The Purpose of Focus Groups in Ascertaining Learner Satisfaction with a Virtual Learning Environment

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Abstract: This paper examines the contribution of focus groups in evaluating learner satisfaction with a Virtual Learning Environment (VLE). It explores the views of a group of introductory level Post Compulsory Education learners that have a history of disaffection, impoverished learning and challenged written and communication skills. The outcome of this study will be used to inform future VLE material design for inclusion in a School policy document. Additionally, the findings will contribute to the development of both a broader range of discrete ICT programs delivered by a VLE and embedded ICT within a range of vocational qualifications across the Post Compulsory Education Vocational Curriculum.

Key words: virtual learning environment, focus group, disaffection, impoverished learning, satisfaction, post compulsory education, policy document.

1. Introduction

The use of a Virtual Learning Environment (VLE) in Post Compulsory Education in Further Education Colleges (FE) has been increasing incrementally over the last five years. Having begun life in Universities and the more 'traditional' higher education institutions, VLEs are flexible, accessible and encourage the development of communities of practice. They encourage group activities, peer support and electronic delivery of learning but are not intrinsically designed to aid those learners at the lower end of the academic spectrum. This paper presents a case study of learners on an introductory (Level 1) FE course in ICT ascertaining their level of user satisfaction with a VLE. The outcome of this study will be used to inform future VLE material design for inclusion in a School policy document. Additionally, the findings will contribute to the development of both a broader range of discrete ICT programs delivered by a VLE and embedded ICT within a range of vocational qualifications across the Post Compulsory Education Vocational Curriculum.

Focus groups were chosen as the method of data collection for this study, based on work by Morgan (1988), using a group of learners whose academic backgrounds are similar in qualification and educational history and because they 'generate hypotheses that derive from the insights and data from the group' (Morgan 1988, Krueger 1988). Focus groups have been in evidence since the 1920s. At that time, they were in the guise of survey questionnaires related mainly to products and the customer requirements of a product. During World War II and up until the 1970s, focus groups were used for market research to elicit wants and needs. From the 1980s onwards, the use of focus groups has been used mainly in the health arena and in examining social issues. Since then social scientists and program evaluators have found focus groups to be useful in understanding how or why people hold certain beliefs about a topic or program of interest. Krueger and Casey (2000) identified that focus groups can be used for program development and evaluation, planning, and needs assessment. Powell and Single define a focus group as 'a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research' (1996) and rely on 'interaction within the group based on topics that are supplied by the researcher' (Morgan 1997) confirming that focus groups are an ideal opportunity to elicit information from learners in a safe, non-threatening environment (Krueger 1988). Morgan (1998, pp58) says that 'the conversations in focus groups can be a gold mine of information about the ways that people behave and the motivations that underline these behaviours.'

David Morgan's book 'The Focus Group Guidebook' (1998) has been used throughout this study as the empirical work containing the methodological approach and the validated data-gathering instrument for the Focus Groups. When designing the VLE interface, factors such as navigatability, learning activities and resources for use within the computer-mediated environment (as is a VLE) were instrumental in the learner satisfaction of the VLE. The work of Robert Gagné (1965) is critical in any study using computers for learning and illustrates the importance of his Instructional Design (ID)

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to an underlying theory of computer-based learning. Gagnés theory stipulates that there are several different types or levels of learning. The significance of these classifications is that each different type requires different types of instruction. Gagne identifies five major categories of learning: verbal information, intellectual skills, cognitive strategies, motor skills and attitudes (web link accessed on 18/06/06). Gagné's Nine Events of Instruction (a sequence of learning events borne out of his ID theory) addresses learners in terms of the logical steps that are mapped to the way they learn. The events are; gain attention, inform the learner of the objective, stimulate their recall of prior learning, present the stimulus, provide learner guidance, elicit performance, give feedback, assess performance and enhance retention and transfer of learning. Using this premise, designing a VLE with learners for whom written communication is difficult and numerical skills underdeveloped, requires 'constant revising and adjusting of our uses of technology to better meet the needs of the program and our students' (Bucci et al 2003), yet is ideally matched to Gagné's theory of developing computer-based learning using his ID to change the capabilities of the learners.

By the very nature of the flexibility that can be achieved in designing a VLE, a vast range of stimulus can be embedded and these will address the learners preferred learning style and learning processes, which are not completely understood, and are different in detail from one person to another (Bostock 2005). This is clearly evidenced in this case study and its learners, where a detailed analysis of pre-VLE knowledge was essential as well as a breakdown of the learning style of the learners so as to maximise their achievement and success against specified learning objectives. The materials available on the VLE for this case study only mapped as far as Instructional Event 6 - Elicit performance (practice). Future studies are planned whereby the full set of Instructional Events is included in all ICT courses delivered via a VLE. An intrinsic part of the study was the collection of data from pre- and on-course diagnostic tests of the learners in the study particularly their literacy and numeracy level (www.keyskills4u.com), preferred learning style (www.vark-learn.co.uk) and a review of their educational history (Individual Learning Plan). Results identified that more than 30% presented with challenged written and communication skills that would require specialist intervention and support throughout their studies. The VARK (Fleming 2001) online multiple-choice learning style assessment profiled the learners learning styles as mainly kinaesthetic and auditory. Typical of auditory learners would be a preference to attend lectures, listen to speaking and like to read aloud. For kinaesthetic learners, their preference is to be 'hands-on' with practical activities and watch (and be part of) demonstrations. The learners' prior educational histories contained instances of exclusion and disaffection with their 11-16 education, many learners not completing their year 10 or 11 studies. Their home postcodes indicating that they live in some of the lower socio-economic housing, mostly council owned, with 3 learners living in 'poor' housing in southeast London. All learners in the study completed a pre-VLE questionnaire (Table 3) that identified their personal profile, general level of computing experience (including using the internet/web), concerns they had about using a VLE in their learning and were asked to rank a number of learning activities/resources they had previously used in their educational history. This was used to inform the design of the interface of the VLE and the resources/activities within it. Care was taken in the design process such that there was ease of navigation for the learner, and a simple hierarchical structure for the relationship between the course elements to encourage the learners to make appropriate connections within or between each resource and/or activity. Usability, flexibility and pedagogy attributes were considered at all stages of the VLE design as content management shortcomings militate against making any improvements once the VLE is 'live' especially if those improvements involve structure (Vogel 2006).

2. Methodology

This study used a mixed methods data collection approach where agency was given to both quantitative (Likert-scale questionnaire) and qualitative data (Glaser and Strauss 1967) thereby triangulating the results. Creswell (2003, p208) makes clear that the perceived legitimacy with which the mixed methods approach is being promoted is expanding. This is supported by detailed reference to mixed methods studies in areas as diverse as occupational therapy and AIDS prevention. A new 'Handbook of Mixed Methods in the Social and Behavioural Sciences' (Tashakkori and Teddlie, 2003) is cited within Creswell (ibid) as the foremost publication in the field of mixed methods research. In this case study, 39 students were actively recruited and all completed the pre-VLE questionnaire before being exposed to the VLE itself. The issue of ethics is of paramount consideration in a focus group study. Informed consent must be gained prior to any focus group activity in either written or oral form. The participants must be told of the consequences of the research and care must be taken to reduce any harmful effects of the research on the participants. The usefulness of the research cannot

be under-estimated and this must be brought to bear on the participants in terms of their benefit and that they can get involved in the change that will result from the study findings. Learners in this study signed an agreement that gave permission for transcription and hard copy storage of the focus group discussions. All participants in the study had sight of the transcripts at the final stage before coding and were able to discuss changes they felt needed to made where meaning or incorrect transcription had occurred. Whilst the learners knew each other as a group on the same ICT Program, the focus group selection process ensured that the 'friendship groups' that existed were separated to allow full and frank discussions to take place (Krueger and Casey 2000). Focus groups involve not only 'vertical interaction' or interaction between the moderator and the interviewees, but also 'horizontal interaction' among the group participants (Denzin and Lincoln 2003). Data emerges from the interaction of the learners in the focus groups, in a language that is native to them alone (Fine 1994). This then has to be delicately decoded to elicit the themes contained therein. Kitzinger (1994) explains that the group situation creates the group's own hierarchy of importance, their own words and language.

Focus groups are a collectivistic method as defined by Denzin and Lincoln (2003) based on theoretical and methodological considerations. For example; consideration has to be given to how many groups will be held? How many people will be involved in each group? The focus group is an unstructured interview guide with introductory questions. There is an overt need to state that there are no 'right' or 'wrong' answers. That it is perfectly acceptable (in fact preferred) if there is disagreement on topics. There is much controversy about prior analysis by the researcher of the situation in which the subjects have been involved. Merton and Kendall say: 'Foreknowledge of the situation obviously reduces the tasks confronting the investigator, since the interview need not be devoted to discovering the objective nature of the situation. Equipped in advance with a content analysis, the interviewer can readily distinguish the objective facts of the case from the subjective definitions of the situation' (Merton and Kendall, 1946). In a study by Hart (2001), 8 focus groups were used and looked at the experiences and impressions and relationship teenagers in public schools in the United States had with computers. The learners were in public school in Florida, Maryland and Illinois. One of the most surprising findings was that the learners felt that the quality of their education depended on the teacher and not the technology as a better way to learn. This is supported in part by Ainley et al (2000), whose studies showed that learners, teachers and parents felt that computers have a positive effect on learning. US Research shows that the presence of computers and Internet at home has a strong positive association with academic outcomes of school children, particularly children from disadvantaged backgrounds (Wilhelm et al 2002). Interestingly, a study by researchers at the National Centre for Social and Economic Modelling (NATSEM) found that educational attainment of an individual was a stronger predictor of having home computers and the Internet than income (Hellwig and Lloyd 2000).

3. Research design

The group of 39 learners in this case study exhibited the following characteristics:

Table 1: Learner characteristics

Learner Data	
Total number of students	39
Males	35
Females	4
Age (years)	No of Learners
16	27
17	8
18	4

Table 2: Learner home postcode

Home Post code	DA1	DA11	DA8	DA12	DA2	BR8	DA15	DA16	DA9	SE2
No. of learners	9	6	4	4	3	3	3	2	2	3

The home postcode (zip code) for the learners was spread over a 10 mile radius from the College and included areas associated with low-status housing, either local council owned or starter homes as well as 'poor' housing in south east London (SE2). The pre-VLE questionnaire was aimed at establishing the learners' pre-existing level of computing skill and those chosen for inclusion in question 2 and 3 of the questionnaire were explicitly required for the learner studying on the introductory ICT program. Learners were asked to score their response to each of the statements as 1 (no experience), 2 (some

experience) or 3 (extensive experience). Question 4 was aimed at identifying whether the learner had found a prescriptive range of learning activities and resources useful in their learning history. Question 4 required the learner to respond to each learning activity or resource as 1 (not useful), 2 (some use) or 3 (very useful). Question 5 required the learner to respond as 1 (no concerns), 2 (some concerns) or 3 (extensive concerns) in respect of their anticipated concern with using a VLE in their learning. Statistical Package for the Social Sciences (SPSS) was used to calculate Cronbach's alpha. Cronbach's α (alpha) is a quantity defined in multivariate statistics. It has an important use as measure of the reliability of a psychometric instrument, since it assesses the extent to which a set of test items can be treated as measuring a single latent variable http://en.wikipedia.org/wiki/Cronbach's_alpha The Cronbach's α value for the items in question 2 and 3 in the Pre-VLE questionnaire were calculated as:

Q2 Cronbach's α value = 0.791

Q3 Cronbach's α value = 0.820

For a set of items to be considered as a scale, the Cronbach's α value must be > 0.7. The results obtained here, suggest that the items are measuring the same underlying construct and so have "high" or "good" reliability.

Table 3: Pre-VLE questionnaire

Question No.	Question(s) asked/data collected
1	General learner profiling information Student registration number Name Address Postcode (zip code) Gender Age at 1st September 2005)
2	General level of learner computing experience Burn a CD Move files Insert clipart image Wordwrap text Insert a table Merge two cells Mail Merge Animation in Powerpoint Insert pictures Insert hyperlinks
3	Experience of using the internet/web in their learning history Send and receive emails Research information from the web Use MSN or equivalent Download a podcast Use a webcam
4	Usefulness of a learning activity or resource used in previous learning history Essay writing Report writing Short answer questions Reading text books and/or journal articles Accessing/downloading reports/articles in word or pdf format. Powerpoint presentations Listening to lectures Online groups activities Chat rooms Discussion forum/message boards Watching short video clips Assessment using online multiple-choice questions Gapped Handouts Analysing numerical data Drawing charts and graphs Presentation of work to peers and tutors

5	Concerns that learner had about using a VLE in their learning

The focus group meetings were held during the learner's weekly group tutorial sessions (one hour long) over a period of six weeks. Rooms were allocated that were comfortable and non-threatening and informal debriefs were set up so the participants could wind down post-focus group session. Data was collected against the questions asked using notes and then (latterly) recordings that were transcribed and coded. Full focus group questions reproduced below.

Table 4: Focus group questions (based on Morgan 1998, and Vogel 2006)

Question no.	Question asked/data collected
1	What were the learner responses when they looked at the VLE for the first time?
2	How did the learners find the experience of using the VLE for: Curriculum activities? User Interface (navigatability)?
3	What was the learner perspective on the parts of the VLE raised as not so good?
4	How has the VLE learning fitted in with other types of learning for the program?
5	What are the most valuable aspects of the VLE for the learner? (data collected on an individual basis).
6	Taking into consideration all the discussions so far, please rate learner satisfaction of the VLE on a scale of 1 – 5 (1 - will not lead to a chance of success on program, 5 - will greatly improve chance of success on the program).

Question 6 required the learner to respond on a 5-point Likert scale. The change from a 3-point Likert scale used in the pre-VLE questionnaire was intended to broaden the categories of learners response such that learners could differentiate between 'might lead' and 'will definitely lead', thereby identifying their confidence in the VLE as a contributory factor to their success. Learners were asked to score their response to the statement in question 6 as 1 (will not lead to a chance of success on the program), 2 (might lead to a small chance of success on the program), 3 (might lead to good chance of success on the program), 4 (will definitely lead to a small chance of success on the program), 5 (will greatly improve chance of success on the program). Participants in focus groups often say what they do but this might not reflect what they actually do. It is therefore essential to triangulate findings using an alternative data collection method to ensure that the data collected is accurate. Fern (2001) says that focus groups can be used to supplement other methods, hence the choice of a mixed methods approach to this study (see Methodology). McNamara (web link accessed on 01/06/06) suggests that the order of a focus group should be 'Develop the questions, record the responses using an audio recorder, reflect the response back to the participant to ensure the correct understanding of the response'. This methodology was followed, thereby ensuring the analysis and results could be verified and validated with the learner at the earliest opportunity. Researchers disagree about the correct number of participants for a successful focus group. Many say that 8 – 12 (Kitzinger and Barbour 1999), 6 – 12 (Lindlof 1995), 6 – 8 (Krueger 1988), 5 – 8 (Green and Hart 1999). Focus groups in this case study were 5 – 8 strong to get enough groups to derive sufficient data to analyse learner satisfaction.

3.1 Findings

3.1.1 Questionnaire:

Learners' response to question 1 and scored response to questions 2 – 5 for the pre-VLE questionnaire were entered into a spreadsheet and analysed using numeric, statistical and graphical methods. Learners gave themselves an overall low score in the area of 'general computing experience' with 80% of learners replying that they had either no experience (47%) or some experience (33%) in the computing skills required for studying on the introductory ICT program (figure 1).

Unsurprisingly, all learners had a high pre-existing level of experience of using the Internet/web in their learning history with only 14% of learners replying that they had either no experience (2%) or some experience (12%) in the use of the internet/web in their learning (figure 2).

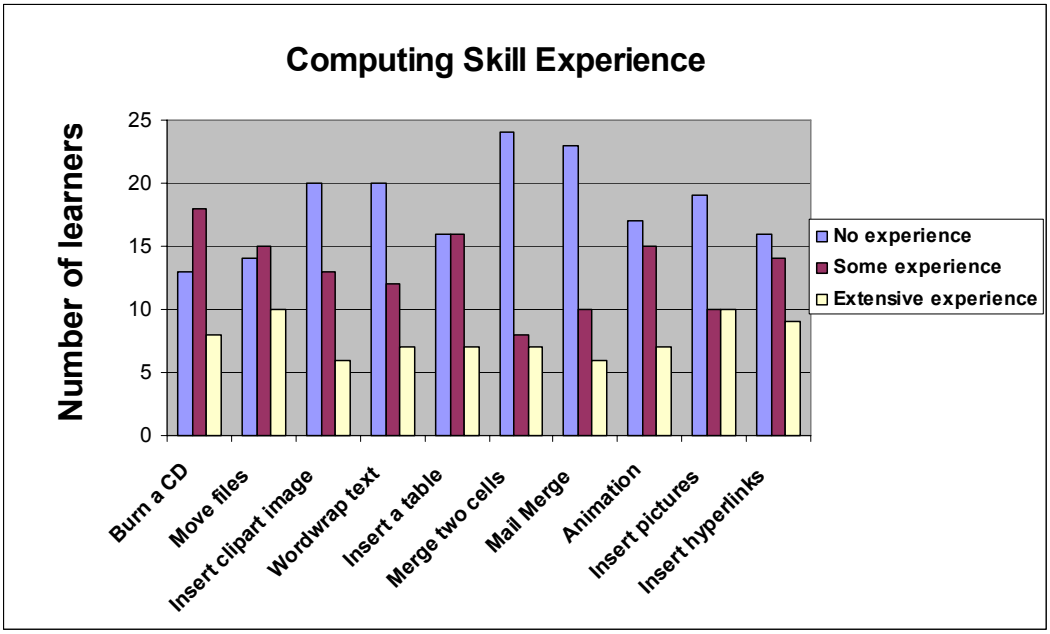

Figure 1: Pre-existing level of computer skill experience (Q2)

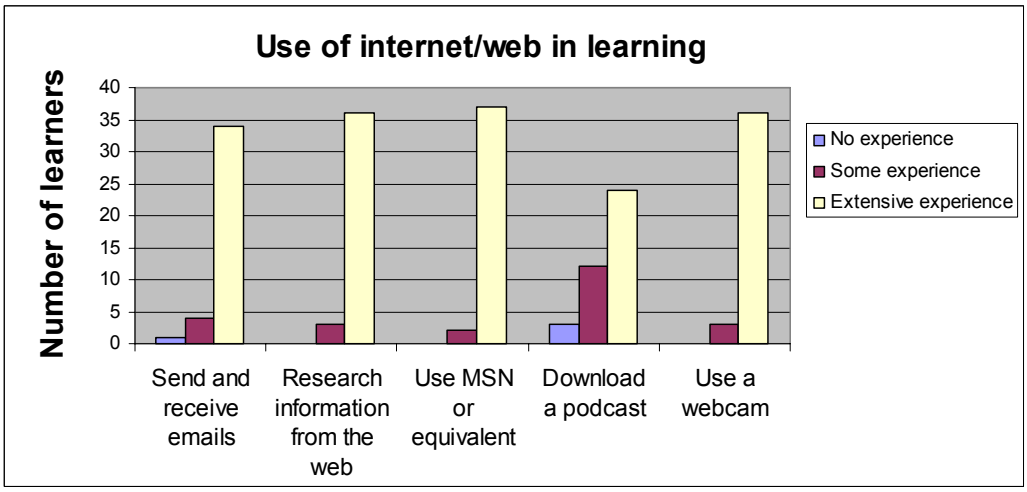

Figure 2: Pre-existing level of experience of using the Internet/web in learning history (Q3)

The usefulness of a range of learning activities/resources resulted in mixed responses. Some learners felt that simple activities with answers (gapped handouts, online multiple-choice questions) were much more useful than overly long essays/reports that were required in some cases. Other learners identified group activities using chat rooms/discussion forums as useful as this was something with which they felt they had 'loads of experience'. Learners scored low in their concerns about using a VLE in their learning (figure 3) with 54% having 'No Concerns' (21 learners), 33% having 'Some Concerns' (13 learners) and 13% having 'Extensive Concerns' (5 learners). This is not unexpected and goes someway to validate the learners self-assessed high level of experience in using the internet/web (Q3). It is suggested that this (apparent) lack of concern with using the VLE has been translated by the learner as the learners' expectation that the VLE will be very similar in use to the internet/web and therefore have no concerns for them.

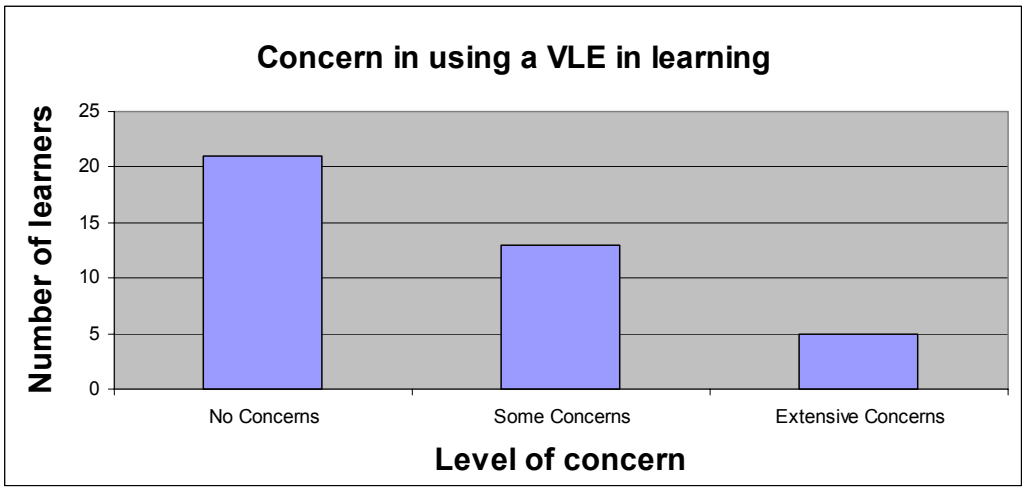

Figure 3: Level of concern with using a VLE in learning (Q5)

A Chi-square test was applied to determine if male and female learners responded differently to each of the items in Q2 of the pre-VLE questionnaire. Due to the small sample size of female learners (4), the Chi square test returned an error in all cases tested, identifying that the low female count would affect the validity of the Chi-square value. This was also the case for each of the items in Q3 of the pre-VLE questionnaire. When the Chi-square test was repeated using age at 1st September, this too showed an error in the count for the number of learner's aged 17 and 18 years. Correlation analysis (Pearson Correlation co-efficient r) and t-test analysis were inappropriate as there were no numerical values collected as part of the pre-VLE questionnaire (the scores of 1, 2, or 3 are categories or ordinal numbers and not true 'numerical' values).

3.1.2 Focus groups:

Results from analysis of Q6 of the focus group questions indicate that 40% of the learners are dissatisfied with the VLE content and scored either 1 (will not lead to improved chance of success on the program) or 2 (might lead to a small chance of success on the program). The focus group sessions were coded immediately following the session where every line, paragraph, or other section or text was coded for relevant themes. As these were identified, they were assigned a working code. This meant that definitions were constantly challenged and new codes developed (Glaser and Strauss, 1967). Saturation was reached after 26 transcripts were decoded. No new codes were required, no new categories emerged and any new transcripts only produced a repetition of themes already identified. Themes identified were; ease of navigation in the VLE; clear content; able to revisit difficult topics but didn't like all the on-screen reading; the hot-links were all active; the hot-links were to good sites; charts/graphs made understanding numbers easier; audio would have helped with all the reading; the chat rooms were 'cool to hang out in'; it was difficult to get in touch with a tutor and that scheduled real-time chats (RTC) with a tutor would have been better; email messaging system was a good way of keeping in touch if off sick or during holiday periods; the use of the diary and was considered to be useful as a reminder for homework/assignment hand in deadlines and could be used for recording all kinds of calendar events (not necessarily academically related ones); the use of group-based activities were a good way of improving skills and knowledge by sharing ideas with peers; the inclusion of a variety of small activities made the VLE much more interesting to use.

4. Conclusion

Overall the case study was considered successful in that it identified pre-existing areas of concern for the learners that were to use the VLE. These concerns would be included as part of the redesign brief for the VLE interface and learning activities. It also identified that those learners whose predominant learning style was either kinaesthetic or auditory, would require different ways in interacting with the materials in the VLE. It also confirmed that not all learners' needs were catered for by developing a VLE that was 'fit for the masses' and that 40% felt that it would not improve their chance of success on the programme. It is acknowledged that the study is limited in that it focussed on a narrow range of learners and ICT programs. As a pilot study, whose aim was to ascertain learner satisfaction with a VLE, using focus groups as the main data collection instrument, it is felt that the results show that that

has been achieved. In the next study, a larger female cohort will be studied as the statistical analysis was impeded by the small female representation.

The use of focus groups in this study has been shown to be a sound method of inquiry by using an already validated data-collection instrument and triangulating the results with a quantitative questionnaire. Focus groups are ideally suited for small groups where a one-to-one setting can be threatening and are most effective where the groups are comfortable, there is no peer pressure and intimate topics are not being discussed. They are the data gathering method of choice for use in 'plural voice' situations (Fine 1994) where learners can use their own language and words leading to the participant's involvement as key players in the future development of both a broader range of discrete ICT programs delivered by a VLE and embedded ICT within a range of vocational qualifications across the Post Compulsory Education Vocational Curriculum.

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