

# A PEDAGOGICAL FRAMEWORK FOR THE USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN INITIAL TEACHER TRAINING

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### ABSTRACT

*This paper describes the initial findings of a longitudinal case study that investigates the use of e-learning and communications technology to enhance the placement experience for full time post graduate certificate in education (PGCE) students. It is a work in progress examining how a VLE might be used to support trainees while they are on placement.*

*Geographically separated trainees can feel very isolated on placement. The purpose of the VLE site was to try to alleviate some of the loneliness associated with placement by offering a way for trainees to maintain contact with each other, and to offer mutual support for the work they were doing in terms of lesson plans, assignment work resource planning and so on.*

*The Blackboard® (BB) site was set up prior to the students going on their first placement. Asynchronous and synchronous activities and communications were encouraged and provided for on the BB site, on a regular basis by the tutor while they were on placement.*

*This paper describes the initial findings and analysis of the study, giving the depth and breadth of trainee usage of the site over the course of the academic year. The findings from the trainee evaluations of their use of e-learning technologies during the course are also given. A preliminary analysis of the results is used to offer some insight into how this type of support might be improved for future students, and a minimum pedagogical framework is recommended for the implementation of VLEs for initial teacher training.*

### INTRODUCTION

This paper describes the initial findings and analysis of a longitudinal case study investigating the use of e-learning technology, specifically a virtual learning environment, (VLE) to enhance the training experience of trainees on the professional year post graduate certificate in education (PGCE). The purpose of the research is to try to determine if the trainee placement experience can be enhanced by using the communication and collaboration opportunities provided by the VLE to negate the geographical isolation of students. This paper reports the initial findings of the first year of the study, and recommends a minimum pedagogical framework for the implementation of VLEs in this type of teaching and learning.

The research described here gives a critical analysis of the use of the VLE in terms of its fitness for purpose. The VLE is

seen as an enhancer, providing further opportunities and alternatives, rather than as a replacement or substitute for face to face teaching and learning. The paper aims to present the preliminary findings of the study, and also to propose a minimum pedagogical framework for the use of VLEs in teacher training of this nature, based on the results of this initial analysis.

### Context and background for the research

The research is grounded in theories of networked collaborative learning, (de Laat & Lally, 2003; Jones, 2000) linked with socio constructivism (Dillenbourg, 1999; Kyriakidou, 1999; Vygotsky, 1978) and communities of practice (Wenger, 1998). It also builds on previous work done at Sheffield Hallam University which reported that whilst there was great potential in using the VLE as a mode of delivery, it also required a great deal of time and input from academic and technical staff (Angier, 2004).

Previous research recommends that trainees have equal access to the shared electronic resources, and that a sense of community is created between the learners in the group, giving them opportunity to structure the online experience for themselves. Research that has explored the 'connectedness' of the trainees who engaged with the VLE for the purposes of study, reports that there is a heightened sense of feeling connected as part of a wider learning community (Thurston, 2005). The forming of the sense of community is deemed to be a necessary initial step in online collaborative learning (Wegerif, 1998). Other research has identified key issues of access to the technology and support for teachers, amongst others, as being important to the success of the use of communications technology for teaching and learning (Abbott *et al.*, 2005). In other studies, research confirms that electronic conferencing can be used as a tool to enhance the learning and teaching of trainee teachers, but its success depends on the nature interaction and level of collaboration among the participants (Kyriakidou, 1999).

Research done in Northern Ireland has some parallels with the work done here. This research reports that online discussion not only reduced the sense of loneliness often felt by trainee teachers when they are dispersed on teaching practice, but also helped to build a community of practice among them (Clarke, 2002). This study also aims to explore the potential of the discussion forums within the VLE to promote and support communities of practice (Wenger, 1998) and to attempt to investigate the nature of their participation while on teaching practice, as they become more established and thereby identify themselves more as teachers (McConnell, 2002).

Evidence from Open University (OU) PGCE trainees suggests that extensive use of electronic networking systems can encourage collaboration and support and enhance practice (Selinger, 1997). Galanouli and Collins found that trainees used computer conferencing successfully without moderations by tutors (Galanouli & Collins, 2000). In the study described here, the tutor only participated in the discussion boards when required, for example, when requested by other participants or in order

to encourage greater use of the system. In the Galanouli and Collins study, no tutor had access to the system at all. The main aim of this study is to determine and implement as an iterative process, a pedagogical framework for the use of information and communications technology, specifically, a VLE, on initial teacher training. The purpose of the study was to establish over the course for a number of years, and through practitioner led research, a pedagogical framework that utilised e-learning technology, and which would enhance the placement experience for trainees.

## Methodology and methods

The approach taken for the study is that of an evaluative, longitudinal case study, (Basse, 1999; Yin, 1984) looking at how the VLE might be used interactively, over a period of two to five years, to enhance the placement experience for trainee teachers. The methodology is that of practitioner led action research with the tutor as participant and researcher. It engages with both context rich qualitative and quantitative data collection and analysis, searching for themes within and across a distinct number of data sets. This provides methodological triangulation of the study and thus adds energy to any conclusions drawn (Cohen & Manion, 1994).

Trainees start the one year Applied ICT PGCE in September of each academic year. During that time, the trainee spends approximately one third of their time at university, and two thirds of their time on two separate school placements. All the trainees in this study have a degree in information technology, (IT) and some also have either higher degrees or work experience in this area. All had access to a computer with internet facilities during their course.

The VLE used for this research was Blackboard<sup>®</sup>, and a site was set up specifically for the use of Applied ICT by PGCE trainees, who were early in their course (October). In addition to this, the trainees had received familiarisation sessions on the use of the VLE, and had also been given much group work in class, in order to get them working together as a learning community (Kyriakidou, 1999; Rovai, 2001). The Blackboard<sup>®</sup> site was set up to provide

trainees with the means of staying in touch with their peers while on placement in school.

The wide area covered by the course meant that trainees were geographically isolated from each other while on placement. The site was set up to provide a place, (or space) albeit virtual, where they could swap ideas, raise questions, discuss issues and experiences, and so on, despite their physical separation from each other. In doing so, the tutor also intended to model good practice with respect to e-learning tools to try to ensure that they were familiar with the different ways in which a VLE could be used. The intention being that, in addition to enhance their experience of placement, through the provision of an online community it would improve their own understanding of this type of technology.

Consent was obtained from all participants prior to the start of the study. Over the course of the academic year, a total of six discussion boards were set up for the use of students. Some were set up for use as soon as the BB site was ready and accessible by the students, others were set up later in the course to reflect the needs of the trainees as they progressed on the course. For example, the interviewing board was set up after the first placement to reflect the need of trainees to discuss issues pertaining to seek employment at a time when they were likely to be doing so.

While the trainees were on placement, a number of synchronous chat sessions were also set up. The first session took place in November, approximately half way through the first placement, and the second just prior to the Christmas break. A record of the use and accessibility of the BB site was also obtained for the purposes of the study. The statistics given in the results represent the hits that are made by the trainees and tutor on the Applied ICT PGCE BB site.

An online survey, (accessible only from the BB site) was also completed by the students towards the end of their second placement (and academic year). The survey covered both their access to and usage of the BB site, and also their preferred learning styles. The survey included both open and closed questions, allowing for factual and

narrative style responses.

A group interview was also conducted within the trainees at the end of the course. This data was used to augment the data from the survey and the discussion boards. The interview was conducted for triangulation purposes, to clarify issues emerging from the other data sets.

All the data sets were collated and analyzed for themes within, and across them and this is described in the following section.

## Results and findings

This section describes the results for each of the different data sets obtained from the study, and also gives a comparative analysis of the data from all the data sets.

### Discussion Board Data Analysis

The following table, (Table 1) gives the usage and access results from the discussion board data from the BB site from October to June, with brief comments on the relation between the statistics and the activities on the course.

Totals for Discussion Boards	Urgent	TP1	TP2	Assignments	Interviews	Ebay
N° Threads	14	20	12	7	4	3
N° participants (minus tutor)	4	9	3	4	4	0
Total No messages	24	46	38	19	14	3
N° tutor messages	13	10	9	6	6	3
N° tutor messages as %	54	22	24	32	43	100
Access Up to 12 pm	10	7	7	5	6	0
Access 12-6 pm	7	14	15	7	5	3
Access 6 pm to 12am	7	25	16	7	3	0
Start date dtb	07/10/2004	07/10/2004	07/01/2005	07/10/2004	10/03/2005	07/10/2004
First trainee posting	19/10/2004	15/10/2004	03/02/2005	18/10/2004	10/03/2005	
Last trainee posting	16/11/2004	16/11/2004	08/03/2005	16/03/2005	24/03/2005	
End date dtb	25/11/2004	07/01/2005	10/03/2005	22/03/2005	31/05/2005	08/03/2005
N° days	29	62	33	149	14	n/a
Notes and comparison with course activities	Not very useful. Superseded by email by tutor and students.	End of messages coincides with end of term on TP1. Used from transition time in school to end of 10h timetable on TP1	Used from end of transition time in school to beginning of 3 <sup>rd</sup> week of full time in school (on 15h timetable by this time) in TP2	Used from the 3 <sup>rd</sup> week of transition time in school in TP1 to 4 <sup>th</sup> week of full timetable (15h) in TP2. Used in blocks in Oct/Jan(2)mid March which coincides with hand in dates for assignments, work on them in university, and hand in dates in April, respectively. Assignments were due in	Very short usage - coincides with a flurry of activity in terms of job hunting and interviews and includes the Easter holidays. By end March, most had either got jobs or were getting interviews regularly.	Not used

Table 1: Discussion board statistics for Applied ICT PGCE trainees 2004-2005

As can be seen from the data in Table 1, there was low usage of the discussion boards throughout the duration of the course. The most used board was that for the first teaching placement (TP1). This had the most threads and messages but with a very small number of participants who were actually posting them. The data also shows that the tutor engaged significantly with most of the boards, (placing at least 20% of the messages on all boards) in order to respond to any questions set and to encourage further usage of them.

The longest listed board was that for the assignments,

however, as the table shows, the trainee messaging finished six days before the end date of the board. This board was mainly used around assignment deadlines. Access times for placement boards show an increase in message posting throughout the day, other boards, however, show no real significant pattern between posting and time of day.

The actual usage of the boards is so low that it is not reasonable to draw any firm conclusions from the data given in Table 1, other than to conclude that participation on the site was low and that usage was restricted to a small number of participants.

In Table 2, the access statistics over time for the second block placement for each of the discussion boards (detailing the number of hits per board per month) is given. All figures include the tutor's hits, as the tutor was deemed to be part of the on line group. Figures are rounded up to the nearest number with percentages in parenthesis.

	No Students	Total Hits	DBoard	Announce	Content	Email	Staff Info	Comments	Collab
March (to 10.3.05)	13	1274	870 (68)	203 (16)	150 (12)	22 (2)	8 (1)	17 (1)	4 (0.3)
April	12	403	268 (67)	83 (21)	45 (11)		3 (1)	3 (1)	1 (0.2)
May	11	487	224 (46)	128 (26)	76 (16)	15 (3)	10 (2)	8 (2)	6 (1)
June	11	79	24 (30)	27 (34)	14 (18)	6 (8)	3 (4)	3 (4)	2 (3)

Table 2: Access Statistics for Applied ICT PGCE BB Site March to June 2005

As can be seen from the data in Table 2, the total number of hits tails off as trainees enter the final phase of the course and move to full timetables in placement two around the end of March and in the beginning of April. The visits and hits for the month of June coincide with the days when trainees attended university. The number of trainees on the course remains fairly constant, only dropping by two from March to June, BB site usage drops off significantly over those months, particularly at the very end of the course when trainees have completed their second placement at the end of May.

### Synchronous Chat Sessions

The synchronous chat sessions were conducted in November and December as previously stated. The 16<sup>th</sup> November session (approximately half way through the

first placement) was setup for 6pm and ran for an hour. A total of four trainees participated, three male and one female.

The second chat session was set up for 16<sup>th</sup> December at 6.30 pm, to 7.30 pm (a later time than for the previous session at the request of the students. This session was terminated early because of technical difficulties with the BB site that prevented access to the 'chat room' for some participants. The archive from the November session is summarised below:

1. Overall feel of the session	2. Discussion topics covered
Very informal. Language was friendly, often humorous, and questions were open, how, what, tell us more, can I Check...? and so on. Trainees always asked about each other's Well being when they joined. Closed questions were used only when clarification of a point was required. The discussion remained very friendly and informal throughout the session independent of who joined later in the session.	Placement visits and arrangements. Teaching observations and teaching practice. Assignments, and help with them. Use of BB. Contact with other students. Lessons and lesson plans. The use of Plan B in lessons. ICT and other problems in lessons. The levels of work and pupils being taught on Teaching Practice. GCSE and Key Skills questions preparation. The difference in ability between pupils in the various Schools. How to engage pupils, ideas for the practicalities of this, Powerpoint Using , electronic whiteboards, online options. Length of teaching sessions. Some personal questions. Different ideas of how to get pupils to present work, the problems, solutions, ideas, shared experiences, starter activities, different ideas for lessons, and the activities in them, use of internet resources, group work.

Table 3: Summary of the Synchronous Chat Session 16<sup>th</sup> November 2004

There were problems with the messaging due to the time delay between answers to any given question. This made the messaging appear disjointed and unsynchronised, particularly when an answer to one question would appear after other questions had been asked. The time delay affected the flow of text to such an extent at times that it was difficult to facilitate the discussion between the trainees and between the trainees and the tutor.

When asked if they had found the session useful, there were a number of positive responses from the students:

- "[...] better than nothing but I do prefer face to face"
- "but at least it is a form of real time communication"
- "yeah some good ideas"
- "yes [tutor's name] definitely useful"

### Group Interview

A group interview was conducted with the trainees at the end of the course. The whole PGCE cohort, (a total of 11 trainees) participated, 10 male and one female. A summary of what was said is given in Table 4.

1. Was the BB site useful?	2. Priorities	3. Most/Least Useful Things on the BB Site
Useful at the start of teaching practice-a comfort blanket when you don't know anyone - this was agreed by all. It needs to be the main point of contact if you want people to use it. Email was preferable. Technical problems at the start put you off. Handy for information - as a resource.	When asked about use of BB in terms of their priorities, the whole group confirmed that BB came after: Teaching practice and lesson planning. Assignments. Job hunting.	All agreed with a comment made that they would not miss it if it wasn't there - it was an enhancement only. Only two in the group said they made it a habit to check it regularly as part of a work routine.

Table 4: Summary of Responses from the Group Interview

Some trainees found the documents on the site useful, and some found the discussions useful, but, 'only if they got going'. Trainees also mentioned problems with technical issues and familiarisation as being issues for non participation.

### Preliminary comparative analysis of data

It is beyond the scope of this paper to fully record the data from the online survey (questionnaire) used in this study. A summary of this data, however, is given in Table 5 for comparison with the other data sets.

Data Set	Summary of findings
Discussion boards	TP1 discussion board was the most used, followed by TP2, Assignments, Urgent and Interviews. TP1 had the most participant other discussion boards had similar lower numbers of participant
Synchronous chat session	Low participation rate. Very friendly and informal. Lots of topics covered. Very practical help offered. All participants found it useful.
Access to BB site statistics	Decrease in overall activity from March to June. Discussion board were the most used feature on the site. Dd and email usage decreased from March to June. Announcements and contents remained mixed (up and down). Access data for site shows no discernable Pattern.
Questionnaire	Low time spent by trainees per week on BB. Mostly accessed for reading. 60% of the group made regular contributions. No real difference in use on/off placement or between TP1 and TP2. 80% of the group were happy/satisfied about amount read and contributions of tutor. Trainees were least happy with the level of their own contributions. 60% of the group said it enhanced their IT but that the Discussion boards were dominated by a few. Ideas for improvement and use of site were given. Trainees said that the use of email as communication far out weights BB. Learning styles indicated are those of a preference for learning and from others, interactions with others were given as important (except family). They like to participate, discuss, reflect and to learn with and from others.
Group Interview	All agreed that BB was a low priority and a comfort blanket at the start of TP1 only. BB needs to be available from the start of the course, and to be the main point of contact to increase usage and thus to make the discussion boards useful.

Table 5: Summary of all Data Set Findings

A comparison of all the data sets, given in Table 5 shows that the low participation rates observed for the BB site and the synchronous chat session are supported by the responses to the questionnaire and the group interview. Low participation rates are also reflected in the interview comments and questionnaire returns which show that the discussion boards are dominated by a few participants,

and that the trainees preferred to use email rather than the discussion boards to maintain contact with each other.

The trainees indicate a preference for socio constructivist type learning in their responses to the learning styles as part of the questionnaire. That is, learning through interaction with others. The responses showed a preference for participation, discussion, and reflection with each other. The comments made at the group interview support this data, and also give some indications for improvement of the use of the VLE for future groups. These are discussed in detail in the following section. This preference for interaction with others as a way to learn on the course is, however, not reflected in the use of the BB site. This preference for socio-constructivist type learning may be something that may not be transferable from face to face to online situations as indicated by the low participation rates.

### Discussion and Analysis

In this section of the paper, it is intended to present ideas on what the findings of the study might mean, and also what they offer in terms of recommendations for future work in this area. A minimum pedagogical framework is proposed for the implementation of VLEs in initial teacher training.

Data from the study indicates that the VLE was, at best:

- An enhancement only.
- Useful for information but not really used significantly as an interactive and collaborative tool.
- A comfort blanket at the start of placement only.
- A low priority.

As with other studies, (Galanouli & Collins, 2000) this study found that the frequency of communication falls off during school placement, though not due to network access more because of the reasons stated above. Earlier research has recognized that tutors also need time to prepare the resources and structure the VLE, and to maintain the site throughout the academic year (Angier, 2004). In this study, there was a lot of work done by the tutor for not very much in return in terms of benefits to students - according to the data collected from them. A balance is

required for time spent by tutor against benefits to students, and it may be more appropriate to look at alternatives to running and interactive VLE for ITT, even if this means going against the tide of pressure to use interactive, collaborative, electronic resources across all education sectors.

What these, (and possibly other similar ICT) trainees are unlikely to gain from the use of the VLE in ITT is an increase in, or enhancement of, their own ICT capabilities. This lack of perceived benefit is something that should not be discounted in terms of its possible affect on the judgment of ICT PGCE trainees of how useful the VLE was for them overall. This is in contrast with research involving non ICT PGCE students, (Galanouli & Collins, 2000) where the use of computer conferencing promoted IT awareness and improved the ICT skills of the participants. In this case, it is hoped that having used a VLE in this way in their training may open their minds to the possibilities of its uses in their own teaching of both trainees and teachers in the schools where they teach. This is a possible area for further investigation.

Trainees on such an intensive course as ITT invariably is, need to make rational workable decisions about what to spend their time on, and how to prioritize tasks. In doing so, they tend to look to where they will get the most benefit for the least effort, because their time is both very precious and very limited. There is still much to be learnt about the way trainee teachers perceive the benefits of using e-learning tools while on placement. For some, the cost of time is a prohibitive factor when so many other pressures challenge their daily routines. The intention, therefore, is to ensure that the VLE is implemented on initial teacher training in such a way so as to make the best possible use of their time. It can provide the support that they need, when they need it and as they need it and also most effectively, through the use of discussion boards and synchronous sessions *if* these have been put into practice using the pedagogical framework described in the next section of this paper as a basic set of conditions for this type of course.

## A minimum pedagogical framework for the implementation of VLEs in teacher training

From the analysis of the initial findings of this study, a pedagogical framework for the implementation of VLEs for ITT is as proposed as follows:

1. Ensure that trainees have access to the site and are familiar with it.
2. Engender/encourage the trainees to become a face to face learning community prior to the geographical separation of placement, including the use of peer to peer assessment, and also using collaborative exercises to build confidence in them and to pay respect for each other.
3. Embed the use of the site in the face to face sessions to model good practice, for example, using the site to access course information and link to other useful sites.
4. Make the site focused on the communications on the course give them a need for it.
5. Provide online peer to peer collaboration exercises that can only be done via the VLE.
6. A critical mass of active participants pivotal to the success of this type of online learning and participation.

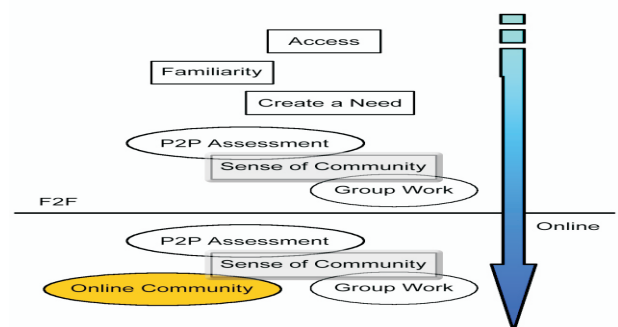


Figure 1: A pedagogical framework for the use of VLEs in initial teacher training

From the results of this study, the most crucial aspect for the success of the VLE is the number of students. Thus, I would argue that even if you put the framework in place without a critical mass of trainees to participate, to interact on line, the potential benefits of the VLE to the

trainees will be lost - or simply just not gained. Starting with a small group such as this one, (there were only 11 trainees for most of the course) may mean that the chances of success in terms of benefits to the students is reduced dramatically.

There are some aspects of face to face teaching and learning that are difficult to replicate using e-learning technologies (Tanner & Jones, 2000). This is arguably the case of this type of interactions that occur on a PGCE course. In these courses, the modelling of good practice that occurs in university sessions means that trainees are frequently involved in peer to peer interactions, group work and discussions, whole class brainstorming, and ultimately, in collective reflection and analysis. This is not necessarily something that is easily replicated online. It was certainly not replicated in this study as indicated by the preference of trainees for socio constructivist types of teaching and learning in face to face, that were not deployed online. Continuation of this study over a number of years with successive PGCE cohorts, using the pedagogical framework described here as part of the iterative ongoing research, will enable further knowledge to be gained concerning possible ways forward for enhancing placements on initial teacher training.

The paper has presented the findings of this study as a work in progress. It proposes a minimum pedagogical framework for initial teacher training in order to enhance the placement experience of geographically isolated students. The investigation of practical steps taken to improve and enhance the experience of trainees on placement will be a possible area for further research.

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