116. For a more substantial impact on outputs, input targets would need to be accompanied by measures to limit the losses in the transition from first year ITT student to employed Welsh medium teacher and by measures to limit the extent of wastage from the stock of Welsh medium teachers. This is difficult to achieve effectively, particularly if it involves the need to coordinate between different organisations, and assumes that the particular organisations have some control over the outcome variable they mean to influence.
117. An alternative to this approach is to aim to focus more directly on the behaviour of teachers and potential teachers since these individuals are really the only agents that can have a direct impact on the process of converting initial teacher trainees into fully qualified teachers teaching through the medium of Welsh. By adopting this approach, it may be possible through the appropriate use of financial and non financial incentives to alter the behaviour of potential trainees – but again the incentives need to be structured to ensure that the outcome variable of interest is rewarded and not simply the initial or intermediate inputs. Some stakeholders suggested that in the long term teacher pay was more likely to have a significant effect than financial incentives at the time of training.
118. One further issue that we were asked to consider was the practical difficulty associated with applying Welsh medium targets to courses with small numbers. All of the potential problems associated with targets more generally that are outlined above would also apply to courses with small numbers of students. In addition there may be further problems associated with courses with small numbers of students. If a provider fails to meet a target for Welsh medium intake numbers on a small course, a bigger proportion of the course funding could be lost than on a larger course, depending on the way in which the funding mechanism is linked to Welsh medium intake targets. It should also be noted that Welsh medium ITT courses may be more likely to have small numbers of students than other ITT courses.
119. We suggest that initially, at least until further clarity is achieved on a definition of Welsh medium ITT that a firm target might apply to, that any targets are limited to ‘indicative’ targets whose main purpose is for monitoring. We also suggest that some consideration be given to:
- the scope for a coordinated approach to limiting the drop out rates between first year Welsh medium ITT course numbers and entry into Welsh medium teaching employment as well as wastage from the profession; and
  - potential policy mechanisms for improving the incentives on teachers and trainee teachers to become and to remain Welsh medium teachers.
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## 5 Main Recommendations<sup>44</sup>

### Modelling demand for Welsh medium teachers

120. We propose that projections of demand for Welsh medium teachers be based on the projections of pupil numbers developed by the Welsh Assembly Government and that forward-looking assumptions about the proportion of pupils learning through the medium of Welsh reflect two elements. First, the nature of demand as reflected by current take up of Welsh medium classes in each category; and second, the extent to which policy measures or other changes in the education environment may stimulate further take up, or reduce barriers to further take up. [See Section 3.2.2]
121. For the medium term we suggest that consideration is given to the collection of other additional demand related data. In particular, since there are large variations in the supply of Welsh medium teachers across the subject areas and there may well also be variations in demand, the collection of data on the number of pupils studying each subject through the medium of Welsh would be useful. [See Section 3.2.2]

### Modelling the supply of Welsh medium teachers

122. Much of the modelling that is undertaken by the DfES for the Teacher Supply Model relies on information on individual teachers that is provided by the Database of Teacher Records. Whilst these data are available for teachers in Wales, it does not provide any indication of Welsh medium teaching. This makes separate supply modelling for Welsh medium teachers much more difficult.
- a. We recommend that for the initial modelling, assumptions for Welsh medium teachers, generally mirror those for other teachers in Wales. There are some exceptions, where additional Welsh medium specific data can be used. [See Section 3.3.2]
  - b. We recommend that the proposed Annual Census of Teachers in Wales seek to collect the information on individual teachers, including the extent of Welsh medium teaching, that is necessary to enhance the supply modelling for Welsh medium teachers. [See Section 3.3.2]

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<sup>44</sup> Some further, subsidiary, recommendations are also made during the course of our discussion of data and modelling issues in Chapter 3.

123. For the medium term we recommend that consideration is given to the scope for modelling the subject variation in the supply of Welsh medium teachers. Whilst this adds an extra element of complexity, there are important policy concerns that relate to teacher shortages in some subject areas, particularly in the Welsh medium. [See Section 3.3.2]
124. We recommend consideration of the scope for aligning the data relating to Welsh medium teaching and speaking that are collected for the GTCW's Register of Qualified Teachers in Wales with the equivalent data that are collected through PLASC Wales and through any new annual teacher census. [See Section 3.3.2]

### Intake planning for Welsh medium ITT places

125. We recommend that the link between ITT intake numbers and entry into Welsh medium teaching is also modelled. We propose that initially the student/teacher drop out rates at each stage are assumed to be the same for Welsh medium teachers as they are for other teachers in Wales. In addition we suggest that the extent to which newly qualified Welsh medium teachers teach through the medium of English, rather than Welsh, is assumed to be the same as the proportion of the stock of teachers in Wales who are able to teach Welsh, or through the medium of Welsh, but who do not do so. [See Section 3.4]

### Linking Welsh medium modelling with wider teacher supply-demand modelling

126. Work is to be carried out by the WAG Statistical Directorate on the modelling of teacher supply and demand in Wales in the coming months. Once further progress on this work has been made and decisions have been taken about the structure and data sources for that modelling, we suggest that the approach to modelling the Welsh medium elements is further reviewed at that stage. Since the Welsh medium elements will be linked to the wider modelling work, it will be easier to judge more precisely what the most appropriate approach is for the Welsh medium elements once decisions have been taken in relation to the wider work. As with all modelling of this nature, we would expect there to be further refinements later on in the process as well, as new data becomes available and as experience with the modelling approaches and their effects develops. [See Section 3.1]



## Defining Welsh medium ITT

127. The many-faceted nature of Welsh medium provision makes the achievement of a universal agreed definition difficult. It is likely to mean that any such definition is a complex one, which could lead to scope for perverse incentive effects. We propose that three options for a qualifications based route should be explored as an alternative. Any course that enabled the achievement of an agreed Welsh medium qualification could be defined as a 'Welsh medium' course. Our preferred option would involve the achievement of greater recognition and wider acceptance of the language competency certificates that are currently issued by individual Welsh medium providers. This would probably need to involve some convergence of standards and cooperation between the providers so that a common standard was used to enable recognition of a Welsh medium course and of teachers competent to teach through the medium of Welsh. [See Section 4.1]

## Setting targets for Welsh medium ITT places

128. We suggest that initially, at least until further clarity is achieved on a definition of Welsh medium ITT, that any targets are limited to 'indicative' targets whose main purpose is for monitoring. [See Section 4.2]

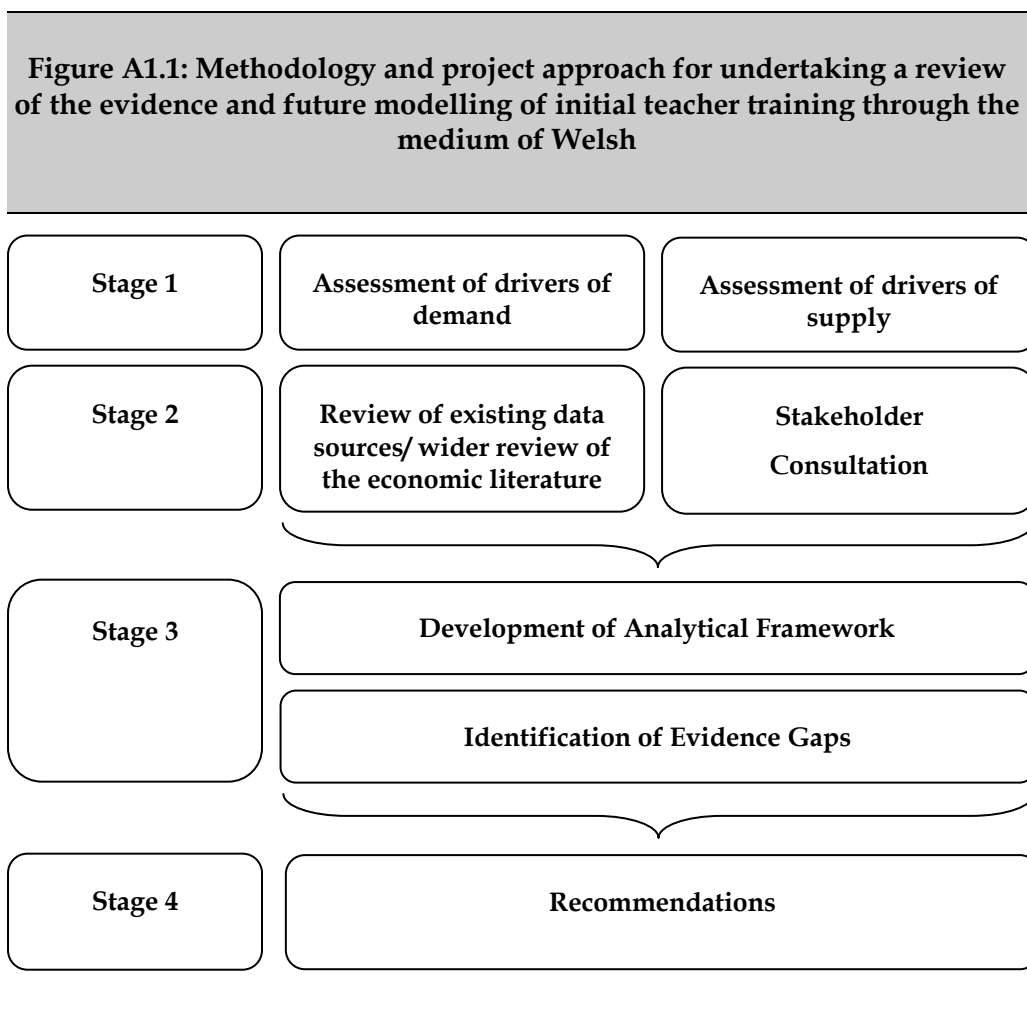
129. We also suggest that some consideration be given to:

- a. the scope for a coordinated approach to limiting the drop out rates between first year Welsh medium ITT course numbers and entry into Welsh medium teaching employment as well as wastage from the profession [See Section 4.2]; and
- b. potential policy mechanisms for improving the incentives on teachers and trainee teachers to become and to remain Welsh medium teachers. [See Section 4.2]



## Annex 1 Project Approach

130. In this section, we present the project approach underpinning this review of the evidence and future modelling of initial teacher training through the medium of Welsh.



### Stage 1

131. In the first stage, we considered the primary drivers of the demand for Welsh medium teachers, which is itself a function of the population's demand for Welsh medium education, as well as the geographical distribution of the demand for education through the medium of Welsh. This stage also involved the assessment of the key determinants of the supply of teachers able to teach through the medium of Welsh. This element of the review considered the factors affecting the retention and wastage of teachers from the current stock of teachers, the multiple sources of wastage during and post completion of initial teacher training and the applicability of some of these factors to the Welsh context.

## Stage 2

132. The second stage of the analysis involved reviewing the wider economic literature to understand factors affecting the supply of teachers. This stage also involved the detailed assessment of a variety of secondary data sources that might be used in the later modelling of teacher demand and supply to understand the information contained within those existing data sets, the coverage and robustness of the data, as well as the information contained within the data in relation to the Welsh language. This stage of the analysis resulted in the initial consideration of the possible modelling approaches that might be appropriate to the National Assembly given the policy context, data availability and theoretical foundations.

133. This stage also involved undertaking a wide range of stakeholder consultations to better understand the practical issues affecting the teaching profession in Wales, the provision of Welsh medium initial teacher training and some of the fundamental issues relating to the definition of Welsh medium education, both in secondary education and within higher education and beyond. In particular, as part of this review, we arranged face to face or telephone interviews with the following key stakeholders

- General Teaching Council for Wales (GTCW)
- Welsh Language Board (WLB)
- Assembly Statistical Directorate (NafW)
- Department for Education and Skills (DfES)
- Training and Development Agency for Schools (TDA)
- Universities Council for the Education of Teachers (UCET)
- Higher Education Funding Council for Wales (HEFCW)
- University of Wales, Bangor
- Trinity College, Carmarthen

134. We also undertook a written consultation of stakeholders with all the higher education institutions (under the auspices of UCET) and local education authorities in Wales, as well as a variety of organisations (such as CYDAG) were asked to provide some short responses to a series of questions relating to the review.

135. The final stage of the consultation exercise involved a workshop that was organised and facilitated by the Welsh Language Board. This stakeholder workshop was not envisaged at the start of the Review but given the perceived importance of the topic to a variety of stakeholders and the possibility of efficient collection of information and views, LE Wales believed that the quality and robustness of the findings feeding into the Review's recommendations would be substantially augmented. Attendees at the workshop represented teaching unions; students; schools; parents; higher education institutions; and other public sector bodies, such as WAG, HEFCW and Estyn.

### **Stage 3**

136. Stage 3 of the Review involved the detailed analysis of the academic literature, the analysis of the secondary data that is already collected by a variety of organisations, as well as the assessment of the qualitative information collected from stakeholders during the face to face interviews, the written consultation exercise and the stakeholder workshop. One key objective of this Review is to identify the evidence gaps that exist despite the current data collection exercises, the possible data inconsistencies through multiple data collection exercises and the identification of possible means of data collection in the future to overcome these data limitations.

### **Stage 4**

137. The final stage of the Review involved the provision the workable recommendations to the National Assembly of Wales with respect to the possible modeling of teacher supply and demand in Wales.

## Annex 2 Relevant Data Sources

### Database for Teacher Records

138. The Department for Education and Skills (DfES) extracts data from the Database of Teacher Records (DTR), which is maintained by Capita Teachers Pensions. The data cover England and Wales. The DfES extract of the DTR holds personal, qualification, training, salary and service details for those who are or have been in full-time or part-time teachers in maintained schools and others who are or have been members of the Teachers' Superannuation Scheme. Data are held on the personal, qualification and training details of all those who have at some stage completed a course of initial teacher training but have not entered teaching service. Data are available for full-time teachers, by age, length of service, sex, graduate status, subject of graduation, annual regional staff movements, inflow and outflow, salary scale points, and salary bands.
139. The DTR contains approximately 1.9 million entries. It is an annually administered census with reference period 31<sup>st</sup> March completed by teachers' employers. In addition to teachers in the maintained sector, approximately 50% of teachers in the independent sector are also included in the dataset. The latest DTR data are available approximately 18 months after initial collection.
140. Although the data cover England and Wales and also contain information in relation to the qualification and training details of teachers, there is no information relating to the type of initial teacher training received or any indication of the ability to speak welsh or teach through the welsh medium.

### 618G/ STATS3

141. The 618G is a statutory return for the Department for Education and Skills and its completion is mandatory under the Education Act 1996. The 618G form is completed at Local Authority level, however, schools complete individual returns for the Local Authority. The collection exercise takes place in January each year. The form includes information on teachers (full time, part time and occasional) with and without QTS and teacher vacancies in primary, secondary and special schools. The form also contains information on teacher sickness absence and ethnic origin at school level.

142. The equivalent exercise of estimating teacher vacancy rates in Wales (the STATS3 form) gathers information at unitary authority level and does collect information on the extent to which vacancies that may exist are for positions involving teaching through the Welsh medium. However, our understanding is that the STATS3 form does not collect information on the stock of teachers who are or who have the capability of teaching through the Welsh medium.

### **Secondary Schools Curriculum and Staffing Survey (SSCSS)**

143. The Secondary Schools Curriculum and Staffing Survey (SSCSS) is a sample survey of maintained secondary schools in England. The survey collects data on curriculum provision, teacher's qualifications and teacher deployment. The Secondary School Curriculum and Staffing Survey is a voluntary survey conducted approximately every four years (the last collection being in 2002). It is designed to give detailed information on the curriculum offered in secondary schools and the qualifications of teachers responsible for the delivery of the curriculum. The next survey is due to be undertaken in 2007.

### **Pupil Level Annual Schools Census in England (PLASC)**

144. The Pupil Level Annual Schools Survey is a statutory annual electronic return, which replaced the previous Form 7 return. The form is administered at school level, returned to the relevant local authority and then submitted to the Department for Education and Skills. The census collects individual pupil attainment and exclusion information directly from schools (with a unique pupil identifier) and allows for matching of attainment data across years. The data also contain summary information on teachers and some members of the school workforce other than teachers working at the school. PLASC provides aggregated school level data only on staff employed within maintained schools and non-maintained special schools.
145. The Pupil Level Annual School Census (PLASC) is used to collect data on individual pupils. Data derived from PLASC, which will eventually replace the STATS1 for all maintained schools, were used for the first time in 2003. From January 1994 independent schools in Wales also complete a STATS 1 return which replaced Form 101A (school census return for independent schools prior to January 1994).

### **Pupil Level Annual Schools Census in Wales**

146. PLASC in Wales replaced the previous STATS1 form. The form is administered on the same lines as that of England at Local Authority level, with schools providing individual level data at pupil level and aggregate data relating to the school workforce at the school level.

147. The data contain mandatory information at pupil level in relation to the ability to speak welsh and whether the Welsh language is spoken at home. The census also collects information on whether the individual pupil is taught Welsh in school (1<sup>st</sup> or 2<sup>nd</sup> language), and whether they are taught any other language in the Welsh medium.
148. For teachers teaching Welsh, information on the number of qualified teachers who are currently involved in teaching Welsh or through the medium of Welsh is collected at school level. In addition, for both full and part time staff, the number of hours per week taught through Welsh, or in which Welsh is taught is also collected. Finally, the number of qualified teachers considered able or qualified to teach Welsh but are not doing so is also collected.
149. The classification of teachers is as follows:
- Qualified teachers teaching Welsh as a first language
  - Qualified teachers teaching Welsh as a second language only
  - Qualified teachers teaching other subjects through the medium of Welsh
  - Qualified teachers able to teach Welsh or through the medium of Welsh, but not doing so
  - Not qualified to teach Welsh or through the medium of Welsh.
150. The PLASC data for Wales also provide information on the number of vacancies in each school aggregated to Local Authority level where the successful applicant would be required to teach through the medium of welsh, as well as the number of applications for these positions.
151. As the data relating to the workforce are collected at a school level, there is no information available on the individual teacher capability to speak Welsh, teaching through the medium of Welsh or whether the initial teacher training received by the teacher was delivered through the Welsh medium.

### **GTCW Annual Statistics Digest**

152. The General Teaching Council for Wales collects information through its Qualified Teacher Register. The Register contains information on 'registered teachers'. This includes teachers currently working in the maintained schools sector and those that are not working in the maintained sector but have elected to register with the Council. Employers have a legal obligation to ensure that every qualified teacher, who carries out specified work in a maintained school, is registered with the General Teaching Council for Wales (save for certain exemptions under legislation).

153. The data collection exercise is undertaken annually and the figures represent the state of the registered teaching profession on March 31<sup>st</sup> of each year. The register is an important source of data given the fact that it is collected on an annual basis and at individual level. The data therefore contain a breakdown of teachers according to sector, gender, years of experience. There is no information on the entire *stock* of teachers in relation to being a Welsh speaker or whether teaching is undertaken through the medium of Welsh. However, for teachers with QTS registering for the first time with the professional body, information is collected on the Welsh language capabilities. Specifically, the form asks whether the individual is a Welsh speaker, whether they are able to teach through the medium of Welsh and whether the individual is able to teach Welsh as a second language.

### **Higher Education Statistics Agency**

154. The main source of relevant information collected by HESA relates to the Survey of Destinations of Leavers from Higher Education.
155. Specifically, the HESA survey collects the postal code of the place of employment for all students who are employed following graduation. It is possible to match the destinations survey data back to the student record and thus derive the institution of study and assess the extent to which graduates migrate away from their institution of study.
156. In addition, the HESA Student Record provides details of ITT students and the qualifications they obtain.

### **Training and Development Agency for Schools**

157. The Training and Development Agency collects information for England only through a census of recruitment. The data include information on the outcomes achieved by initial teacher trainees, the completers and the number that are employed. The data also segment according to whether the individual is employed in the maintained or non-maintained sectors. There is no information contained on the geographic location of respondents place of employment.

### **Scottish Executive Annual Teacher Census**

158. The Scottish Executive has recently started undertaking an Annual Teacher Census. The data gathered are comprehensive and individuals can be tracked over time according to their unique GTC registration number. In addition to the standard personal information, the survey collects information on the qualifications of respondents, the number of years since gaining QTS status. There is no information collected on the institution where Initial Teacher Training was received nor whether the training was received in the Gaelic medium. However, most importantly in terms of this Review, the census also collects information on the ability to speak Gaelic, and those able to teach through Gaelic medium. The census also collects information on the potential pool of teachers able to teach in the Gaelic medium as there is information collected on fluent Gaelic speakers who may be willing to teach following a refresher course in subject specific language skills.

### **Local Labour Force Survey Data**

159. The Office for National Statistics collects information at local authority level for England and combinations of unitary authority for Wales. The *Local Area Data* files contain approximately 100 variables covering the following subjects: employment by age group; whether an employee or self-employed; economic activity; employment by industrial sector; ethnic minority; economic activity; attending full-time education; highest qualification attained; and whether undertaking job-related training. However, the sample sizes in some cases are limited and therefore unreliable for specific questions that might be included as part of this analysis.

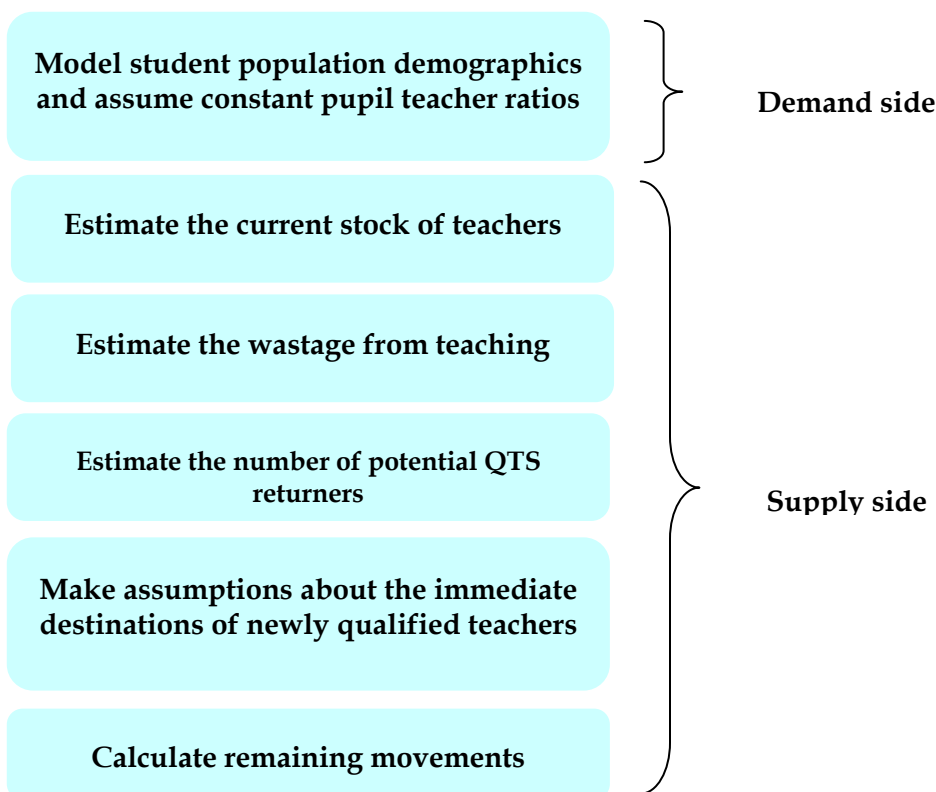


## Annex 3 The Teacher Supply Model

160. Pupil numbers vary from year to year. The rates of teacher flow into and out of teaching vary from year to year as do the policies and initiatives affecting the teaching profession. As such it is clear that a model to assess the annual expected excess supply and demand of teachers is needed, which in turn can be used to estimate the extent of teacher resource needed to be developed through the initial teacher training routes.

161. The original Teacher Supply Model (TSM) for England<sup>45</sup> approached the problem of estimating the number of teachers required to cope with the demand for education at primary and secondary level in the following basic stages. We provide additional information on the model in the subsequent sections.

**Figure A3.1: A simple model for the estimation of the supply and demand of teachers**



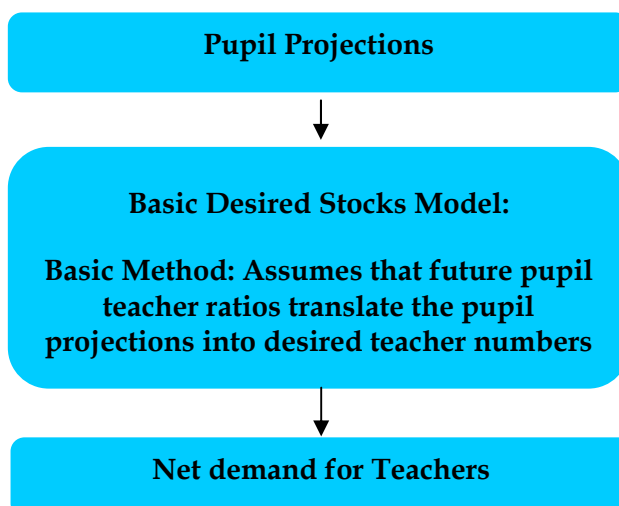
<sup>45</sup> When it was developed, this model was never intended to provide estimates for the number of ITT trainees for Wales.

162. It is clear that there are methodological failings associated with the simple adoption of the standard TSM model and simply scaling the findings to the level of Wales according to relative populations as has been done in the past. The reasons for the non applicability of the TSM is due to the simple fact that recruitment and retention issues faced in large urban areas in England are not the same as those faced by teachers in Wales and the complexity of a bilingual educational system is exponentially more intricate to model than an education system with a single language of provision. This point was reiterated time and again in the stakeholder consultations we undertook.

### Modelling future demand

163. The model of future demand for primary and secondary level education at an aggregate level is based on the national assessment by the Office for National Statistics/Government Actuarial Department of pupil projections by age.
164. The basic TSM model assumes that future pupil-teacher ratios are at least no greater than current pupil-teacher ratios and incorporate any current or future expectations in relation to policy initiatives.

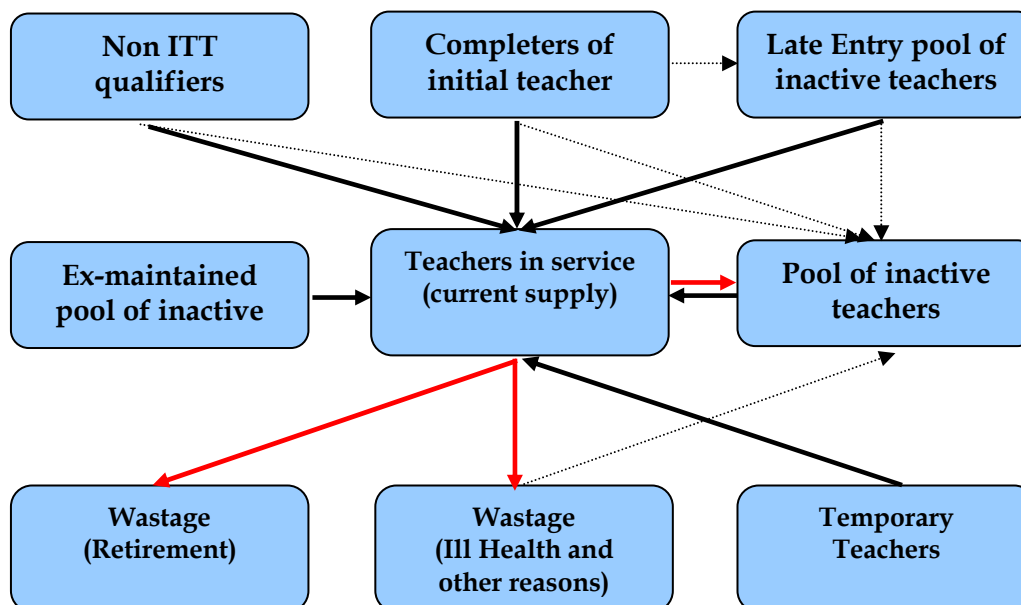
**Figure A3.2: Modelling future demand**



## Modelling future supply

165. Modelling demand is relatively straightforward compared to modelling the supply side. There are significantly more flows into and out of the profession for a wide variety of reasons that have to be incorporated into the modelling with each additional element of analysis potentially adding to the uncertainty relating to the aggregate estimates.
166. There are in general six means of entry into the teaching stock – namely from initial teacher training; non initial teaching entrants; entrants from the pool of inactive teachers; entrants from the non-maintained sector; and temporary teachers entering the profession.
167. There have been three traditional routes out of the profession; wastage for reasons of retirement and other reasons such as ill health. The leavers might be thought as representing those teachers that are permanently leaving the profession. In addition to these sources of wastage, there are also leavers (on a basis that may be reversible) such as those simply leaving the profession (perhaps leaving the workforce temporarily, or finding other employment) and those leaving the maintained sector.
168. In addition to all the flows directly into and out of the main stock of teachers, there are also a significant number of flows not already considered such as flows directly from ITT completers into the pool of inactive teachers.
169. These flows are presented in the diagram below and we present some information on estimating the major flows between categories in the following sections.

Figure A3.3: Modelling future supply



### *Estimating the current stock of teachers*

170. To assess the current stock of teachers, information from the Database of Teacher Records<sup>46</sup> is used as the central element. The Department for Education and Skills extract of the DTR holds personal, qualification, training, salary and service details for those who are or have been in full-time or part-time teachers in maintained schools and others who are or have been members of the Teachers' Superannuation Scheme.

### *Estimating the inflows to the profession by newly qualified teachers*

171. In addition to the information on the existing stock of teachers, information from the Training and Development Agency can be used to assess the proportion of individuals undertaking initial teacher training completing this training as well as the proportion of new completers who gain professional status with the General Teaching Council for England (GTCE).

<sup>46</sup> The DTR is discussed in Annex 2.

*Estimating the inflows to the profession from the pool of inactive teachers*

172. The Training and Development Agency for Schools collects information on the entry to the teaching profession from the late entry pool of inactive teachers, non-ITT qualifiers and the pool of inactive teacher (PIT) returning to the profession.

*Estimating the inflows to the profession by NQTs*

173. Information on the numbers of teachers with QTS entering the profession is obtained from HESA data but can also be used to assess those qualified teachers that do not enter the profession or enter the profession in another country. The Database of Teacher Records also records the teaching destinations (by sector and geography) of individuals completing initial teacher training in the previous year<sup>47</sup>.

*Estimating the outflows from the profession through wastage*

174. The wastage model is an econometric model using information from the Database of Teacher Records that predicts the probability of leaving the teaching profession depending on the personal characteristics of individual teachers. The model illustrates the importance of factors such as teacher salaries relative to other public sector professions (for men) and childcare responsibilities (for women).

*Estimating the outflows from the profession through retirement*

175. The Database of Teacher Records is specifically collected for the purposes of maintaining data on pension provision. As such, there is very specific individual level data collected on the number of teachers leaving due to retirement.

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<sup>47</sup> The Training and Development Agency for Schools collects information for England only through a census of recruitment. Although information on the outcomes of those teachers completing initial teacher training is collected across the maintained and non-maintained sectors, there is no geographic distinction available to assess where those that are employed may be teaching.

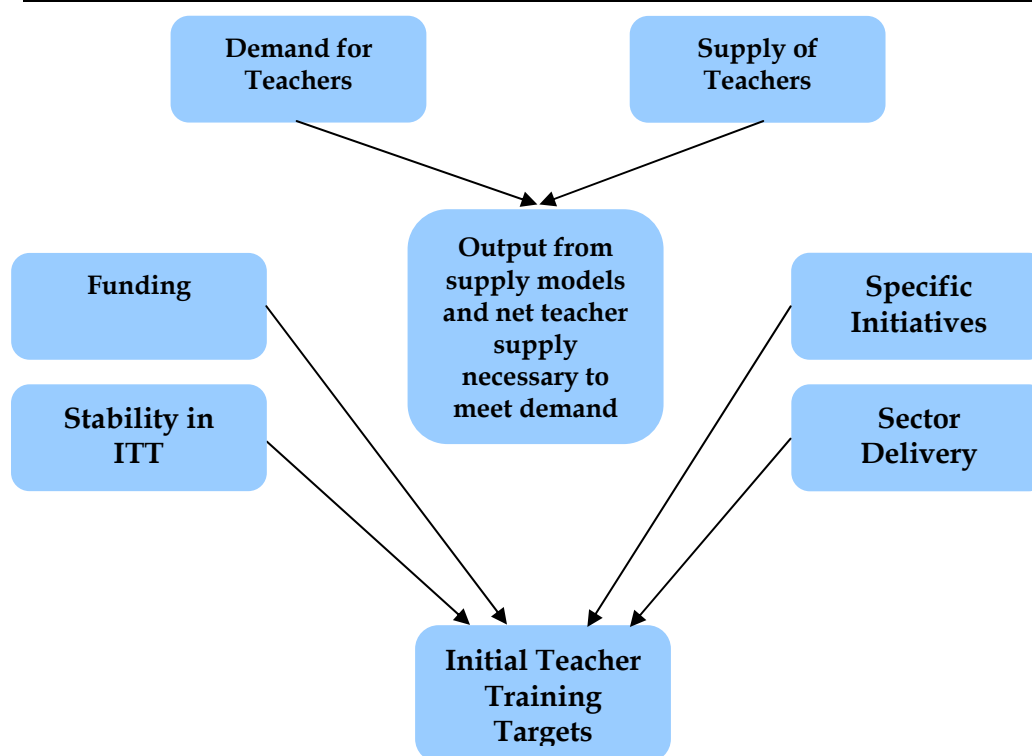
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## Combining Demand and Supply projections to assess excess demand or supply of teachers

176. The information gathered from the demand for education model (and teachers) is combined with the teacher supply and wastage model to provide an aggregate assessment of the net resource requirement as a whole across the teaching profession – broken down initially by primary and secondary level.

177. The second stage of the analysis involves incorporating specific policy objectives (such as teacher shortages in particular subjects) and funding constraints to ensure that there is fundamental stability in the aggregate provision of initial teacher training and the ability of the sector to deliver those initial teacher training places.

**Figure A3.4: Combining Demand and Supply projections to assess excess demand or supply of teacher and initial teacher training requirements**



## Annex 4 Wider evidence from the UK

178. There has been a large literature summarising the labour market situation for teachers in the UK over the last 30 years. Ahamad (1970, 1973)<sup>48,49</sup>, Zabalza *et al* (1979)<sup>50</sup>, Dimmock (1980)<sup>51</sup>, Blackstone and Crispin (1982)<sup>52</sup>, Booth (1989)<sup>53</sup>, Fidler *et al* (1993)<sup>54</sup>, Wilson and Pearson (1993)<sup>55</sup> and Smithers and Robinson (2000)<sup>56</sup>. Edmonds *et al* (2002)<sup>57</sup> and Ross and Hutchings (2003)<sup>58</sup> both survey the alternative policies for attracting and retaining teachers in the UK. These papers provide a thorough overview of the institutional and administrative detail of the UK system of teacher pay and school organisation.

179. Figure A4.1 graphs the trend in pupil numbers in the UK over the 1947-2000 period. The 'switchback' nature of these trends shows clearly the nature of the baby boom periods of the immediate post war period and that of the late 1960s. The graph shows how the balance of the demographic structure of the school population will shift the demand for teachers. In 1947 there were 3.7 million primary school pupils and only 1.2 secondary pupils. By 1984 there were approximately 4 million primary *and* secondary pupils. This pattern has a dramatic impact on the relative demand for primary and secondary school teachers.

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<sup>48</sup> Ahamad and M. Blaug. Amsterdam, Elsevier Ahamad, B. (1970). "A Post-Mortem on Teacher Supply Forecasts". Higher Education Review 2(3).

<sup>49</sup> Ahamad, B. (1973). "Teachers in England and Wales". The Practice of Manpower Forecasting, in B. Ahamad and M. Blaug. Amsterdam, Elsevier

<sup>50</sup> Zabalza, A. (1979). "The Determinants of Teacher Supply". Review of Economic Studies 46(1): 131-147.

<sup>51</sup> Dimmock, C. (1980). "Teacher Supply as a Problem in the USA and England". LACE Occasional paper no.3. London Association of Comparative Educationists.

<sup>52</sup> Blackstone, T. and A. Crispin (1982). "How many Teachers? Issues of Policy, Planning and Demography." Bedford Way Papers, London.

<sup>53</sup> Booth, M. B. (1989). Teacher Supply & Teacher Quality : Solving the Coming Crisis. Cambridge, Department of Education, University of Cambridge

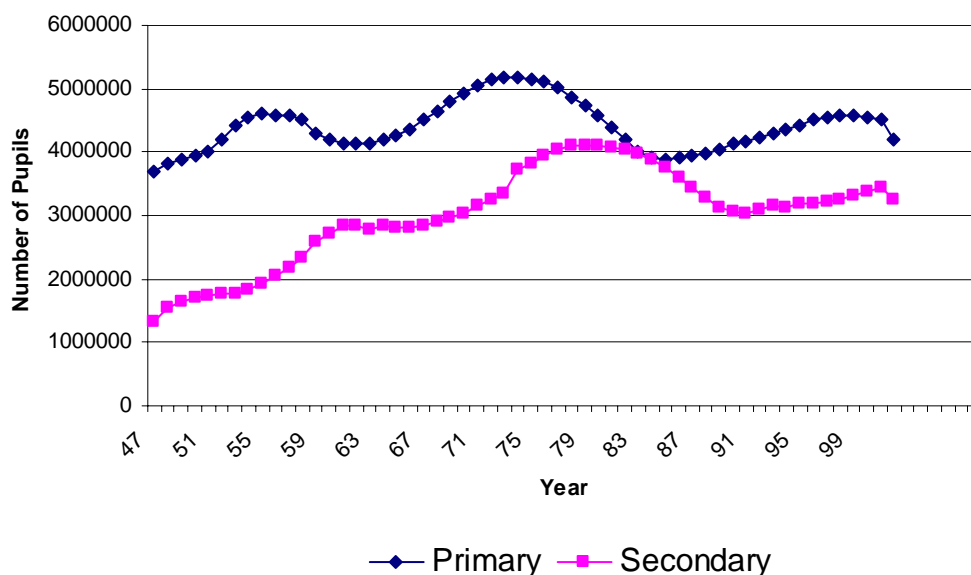
<sup>54</sup> Fidler, B., B. Fugl and D. Esp (1993). The Supply and Recruitment of School Teachers, Longman

<sup>55</sup> Wilson, A. and R. Pearson (1993). The Problem of Teacher Shortages, Heinemann, London

<sup>56</sup> Smithers, A. and P. Robinson (2000). "Attracting Teachers", University of Liverpool: 67

<sup>57</sup> Edmonds, S., Sharp, S. and Benefield, P. (2002) "Recruitment to and Retention on Initial Teacher Training: a Systematic Review" National Foundation for Educational Research, A report for the Training and Development Agency for Schools.

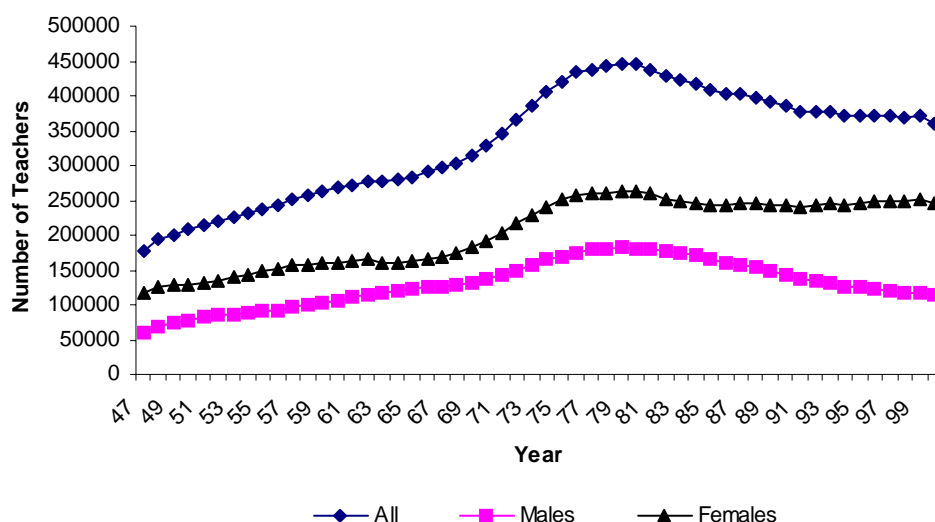
<sup>58</sup> Ross, A. and M. Hutchings (2003). "Attracting, Developing and Retaining Effective Teachers in the United Kingdom of Great Britain and Northern Ireland." Institute for Policy Studies in Education, London: 109

**Figure A4.1: Primary and Secondary School Pupil Numbers in the UK, 1947-2001**

Source: Statistics of Education

180. Figure A4.2 depicts the situation of teachers in service in the UK for the period 1947 to 2000. The number of teachers in service rose markedly up until 1980 but has been in decline since. The number of teachers in service is essentially determined directly from the number of pupils to be taught and the pupil teacher ratios that are used in practice. In terms of the overall number of teachers in service, a similar pattern is observed among the male and female teachers with the ratio of female-male teachers in the UK for the period 1947 to 2000 standing at 60:40 over the period though this ratio has increased in recent years as disproportionately many male teachers have left the profession without being replaced by male trainees through the route of initial teacher training.



**Figure A4.2: Primary and Secondary School Teacher numbers in the UK, 1947-2001**

Source: *Statistics of Education*

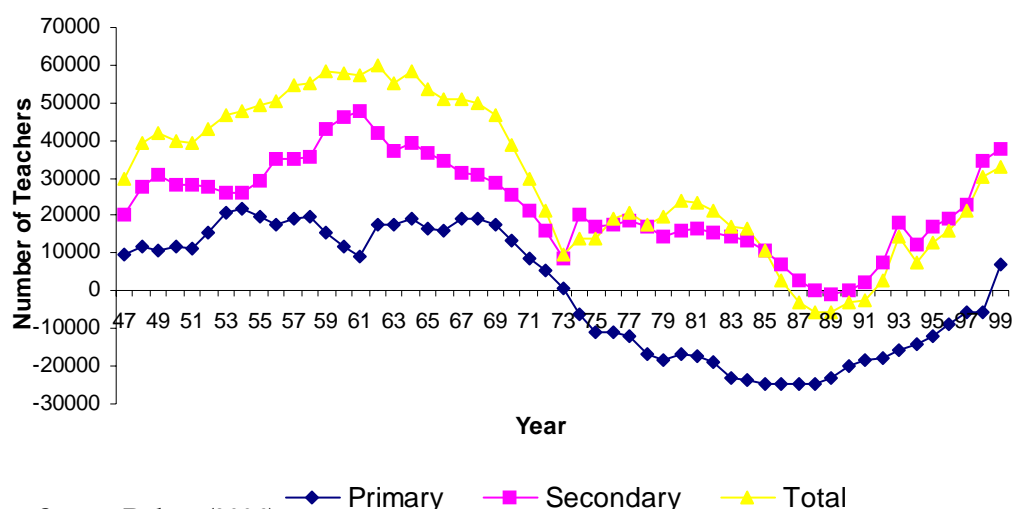
181. Looking at the information in Figures A4.1 and A4.2 it is possible to derive the overall supply position by incorporating the teacher pupil ratio experienced by pupils in the UK over the 1947-2000 period. The average child in a UK primary school was taught in a class of 29 in 1947; that this declined to 20 by 1990 and has subsequently risen to 23 in 2000. The average secondary school pupil was taught in a class of 27 in 1947, 16 in 1990 and 22 in 2000.

182. The interaction between supply and demand has been used to assess whether there is a shortage or surplus of teachers in the UK and feeds into the assessment of the number of initial teacher training places required if the demand for teachers exceeds the current supply. In the example of the UK-wide picture presented above, the number of pupils and the Government's published target pupil teacher ratio determines the demand for teachers. For example, in 2000, there were 4,278,123 primary school children (full-time equivalents). According to the Government's target pupil teacher ratio<sup>59</sup> there would be 21.2 primary school children for every primary school teacher, implying that over 210,000 primary school teachers were needed.

<sup>59</sup> Successive government publications have included a figure for a desired target pupil teacher ratio for primary and secondary schools. See Bee and Dolton (1995) for the details of the UK government's published desired PTR.

183. In actual fact, there were only 183,000 primary school teachers in 2000, implying an excess demand of around 27,000 primary school teachers. A similar analysis for secondary school teachers reveals that there was an excess demand of approximately 16,000 teachers, giving the overall excess demand figure of approximately 43,000. Figure A4.3 uses this logic to chart the situation for all years since 1947.

**Figure A4.3: Excess Demand of Teachers, by Sector, UK 1947-2000**



Source: Dolton (2006)

184. The graph shows that there has been an overall excess demand for teachers almost continuously throughout this period. However, closer inspection shows that there has, in fact, been a surplus (excess supply) of primary school teachers over the 1973 to 1998 period. This is a feature of the market in the UK – namely that in some segments of the market there is a shortage and in others a surplus. Overall there is a shortage but this disguises the surplus of primary school teachers which is offset by the shortage of secondary school teachers and in particular science and maths teachers and teachers in London and the South East of England.

185. This phenomenon of education ‘markets’ where there is excess demand for and excess supply of teachers is especially relevant in Wales where there has been a planned reduction in the number of initial teacher training places to 2010 but at the same time an obligation to increase the proportion of initial teacher training provided through the Welsh medium.

## Wastage

186. A major part of the structural determinants of teacher supply relates to the rate at which males and female teachers leave the profession during their careers, the extent of wastage from the profession and how it has changed over time and what has happened to the stock of inactive teachers and those who could return to the profession.

187. We examine these factors for the UK in Figures A4.4 and A4.5 though it is clear that the factors affecting the supply of teacher in Wales and through the medium of Welsh are not necessarily the same as those affecting the UK as a whole or the larger urban areas in the south east of England.

188. Figure A4.4 shows how women leave the occupation during the period most likely to be associated with child rearing and childcare provision in much larger numbers than men but subsequently return to the job later on in their working life.

**Figure A4.4: Exit Rates of Trained Teachers by Gender over Experience**



Source: Dolton (2006)

189. The average wastage rate by gender is graphed in Figure A4.4. It shows how on average around 10% of female teachers in the UK leave the job each year. Traditionally male wastage from teaching was much lower at around 5% up until the mid 1980s. Since then the rate of male wastage from the profession has risen markedly to around 8% per year in the 1990s. These trends give cause for concern for the government since male teachers are predominantly secondary school teachers and are more likely to be involved in the provision of science and maths subjects.
190. Defining wastage as all teachers in full-time service in the maintained nursery, primary and secondary sector on 31 March who were not in full-time service anywhere in that sector on 31 March of the following year, the recent statistics relating to Schools in Wales indicate that wastage rates in the teaching profession stood at 8.1%<sup>60</sup> in 2003/04 marginally above the long term trend (equivalent to approximately 2060 teachers in 2002-2003).

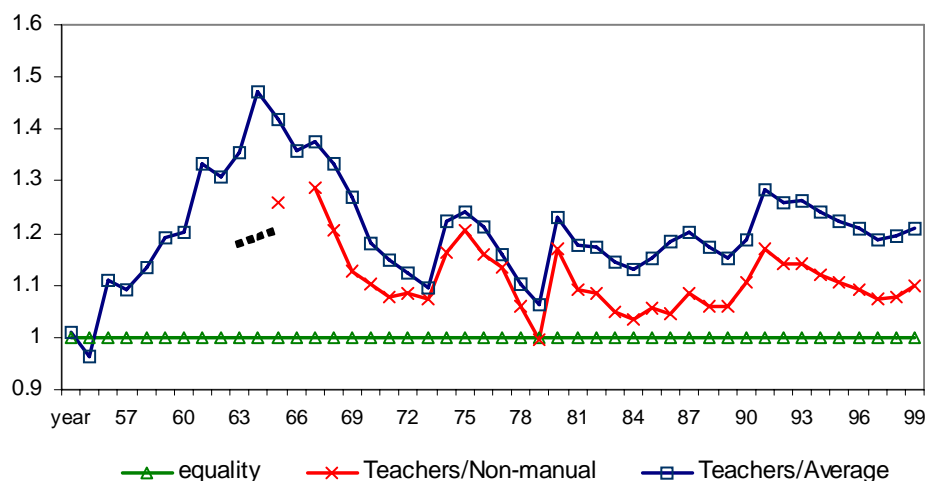
### Reasons for Teacher Wastage

191. Having observed the trends of teacher supply in the UK and from the literature that is available on teachers, it appears to be the case that teachers' pay relative to other graduate occupations is of prime importance, since it is relevant to consider how graduates make choices between becoming a teacher and taking up another occupation. Figure A4.5 graphs the relative earnings of teachers compared to average non-manual earnings and national average earnings.
192. The highest relative wages were paid to teachers in the mid-1960s, followed by a considerable deterioration in the period up to 1973. There followed a series of dramatic adjustments after the Houghton Report (1974) and the Clegg Commission (1980) recommended that teachers' pay had been allowed to decline too far. More recently, the 1990s have seen a continuous decline in the relative wage of teachers, although of less dramatic extent than the decline of the late 1960s and early 1970s.

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<sup>60</sup> This estimate includes full time teachers that became part time teachers. Of the 2060 full time teachers leaving the profession in 2002-2003, 860 retired (380 prematurely, 270 due to age and 210 due to ill health)

Figure A4.5: UK Relative Teachers' Wages



Source: Dolton (2006)

### Subject Specialism Differences.

193. Another important difference in the teacher supply position relates to the different conditions that exist in the market for teachers of different subject specialisms. There is a sizeable literature on the demand for teachers by subject specialism. However this literature has more or less exclusively focused on the demand and supply of the science and maths teachers. Many papers (particularly in the US) examine the shortage of maths and science teachers and find salary differentials are particularly important in these subjects and that teachers of these subjects are much less likely to return to teaching once they had left.

### Female Career Patterns.

194. The importance of the role that gender considerations play in the supply of teachers cannot be overstated. From OECD data on different countries we know that around 62% of teachers are women and that in some countries the fraction is as high as 94%. Not only do women choose teaching as a career in their initial occupational choice they also return to the career if they leave it. This means that the teacher labour market is unlike many others in terms of its reliance on female labour. As a result, more than in nearly any other professional labour market, it is necessary

to be aware of the issues of female labour force participation and the wishes of women to have career interruptions or work part time.

195. Many of the econometric studies report findings separately for men and women and as a result explicitly show how the labour supply decision of women is particularly important in the context of the teacher labour market. Dolton and van der Klaauw (1999) make a distinction between exiting teaching for family reasons and exiting to another job. This distinction is a particularly important aspect of female labour supply. They also find that women from higher social classes and privileged schools are more likely to leave the workforce; those with education degrees are less likely to quit teaching for a non-teaching job and those with postgraduate qualifications are more likely to quit teaching and those who entered the profession reluctantly are more likely to exit involuntarily or for family reasons.
196. One particularly important dimension of teaching as a career for women is the flexibility of working time. In the US, Flyer and Rosen (1997) using the National Longitudinal Survey of Youth (NLSY) from 1979-91 examine the transitions of women college graduates between the home and the market sector. They suggest that teaching provides for more flexible allocation of time between market and home production. They investigate whether teaching as a career for women provides a more flexible alternative that is compatible with domestic and childcare responsibilities.
197. They suggest that teaching does provide a more flexible market to facilitate this intermittent pattern of participation in work combined with periods of household production. Such interruptions are shown to be less costly for women teachers than women graduates who have alternative careers in that that women teachers do not suffer such big pay penalties for taking time out of the labour market. Women college graduates who take jobs outside teaching face an average 9% pay penalty for each year spent out of the labour market. Flyer and Rosen suggest that the flexibility afforded by a teaching career offers an important attraction to the profession for women.
198. Personal circumstances relating to family obligations play a very important role in the decision to become and remain in teaching. Dolton and Makepeace (1993) show that for women the decision to become a teacher and participate in the labour market need to be considered simultaneously as these decisions are endogenous. This is true in the sense that unobserved factors, which make a woman more likely to select a career outside teaching, make them less likely to participate in the labour market and vice versa. This generates a positive correlation in the teaching occupational choice decision and the decision to work.