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ANALYSIS OF STAFF DEVELOPMENT NEEDS

Introduction

The VELVITT Project is examining the use of electronic learning within vocational education in a number of European countries. Electronic learning is developing rapidly and the use of virtual learning environments (VLEs) to deliver courses is gaining in popularity. VELVITT is taking a critical and empirically focused stance towards electronic learning and addressing the needs of different institutions within Europe whilst working towards the development of common methodologies and evaluation frameworks for the effective use of VLEs and electronic learning in vocational education. The work is centred on the Initial Teacher Training departments of institutions in the UK, Finland, Portugal, Crete, Hungary and the Netherlands. The overall aims of VELVITT are as follows:

§ To develop a methodology for assessing institutional requirements for networked learning and for selecting and implementing appropriate solutions, including the choice of VLE.

§ To create staff development and training programmes to support the management and use of virtual and networked learning.

§ To increase trans-national collaboration in Vocational ITT and develop capacity to deliver programmes where this takes place.

§ To investigate the specific application of VLEs in Vocational ITT, and to revise curricula to maximise benefits to teaching and learning processes.

§ To compile and analyse data comparing various VLEs, and to disseminate this with a view to standardising policy in Vocational ITT

As part of the empirical work of the project, a survey has been administered to teacher training staff within these institutions. The aims of the questionnaire are as follows:

- To gather data about qualifications in using E-learning within vocational teacher trainers
- To provide information on current usage of VLEs, including types of platforms
- To gather base-line data about skills, knowledge and expertise in computing and e-learning
- To provide trans-national comparative data concerning VLE and ICT (Information and Communications Technology) usage

Methodology

The survey was designed after consultation at the second project meeting of in September 2003 in Tampere, Finland. All partners were present and the outlines and scope of the survey were ratified and the UK then took the lead role in designing the research instrument. This was completed by October 2003 and after a pilot phase conducted in the UK, the survey was distributed to all partners for completion. The survey was a self-completed instrument administered to all staff involved in Vocational Initial Teacher Training within the partner institutions. Because of the specialist nature of vocational ITT, then numbers of staff in each institution involved in this activity is low. In most cases all of the staff in an institution concerned with vocational ITT completed the questionnaire so although the sample sizes can be considered low for some countries and do not approach the size of samples of other surveys, this is because of the actual limitations of the population size and not a weakness in the methodology of the survey or its implementation.

Partners in each country were responsible for sending out, collecting and performing the initial data entry for the survey. Some countries translated the survey to maximise number of respondents, although the level of English speaking in many of the partner countries is at the level where many respondents were comfortable completing the questionnaire in English. To standardise the data-entry phase, an Excel spreadsheet was produced and once complete, the country results were sent to the UK where all survey results were collated into an SPSS file, and country codes added to allow cross country comparisons to be made.

Each respondent was asked for their age and the number of years they had been teaching, as well as their gender. This personal information is extremely useful in identifying possible trends within training needs both within and between countries. For the other questions a 5 point Lickert scales were used for many questions, with a range of 1 (very experienced) to 5 (no experience). The mid point (corresponding to 3 on the scale) was linked to the response "some experience". A 5 point Lickert scale is widely acknowledged in education and social science research to provide accurate information about respondent's attitudes to things they already know about, in a form which is statistically robust enough to support a range of procedures. In total there were 15 Lickert scale questions, and a Cronbach's Alpha test performed on these scores in order to measure the reliability of the instrument yielded a value of .924 which is a high reliability coefficient and strongly suggests that the internal reliability of the instrument is robust.

In addition to the Lickert scales there were some open responses, being the answers to the questions: "What ICT qualification do you have?"; "What is your

subject specialism?"; and "What VLE do you use?". In all cases these textual responses were coded after completion of the questionnaire.

The survey has been designed to provide simple but usable data on skills, knowledge and expertise to ICT and VLE usage within the various European Institutions involved in VELVITT. Using VLEs effectively for teaching and learning relies on a host of other skills Information and Communication Technology skills, therefore the survey included items which measured confidence in the general use of computing, including email, word processing, spreadsheets and digital imaging. One question directly related to confidence using VLEs, and allied to this was a subset of questions which relate to discrete skills within VLE usage, such as uploading files, managing learner accounts and organising assessments online using the facilities which most VLEs provide for learner assessment.

Data Analysis

The entire data set was entered into the software program SPSS (Statistical Package for the Social Sciences), and this was used to create the summary of the survey. Descriptive statistics have been used extensively to provide information on how each question was answered. The data has also been disaggregated by country, gender and teaching experience and teachers' age where these breakdowns provide useful insights into differentiations within the dataset. In addition two additional variables were created by summing the Lickert scale responses for the general ICT skills and for the VLE specific skills. This summed variable gives a simple indication of respondents' overall skills, confidence and experience using ICT or VLEs and because this variable is a scale rather than a nominal variable type, it does allow a simple summary of overall experience. All procedures are explained in detail in the Survey Results section.

Survey results

The number of respondents varied from country to country according to how many people chose to complete the survey. Completion was voluntary, and the number of teacher trainers in each institution available to complete the survey also varies. The numbers from each country completing the questionnaire is summarised in table 1. The UK and Finland had 12 respondents, which is a high percentage of the total teacher trainers in each institution involved in vocational education. Hungary's response included two different institutions; hence the higher number of responses, and an institution in Crete completed the highest number of responses with 23. Portugal offered 23 responses to the survey. The Netherlands response was 9 responses in total, which is lower than the others, but still a useful addition to the dataset. In total there were 78 completed surveys.

Table1: Number of respondents in each country

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UK	12	13.5	13.5	13.5
	Finland	12	13.5	13.5	27.0
	Hungary	22	24.7	24.7	51.7
	Crete	23	25.8	25.8	77.5
	The Netherlands	9	10.1	10.1	87.6
	Portugal	11	12.4	12.4	100.0
	Total	89	100.0	100.0	

The gender breakdown of the respondents is summarised in table 2. There were more men than women completing the survey, which is an indication of many of the subjects of vocational education which tend to still be male dominated. These subjects such as engineering and construction tend to have male teacher trainers, although the sample also included women teaching these subjects and women teaching other subjects such as social science, economics, business, maths and ICT.

Table 2: Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	55	61.8	61.8	61.8
	female	34	38.2	38.2	100.0
	Total	89	100.0	100.0	

In terms of the age of the respondents, this detail is summarised in table 3. The average age was 44, which reflects the fact that in most cases, people have careers in a vocational field before entering vocational education as teacher trainers. However there were some younger respondents, with a lowest age of 24.

Table 3: Age of respondents

	N	Minimum	Maximum	Mean	Std. Deviation
Age	89	24.00	63.00	44.3371	10.05207
Valid N (listwise)	89				

The next question concerned the number of years of teaching experience for each respondent. This is summarised in table 4.

Table 4: Number of years of teaching experience

	N	Minimum	Maximum	Mean	Std. Deviation
Years of teaching	89	1.00	40.00	15.8764	10.81016
Valid N (listwise)	89				

A wide range of years of experience is evidenced here. The minimum is 1 with the maximum being 40 years of experience. The average is 16 years of teaching experience. The standard deviation is just under 11 years which tells us that there is a wide variation in responses to this answer. An average of 15 years of teaching experience demonstrates the accumulated skills and experience of the teaching staff in the partner countries of the VELVITT project. We are working with teachers and lecturers who are vastly experienced at supporting learners and delivering courses.

Respondents were asked to identify their subject specialism in an open question on the instrument. These open responses were coded in the UK during the final data preparation stage and 9 categories were identified. These are listed in the table 5.

Table 5: Subject specialisms of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ICT	8	9.0	9.9	9.9
	Maths	4	4.5	4.9	14.8
	Arts	2	2.2	2.5	17.3
	Science	5	5.6	6.2	23.5
	Humanities	27	30.3	33.3	56.8
	Mechanical Engineering/Construction	20	22.5	24.7	81.5
	Electronic and electrical engineering	7	7.9	8.6	90.1
	Business/Accounting	5	5.6	6.2	96.3
	others	3	3.4	3.7	100.0
	Total	81	91.0	100.0	
Missing	System	8	9.0		
Total		89	100.0		

A wide range of subject specialisms is in evidence here. Humanities is the largest single category (comprising history, economics, social science), and although these are not traditionally seen as vocational subjects, it should be noted that teacher trainers working within these specialisms often teach vocationally oriented subjects. Engineering and electrical and electronic engineering are well represented, as is Computing Science and technology (grouped in category 1, ICT).

Having examined the demographics of the dataset in summary form, it is illuminating to examine it from a country by country perspective. First we shall look at the gender mix for each country which is summarised in table 6.

Table 6: Country * Gender Crosstabulation

			Gender		Total
			male	female	
Country	UK	Count	4	8	12
		% within Country	33.3%	66.7%	100.0%
	Finland	Count	6	6	12
		% within Country	50.0%	50.0%	100.0%
	Hungary	Count	16	6	22
		% within Country	72.7%	27.3%	100.0%
	Crete	Count	13	10	23
		% within Country	56.5%	43.5%	100.0%
	The Netherlands	Count	8	1	9
		% within Country	88.9%	11.1%	100.0%
	Portugal	Count	8	3	11
		% within Country	72.7%	27.3%	100.0%
Total		Count	55	34	89
		% within Country	61.8%	38.2%	100.0%

Some interesting details emerge here. Some countries have more men than women responding to the questionnaire (Hungary, the Netherlands. Portugal), but this picture is reversed in the UK, where two thirds of respondents were female. Finland shows the closest to a 50/50 gender balance, although Crete is also very close to this.

We shall now look at the average age of teachers and years of teaching experience by country. These statistics are summarised in tables 7a and 7b:

Table 7a: Average Age of teaching staff by country

Age

Country	Mean	N	Std. Deviation
UK	51.4167	12	7.52521
Finland	48.5833	12	7.86775
Hungary	44.5455	22	12.51181
Crete	37.2609	23	7.98417
The Netherlands	47.8889	9	5.57773
Portugal	43.4545	11	7.46142
Total	44.3371	89	10.05207

Table 7b: average years of teaching experience by country

Years of teaching

Country	Mean	N	Std. Deviation
UK	22.5833	12	6.78847
Finland	18.9167	12	9.79293
Hungary	17.6818	22	12.81140
Crete	6.1739	23	6.19862
The Netherlands	20.2222	9	7.24185
Portugal	18.3636	11	9.40503
Total	15.8764	89	10.81016

A wide variation of responses by country is seen here. The average age of teachers is not subject to much variation. The UK has the oldest teaching staff and Crete the youngest, which is no doubt a function of the operation of the educational systems and career progression opportunities in these countries. The number of years of teaching does vary by a great deal. Again the UK has the most experienced staff with over 23 years of teaching averaged by the respondents, in contrast the staff at Crete have an average of 6 years experience. All other countries are within these upper and lower limits.

We now turn to the numbers of respondents with an ICT specific qualification. These results are summarised in table 8.

Table 8: ICT qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	23.6	23.9	23.9
	No	67	75.3	76.1	100.0
	Total	88	98.9	100.0	
Missing	System	1	1.1		
Total		89	100.0		

Just under 24% of respondents had an ICT specific qualification, which is 21 of the 89 respondents. When asked to identify this qualification the results were as follows:

Table 9: Name of Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Masters	3	3.4	14.3	14.3
	ECDL	3	3.4	14.3	28.6
	Elearning Qualification	1	1.1	4.8	33.3
	Other	14	15.7	66.7	100.0
	Total	21	23.6	100.0	
Missing	System	68	76.4		
Total		89	100.0		

This was an open question, and some categorisation of responses was needed. 3 respondents had Masters Degrees with an ICT component, and 3 had the European Computer Driving Licence (ECDL). 1 respondent identified an e-learning qualification, and for the other 14 it was not possible to categorise the qualification because of insufficient detail on the forms.

If we examine the breakdown of ICT qualifications by country (table 10), we see that The Netherlands has the highest proportion of staff with a qualification (28.6%), and Finland has the lowest with 8.3%. The UK and Hungary followed the Netherlands closely with 25% and 22.7% respectively, 18.2% of the Portuguese staff had ICT qualifications and in Crete 17.4% of respondents. Later in this report we will consider, using a summed variable of ICT experience, whether the presence of an ICT qualification affects how respondents answered on their experience of using VLEs and ICT in general.

Table 10: Country * ICT qualification Crosstabulation

			ICT qualification		
			Yes	No	Total
Country	UK	Count	3	9	12
		% within Country	25.0%	75.0%	100.0%
	Finland	Count	2	10	12
		% within Country	16.7%	83.3%	100.0%
	Hungary	Count	5	17	22
		% within Country	22.7%	77.3%	100.0%
	Crete	Count	6	17	23
		% within Country	26.1%	73.9%	100.0%
	The Netherlands	Count	3	5	8
		% within Country	37.5%	62.5%	100.0%
	Portugal	Count	2	9	11
		% within Country	18.2%	81.8%	100.0%
Total		Count	21	67	88
		% within Country	23.9%	76.1%	100.0%

ICT Experience

We now turn to the results of the questionnaires about general ICT experience. These were 5 points Lickert questions and covered a range of general ICT skills. Tables 11 through to 19 summarise the total responses for these questions.

Table 11: Confidence with Word processing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	25	28.1	28.1	28.1
	experienced	37	41.6	41.6	69.7
	Some experience	16	18.0	18.0	87.6
	Limited experience	7	7.9	7.9	95.5
	No Experience	4	4.5	4.5	100.0
	Total	89	100.0	100.0	

Table 12: Confidence with Spreadsheets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	16	18.0	18.2	18.2
	experienced	19	21.3	21.6	39.8
	Some experience	19	21.3	21.6	61.4
	Limited experience	24	27.0	27.3	88.6
	No Experience	10	11.2	11.4	100.0
	Total	88	98.9	100.0	
Missing	System	1	1.1		
Total		89	100.0		

Table 13: Confidence with Presentation software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	11	12.4	12.4	12.4
	experienced	27	30.3	30.3	42.7
	Some experience	16	18.0	18.0	60.7
	Limited experience	22	24.7	24.7	85.4
	No Experience	13	14.6	14.6	100.0
	Total	89	100.0	100.0	

Table 14: Confidence with File management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	27	30.3	30.3	30.3
	experienced	22	24.7	24.7	55.1
	Some experience	14	15.7	15.7	70.8
	Limited experience	11	12.4	12.4	83.1
	No Experience	15	16.9	16.9	100.0
	Total	89	100.0	100.0	

Table 15: Confidence with Digital imaging

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	4	4.5	4.5	4.5
	experienced	16	18.0	18.0	22.5
	Some experience	24	27.0	27.0	49.4
	Limited experience	19	21.3	21.3	70.8
	No Experience	26	29.2	29.2	100.0
	Total	89	100.0	100.0	

Table 16: Confidence with using Email

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	27	30.3	30.7	30.7
	experienced	32	36.0	36.4	67.0
	Some experience	12	13.5	13.6	80.7
	Limited experience	9	10.1	10.2	90.9
	No Experience	8	9.0	9.1	100.0
	Total	88	98.9	100.0	
Missing	System	1	1.1		
Total		89	100.0		

Table 17: Confidence with Web browsing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	22	24.7	24.7	24.7
	experienced	27	30.3	30.3	55.1
	Some experience	16	18.0	18.0	73.0
	Limited experience	9	10.1	10.1	83.1
	No Experience	15	16.9	16.9	100.0
	Total	89	100.0	100.0	

Table 18: Confidence creating web pages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	9	10.1	10.1	10.1
	experienced	9	10.1	10.1	20.2
	Some experience	17	19.1	19.1	39.3
	Limited experience	15	16.9	16.9	56.2
	No Experience	39	43.8	43.8	100.0
	Total	89	100.0	100.0	

Table 19: Confidence using File Transfer Protocol (FTP)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	11	12.4	12.5	12.5
	experienced	7	7.9	8.0	20.5
	Some experience	10	11.2	11.4	31.8
	Limited experience	11	12.4	12.5	44.3
	No Experience	49	55.1	55.7	100.0
	Total	88	98.9	100.0	
Missing	System	1	1.1		
Total		89	100.0		

There is a great deal of data in these tables, but it is possible to simplify this by taking the total of the responses to 1 and 2 (very experienced and experienced) to identify, for each question, the percentage of experienced users. If we do this we find that users are most experienced with using word processing software 69.7%. This is entirely logical as this is still the most popular use for personal computing and usage has penetrated just about every arena of modern professional life. The next highest level of experience is in using email with 67% reporting themselves experienced or very experienced. Again this is understandable as email is now the preferred method of communication in many institutions and a great deal of institutional business is transacted via electronic communications. The next categories were tied with Confidence with web browsing and file management both accounting for 55% of users. Both of these are again necessary functions of a modern professional. Without the ability to mange files and documents on hard drives and servers, it is hard to function in a modern ICT rich environment and increasingly we look to the world wide web for sources of information.

As we move through the questions, the number of users reporting themselves experienced or very experienced drops below 50% which suggests that we are identifying potential skills deficits and areas which VELVITT will need to address if the potential of VLEs in vocational education is to be realised.   43% of users reported themselves experienced in the use of presentation software (Impact,

PowerPoint or similar). Presentation software is becoming increasingly important in educational contexts, with many lecturers preparing material for delivery using data projectors and interactive whiteboards. Importantly, presentation files can be uploaded to most VLEs to provide permanent and readily accessible records of lectures and teaching sessions. With only a third of respondents experienced using presentation software, this has definitely identified a gap in the skills of teacher trainers which has the potential to have an adverse affect on the use of VLEs in vocational education. 40% of users were confident using spreadsheets, which perhaps reflects the broad base of subject specialisms within the sample as not all subjects need to use data manipulations software. 22% were experienced using digital imaging. The ability to take digital photographs or video and use these in teaching presentations could be a useful additional skill for lecturers. The final two categories were file transfer protocol (FTP 20.5%), and creating web pages 20.2%. Both of these are relatively specialist enterprises and the use of VLEs with user friendly interfaces has made the use of these skills unnecessary for all but the most committed of virtual teachers.

To return to the insight about the use of presentation software and its vital use in VLEs, if we examine the breakdown of answers by country we find a sharp differentiation between countries like Portugal where 100% of users are either experienced of very experienced using this software and the UK where 66.7% of users are experienced compared to Hungary where only 27.3% are experienced. Table 20 gives a full listing of this breakdown.

Table 20: Country * presentation software Crosstabulation

| | | | presentation software | | | | | |
			Very experienced	experienced	Some experience	Limited experience	No Experience	Total
Country	UK	Count	2	6	1	3	0	12
		% within Country	16.7%	50.0%	8.3%	25.0%	.0%	100.0%
	Finland	Count	0	3	5	4	0	12
		% within Country	.0%	25.0%	41.7%	33.3%	.0%	100.0%
	Hungary	Count	4	2	5	6	5	22
		% within Country	18.2%	9.1%	22.7%	27.3%	22.7%	100.0%
	Crete	Count	1	5	2	8	7	23
		% within Country	4.3%	21.7%	8.7%	34.8%	30.4%	100.0%
	The Netherlands	Count	0	4	3	1	1	9
		% within Country	.0%	44.4%	33.3%	11.1%	11.1%	100.0%
	Portugal	Count	4	7	0	0	0	11
		% within Country	36.4%	63.6%	.0%	.0%	.0%	100.0%
Total		Count	11	27	16	22	13	89
		% within Country	12.4%	30.3%	18.0%	24.7%	14.6%	100.0%

Summary Variable for experience with ICT

The questions about ICT experience are all 5 point Lickert scales, and in order to further analyse the data it is possible to produce a summary variable. This is

created by summing all responses for each respondent for these questions. Because the Lickert scale runs from 1 (very experienced) to 5 (no experience), the lower this number for each respondent the more experienced they consider themselves to be with ICT. The descriptive statistics for this summed experience is available in table 21.

Table 21: Descriptive Statistics for summary ICT variable

	N	Minimum	Maximum	Mean	Std. Deviation
General ICT experience	86	9.00	44.00	26.7791	9.10901

As we can see, the minimum score is 9 which represents a respondent who stated s/he was very experienced in all 9 of the categories. The maximum is 44 which represents a respondent who had no experience in 8 of the 9 categories, and limited experience in one other. The average score was just under 26.7, which could represent someone answering with "some experience" to each of the 9 questions, although of course the score could have been distributed differently in the case of each respondent.

ICT skills correlated with gender, country, age and years of teaching

The summary variable is of little use taken in isolation, but when considered alongside the independent variables from the audit, it can illuminate further interesting points from the data set. Firstly, we shall look at the differences in level of ICT experience by gender. This data is contained in table 22.

Table 22: ICT skills by gender

Summed experience with ICT

Gender	Mean	N	Std. Deviation
male	25.5000	52	9.49200
female	28.7353	34	8.24367
Total	26.7791	86	9.10901

We can see that males report slightly higher experience levels with ICT but the scores are relatively close and from this we can infer that skill levels in ICT only vary a small amount between males and females across the dataset. Of course the distribution within respondents of expertise may not be uniform, so more work is needed to probe this important question.

If we consider how the summary ICT variable varies across countries (table 23) we find that the Portuguese staff report themselves to be the most experienced in general ICT usage with a mean score of 18.8 (the lower the score the more experienced the staff), the next most experienced staff group is the UK with a score of 23. We then find that all the other countries are grouped from 27 to 29. Clearly ICT experience is at its highest in Portugal, followed by the UK, and then by the other countries who report very similar levels of ICT experience.

Table 23: Overall ICT skills by country

Summed experience with ICT

Country	Mean	N	Std. Deviation
UK	23.4167	12	9.99507
Finland	28.8333	12	5.32291
Hungary	27.7619	21	10.11388
Crete	29.7391	23	8.77609
The Netherlands	28.8571	7	6.91444
Portugal	18.8182	11	6.92558
Total	26.7791	86	9.10901

Now we have this summary variable, it is worth investigating if the age of respondents or the number of years they have been teaching is correlated with this score. In order to perform this statistical calculation, a cut point in these two variables was calculated which would produce two equal groups. For the age of respondents making a group of those below the age of 47 and a second group of those 47 and above gave us groups of 37 and 38. We could then calculate the ICT variable for each group and make comparisons.

Table 24: Summed Experience by two age groups

	Age	N	Mean	Std. Deviation	Std. Error Mean
Summed experience with ICT	>= 47.00	42	27.4524	7.30587	1.12732
	< 47.00	44	26.1364	10.59528	1.59730

Table 24 shows the average score for the group of 47 and below and the group comprising those over 47. We can see that the scores are very similar, with just over 1 point separating the two and from this we can conclude that there is no correlation between age and level of ICT experience[1]. This may be a slightly surprising result as often it is younger members of staff who appear to be more

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[1] An Independent samples T-Test was conducted on the two groups (below 47 and above 47) and concluded there was no statistically significant difference in the two groups in relation to their overall experience using ICT

confident using ICT and older staff often appear to be more reluctant to learn new skills. From the results of this audit we can say that this is not actually the case and older staff are as likely to be experienced in ICT use as younger staff.

We now turn to number of years of teaching experience and its relationship with this summed variable. In order to create the two groups in this case, the cut point was made at 17 years of teaching experience. This created two groups from the sample, a less experienced group of teachers (less than 17 years), and a more experienced group (more than 17 years). The results of considering the summed variable of ICT experience for these two groups is contained in table 25.

Table 25: Summed ICT experience by years of teaching experience

	Years of teaching	N	Mean	Std. Deviation	Std. Error Mean
Summed experience with ICT	>= 17.00	43	26.9535	7.68410	1.17181
	< 17.00	43	26.6047	10.43150	1.59079

Once again we see that the number of years of teaching experience is not directly related to this variable as the scores are extremely close. And so we can conclude that years of teaching and ICT experience do not have a significant effect on each other.

These two results are important as they tell us that age of respondents and the years of teaching experience they have is not related in any statistical way with their reported experience of using ICT. It appears that training and development needs are to be found across the spectrum of staff profiles.

Experience of using Virtual Learning Environments

This is a vital question for the audit, and we asked respondents directly to respond using the 5 point scale about their experience of using VLEs. The results are collected in table 26.

Table 26: Experience with VLEs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	6	6.7	6.9	6.9
	Experienced	11	12.4	12.6	19.5
	Some experience	24	27.0	27.6	47.1
	Limited experience	31	34.8	35.6	82.8
	No Experience	15	16.9	17.2	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

We can see from this table that 6.7 of users were very experienced, and 12.4% were experienced. So less than one in five of users in all of the countries considered themselves experienced users of VLEs. 27.6% reported having some experience, 35.6% had limited experience and 17.2% had no experience at all. This underlines the need for a greater intensity of development and training within vocational teacher training. When we examine the breakdown by country for this question (table 27), we see a sharp dichotomy of experience emerging.

Table 27: Country * Experience with VLEs Crosstabulation

			Experience with VLEs					
			Very experienced	experienced	Some experience	Limited experience	No Experience	Total
Country	UK	Count	4	3	2	2	1	12
		% within Country	33.3%	25.0%	16.7%	16.7%	8.3%	100.0%
	Finland	Count	2	1	4	4	1	12
		% within Country	16.7%	8.3%	33.3%	33.3%	8.3%	100.0%
	Hungary	Count	0	0	7	12	2	21
		% within Country	.0%	.0%	33.3%	57.1%	9.5%	100.0%
	Crete	Count	0	3	5	6	9	23
		% within Country	.0%	13.0%	21.7%	26.1%	39.1%	100.0%
	The Netherlands	Count	0	0	3	4	1	8
		% within Country	.0%	.0%	37.5%	50.0%	12.5%	100.0%
	Portugal	Count	0	4	3	3	1	11
		% within Country	.0%	36.4%	27.3%	27.3%	9.1%	100.0%
Total		Count	6	11	24	31	15	87
		% within Country	6.9%	12.6%	27.6%	35.6%	17.2%	100.0%

Finland and the UK report high numbers of staff with experience of using VLEs, but Hungary, Crete, Portugal and the Netherlands have no staff in these categories. 36% (4 people in total) from Portugal reported they were experienced in VLE use, compared with 3 people from Crete, 3 from the UK and 1 from Finland. No Hungarian participants considered themselves experienced in the use of VLEs

VLE types in use

We also asked respondents the name of the VLE were using. The results are summarised in table 28.

Table 28: Name of VLE in use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Blackboard	13	14.6	54.2	54.2
	Web CT	8	9.0	33.3	87.5
	Neptune	1	1.1	4.2	91.7
	N@tschool	2	2.2	8.3	100.0
	Total	24	27.0	100.0	
Missing	System	65	73.0		
Total		89	100.0		

We can see that Blackboard is the most popular choice (because of its widespread usage in the UK), followed by WebCT which is the VLE used by the Finnish partner. Neptune and N@tschool had 1 and 2 users respectively.

Skills in using VLEs

The final set of questions on the survey concerned discrete skills in using Virtual Learning Environments and some of the main activities which teachers and lecturers use when teaching using these systems. The first (table 29) concerns experience of uploading content into VLEs, which is the single most important action to be performed.

Table 29: Experience of Uploading to VLEs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	11	12.4	12.6	12.6
	Experienced	7	7.9	8.0	20.7
	Some experience	20	22.5	23.0	43.7
	Limited experience	9	10.1	10.3	54.0
	No Experience	40	44.9	46.0	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

20.6% consider themselves experienced or very experienced in uploading content, and a further 23% have some experience of this. This identifies a clear training need for the future and a development direction for the VELVITT project.

The next question concerned confidence in using asynchronous communication within VLEs. This relates to the use of bulletin boards and newsgroups and other threaded discussion for which are a major feature of all VLEs. 14.9% considered themselves experienced or very experienced in this, and a further 16.1% had some experience of this. 51.7% had no experience at all of using asynchronous communication.

Table 30: Confidence in using Asynchronous communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	5	5.6	5.7	5.7
	Experienced	8	9.0	9.2	14.9
	Some experience	14	15.7	16.1	31.0
	Limited experience	15	16.9	17.2	48.3
	No Experience	45	50.6	51.7	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

To contrast with the previous question, we also asked about synchronous communication, consisting of chat facilities and real time interactions such as video conferencing. The percentage of users who report themselves experienced or very experienced drops even lower for this to just 13.8%, and 57.5% have no experience of these systems.

Table 31: Confidence in using Synchronous communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	4	4.5	4.6	4.6
	Experienced	8	9.0	9.2	13.8
	Some experience	10	11.2	11.5	25.3
	Limited experience	15	16.9	17.2	42.5
	No Experience	50	56.2	57.5	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

Managing learner accounts is an essential part of using VLEs. Student details need to be added, personal details and permissions need to be set up, therefore this is a key factor in the successful use of these systems. 17.2% were

experienced or very experienced in managing learner accounts, with 44.8% having no experience at all.

Table 32: Confidence in managing learner accounts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	8	9.0	9.2	9.2
	Experienced	7	7.9	8.0	17.2
	Some experience	16	18.0	18.4	35.6
	Limited experience	17	19.1	19.5	55.2
	No Experience	39	43.8	44.8	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

Most VLEs make provision for online assessment, including the setting up of multiple choice quizzes, and the use of digital drop box facilities to allow students to send work securely online to tutors. 8% were experienced or very experienced in using these systems and just 55.2% had no experience at all of these.

Table 33: Confidence in using Assessment tools in VLEs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very experienced	3	3.4	3.4	3.4
	Experienced	4	4.5	4.6	8.0
	Some experience	20	22.5	23.0	31.0
	Limited experience	12	13.5	13.8	44.8
	No Experience	48	53.9	55.2	100.0
	Total	87	97.8	100.0	
Missing	System	2	2.2		
Total		89	100.0		

Summary variable of VLE Skills

The 5 questions about the detailed use of VLEs can be summed and analysed in the same way that the general ICT responses were. This operation was undertaken and a new variable created. Some users did not respond to these final sets of questions, and a missing entry in the dataset skews the results leading to a respondent having a much higher experience score than is actually

the case. 3 respondents had not given full answers for this final set of questions, and these were discarded. The new variable is summarised in table x.

Table 34: Summary variable of VLE skills

	N	Minimum	Maximum	Mean	Std. Deviation
Summed VLE skills	87	5.00	25.00	19.7816	5.78777

As with the previous general ICT variable, we need to examine this by country, gender and age to reveal further detail on VLE experience within partner countries. Table 20 gives the average for each country.

Table 35: Overall VLE skills by country

Summed VLE skills

Country	Mean	N	Std. Deviation
UK	15.3333	12	6.85344
Finland	21.0833	12	4.14418
Hungary	19.0000	21	5.67450
Crete	23.1304	23	3.38854
The Netherlands	23.2500	8	2.18763
Portugal	15.1818	11	6.22605
Total	19.7816	87	5.78777

Portugal has the highest level of experience followed by the UK, then Hungary, Finland, Crete and the Netherlands. This is an interesting finding as we know from previous work that VLEs are rarely in use presently in Portugal, although the use of web based tools for learning is a widespread practice. This result for Portugal which gives them the most experience of using VLEs is brought about because staff there are using VLE type tools for learning without them necessarily forming part of a VLE package. The result for the Netherlands is surprising here as VLEs are in use in that country and it was expected that the results for experience of using VLEs would be higher for this particular country.

If we examine the effect of gender on this variable, we find that once again there is no statistically significant difference attributable. Table 21 summarises this result and clearly shows that gender does not affect this score in any meaningful way. The difference between male and female experience of using VLEs is just over one point and a statistical test[2] confirmed this was not a significant difference.

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[2] An independent samples T-test

Table 36: VLE skills by gender

Summed VLE skills

Gender	Mean	N	Std. Deviation
male	19.3585	53	5.71804
female	20.4412	34	5.91962
Total	19.7816	87	5.78777

Correlation between age and years of teaching experience and VLE experience

Once again we can examine age and years of teaching experience on this variable. Table 37 demonstrates that the two age groups we created previously do not have any significant differences in their use of VLE skills. Users under the age of 47 are slightly more experienced, but the differences between this group and those over 47 is less than 1 point.

Table 37: Summed VLE Experience by years of teaching experience

	Age	N	Mean	Std. Deviation	Std. Error Mean
Summed experience with ICT	>= 47.00	42	27.4524	7.30587	1.12732
	< 47.00	44	26.1364	10.59528	1.59730

Table 38 shows years of teaching and its effect on the Summed VLE experience variable. Once again there is no real difference between the VLE experience reported by the younger age group (those with fewer than 17 years teaching experience) and the older group (those with 17 or more years teaching experience. Both score are 26 with the younger age group showing themselves as very marginally more experienced, although this difference is not statistically significant.

Table 38: Summed VLE experience by years of teaching experience

	Years of teaching	N	Mean	Std. Deviation	Std. Error Mean
Summed experience with ICT	>= 17.00	43	26.9535	7.68410	1.17181
	< 17.00	43	26.6047	10.43150	1.59079

Conclusions

This audit has allowed us to examine levels of experience and VLE usage within the partner countries of the VELVITT project. We have found that these institutions have an experienced teaching staff with an average age of 44 and an average of 15 years teaching experience per person. This experience is a result of career structures within education which for most countries mean that staff involved in teacher education have previously had a great deal of experience in delivering front-line teaching.

We asked respondent to tell us about their confidence using a range of ICT tools and processes. Most were confident using word processing, email and web-browsing which can be considered as the basic communication and information presentation skills needed to function in today's technology rich society. Respondents were less confident using spreadsheets and presentation software, digital imaging and creating web pages. The use of presentation software is particularly important when considering VLE usage, as it is often content created by tools such as PowerPoint which are suitable for loading into VLEs. With that point made, it is important to note that VLEs offer a much wider range of pedagogical possibilities than just being a convenient place for a lecturer to store presentations of teaching material, but in many cases the uploading of content of this kind is the first step towards utilising these systems to their full potential.

We found a variety of VLEs in use. WebCT is used in Finland and Blackboard in the UK where both institutions involved in the project have settled on these systems as standard applications across the teacher training curriculum. Portugal uses a range of web enabled teaching tools to deliver online content, but the Portuguese institution does not currently use any identifiable VLE systems. No VLE systems are currently in use in the two Hungarian teacher training institutions.

We also asked users to rate their experience of using VLEs generally and their experience of using discrete parts of the VLEs. The most experienced users were the UK staff (where Blackboard has been in use for 4 years), with Finnish staff coming second. Portuguese staff did present themselves as having experience with VLE systems, although they may have arrived at this decision through their use of analogous stand alone tools.

We also examined the effects of the variables of gender, age and years of teaching experience on both VLE experience and general ICT experience. In all of these cases we found slight variations with younger staff tending to be slightly more experienced users, but overall there was no real difference according to these variables. We can draw some important conclusions from this result. We

now know that age and years of teaching experience does not affect training needs in any significant way and so we can conclude that staff development needs in VLE usage are fairly uniform across all groups of staff in vocational ITT and it is not simply a case of targeting older staff who come from a generation of teachers trained before these tools started to become commonplace. A strategy of flexible training aimed at the needs of all individuals is therefore needed in each institution in order to create the necessary skills and knowledge to allow staff to use VLEs effectively in their practice.

Overall the study confirms findings we have arrived at through discussions and informal research conducted at the institutions involved in the project. The UK and Finland are experienced in VLE usage and can therefore contribute to a significant transfer of knowledge to the Hungarian partners and to some extent the Dutch partners. The Portuguese situation is unique in that experience of VLE type tools is high despite the fact that no VLEs are formally in use at the present time.