

PD in Ponty: Design-by-Doing in Adult Basic Education

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ABSTRACT

This work-in-progress report gives a short account of the participatory design of ICT supported Adult Basic Education (ABE) courses in the South Wales Valleys region of the UK, a post-industrial area with low levels of educational attainment, widespread illiteracy and innumeracy in the adult population, and a growing digital divide. In the 1990s ABE provision in the region was expanded through the establishment of community-based Open Learning Centres (OLCs) dedicated to teaching adults basic literacy, communication and numeracy skills. The introduction of a network of personal computers with broadband Internet connectivity to one such center in 1997 led to the design and development of a number of innovative courses built around the use of new media technologies. Established practices in ABE supported the increasing participation of learners, tutors, and volunteers in this design process resulting in changes to the structure and content of ABE provision at the centre.

Keywords

Participatory design, adult basic education

Introduction: Empowerment and Organizational Change

All organizations encounter a variety of challenges as they grow. Conflicts and tensions at many levels within organizations both constrain and open up possibilities for the design of effective responses to those challenges. Often breakdowns in functioning reveal the underlying contradictions in an organization's activities, showing where change and improvement are required [13]. The process of designing solutions can itself become a source of conflict, often making new approaches possible only by questioning or challenging the status quo [3]. Such organizational disturbances involve mediating artifacts – physical and conceptual tools; rules, regulations, and cultural norms; the allocation of roles and responsibilities –

that are themselves subject to a process of ongoing change and development. In order to identify new approaches that transcend the problems of the present situation, it is often the case that members of the organization as a whole must collectively move toward a shared understanding of the possibilities for novel action [11, 12].

The events described here took place within such a period of organizational growth. The setting is an educational center dedicated to helping adults improve their basic skills of communication, literacy and numeracy. Attempts to integrate the use of information and communication technologies (ICT) into well-established teaching practices revealed contradictions in the needs and motivations of managers, tutors, learners, and volunteers, while at the same time opening up a space where new approaches to the design of teaching and learning activities became possible. In this organization, technology seems to have acted as the “catalyst and occasion that expands the possibilities for organizational realignment and empowerment” [7]. In particular, possibilities for participating in course design, curriculum development and the shaping and use of resources became available to learners and volunteers, people with hitherto little influence on these matters.

A number of the courses discussed in this paper (those from 2000 onwards, see Fig.1 below) have been the subject of a longitudinal field study conducted by the researcher in the course of his doctoral research in human-computer interaction. To date this has involved more than 300 hours of participant observation, 38 interviews with course participants, and the collection of video and audio data. This paper is illustrated by stories told from the viewpoint of some of the participants. These “tales” are derived from the field study notes and transcripts, and are included by permission of the informants. In order to respect their privacy, fictitious names have been used.

The Background: ICT and ABE in England and Wales

The ability to read, write, and speak in the language of your nation of residence, and to use mathematics at a level necessary to function at work and in society in general constitute vital basic skills in modern societies. Currently, almost 8 million adults in England and Wales have

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difficulties with literacy and numeracy [1, 5], yet despite this level of need, over the past three decades Adult Basic Education (ABE) has been the “poor relative” within a chronically under funded education sector. Against this background the UK Basic Skills Agency (BSA) has been reluctant to recognize ICT based activities as being within the remit of basic skills education, wishing to avoid conflating controversial technology issues with a clearly focused campaign of lobbying for governmental funding and support. However, by the end of the 1990s, widespread recognition of the scale of basic skills deficits, debates about the desirability of developing an “information society” in the UK and a sea change in the funding climate following the election in 1997 of a new, socially-conscious Labour administration combined to bring a reversal of this stance. In common with the UK education sector as a whole, ABE is now enthusiastically embracing the possibilities of new technologies to attract and support learners, with the BSA investing in the development of online basic skills teaching and learning resources.

As a result of this history, it is only very recently that many ABE organizations have begun to address the challenge of integrating the use of ICT into their ABE teaching and learning activities. Consequently, there are few guidelines founded in practice for tutors to follow in their day-to-day teaching work, and a lack of suitable computer-based supporting materials. However, in those organizations where technology initiatives were pursued independently of the national policy, the absence of an official, centralized strategy has meant that managers, tutors, learners and volunteers have had an opportunity to participate together in exploring the use of ICT in ABE, developing new course structures and teaching and learning activities in the process. The “early adopters” involved in these ad hoc initiatives - conducted in isolation, and sometimes in the face of opposition from local administrators and technical support staff - now find that their fund of practical experience offers a valuable resource to the wider ABE community.

The Setting: Ponty OLC

The Open Learning Centre (OLC) is located in a converted shop premises in the heart of the busy market town of Pontypridd (“Ponty” to local residents), one of the principal towns of the South Wales Valleys. This post-industrial region of the UK has some of the worst social and economic deprivation in the European Union, with a GDP less than 75% of the EU average. Current assessments indicate that at least 40% of the local population have deficits in literacy and numeracy skills [6]. Research has consistently demonstrated clear associations between low basic skills and other indicators of socio-economic exclusion such as unemployment, criminality and ill health [15]. The links between education, income and technology access [16] also

account for the digital divide clearly evident in the region, with Adult Basic Education learners among the very worst of the ‘information poor’.

The OLC is housed in a bright, comfortable and well-maintained building, located within easy reach of public transport. It has three floors, with a well-equipped teaching and learning workshop on each level, each capable of accommodating up to 20 learners. The Centre is staffed by around 25 highly qualified and experienced ABE tutors, mostly employed on a part-time or job-share basis. Since opening in early 1997 the OLC has been an exemplar of innovative Basic Skills provision in Wales, winning several national awards and achieving high grades in education authority inspections.

The Manager’s Tale

Mary, 52, is Head of School, meaning that she has overall responsibility for all of the basic skills provision in the area served by her college. Over the past two decades her efforts have been directed toward building up ABE from small, under budgeted beginnings to become a significant part of the college’s mission. This has been a long and challenging struggle. Mary was instrumental in the introduction of ICT to the Pontypridd OLC in 1997, funding the original equipment purchases by winning an external award. This was a time when the national basic skills authority was not in favour of the use of technology in ABE, and she faced considerable opposition, both from within the college and from her peer group. Recognizing that the new possibilities offered by these technologies would require expertise from outside traditional ABE, she appointed new staff members to bring ICT skills and fresh viewpoints to the OLC. Since then, through staff appointments and resource allocation, she has strongly supported the participatory development of a student-centered, ICT-based learning strategy within the school. Mary is a strong, decisive manager, used to working within a clearly defined hierarchy, and has sometimes found the participatory process challenging. However, her own lack of training and experience in the use of ICT have led her to value others’ contributions in this area, and she has encouraged tutors, learners and volunteers to develop their skills and offer their views, readily acknowledging their input and influence on her own ideas. Mary is now acting as an advisor on ABE to the newly devolved education funding authority in Wales, influencing the development of ABE at the national level.

Integrating ICT with ABE at the OLC: A Brief History

From the first attempt to integrate the use of ICT into an ABE course in late 1997, provision at the OLC has steadily increased and ICT supported courses now form a significant proportion of the overall curriculum. The range of activities involved has expanded from the use of Web browsers and email to include the creative use of digital video, multimedia,

computer graphics, computer animation, desktop publishing and programming. From just one part-time tutor, one volunteer, and less than a dozen learners in 1997, ICT supported courses now involve a team of 6 part-time tutors, 2 full-time tutors and 8 volunteers working with around 60 learners each term. Between them, the team delivers more than 24 teaching hours a week. In addition, many of the more traditional literacy, numeracy and communication classes at the OLC are also beginning to draw on team expertise to incorporate some elements of ICT use into their activities wherever appropriate.

Figure 1 summarizes the growth in provision of ICT supported ABE courses at the OLC in the period 1997-2002.

Figure 1: ICT-based ABE courses at the OLC 1997-2002		
	Course	Activities
1997-98 4 hrs/week	Internet Club	Web browsing & searching Email HTML authoring
1998-99 6 hrs/week	Internet Club 2	Web browsing & searching Email HTML authoring Computer graphics Navigating 3D virtual worlds
1999-2000 8 hrs/week	Netwise Internet Club 3	Web browsing & searching Email HTML authoring Computer graphics Navigating 3D virtual worlds
2000-01 16 hrs/week	Computer Creative Web Workshop Computer Club	Web browsing & searching Email HTML authoring Computer graphics Computer animation Digital video Computer Programming
2001-02 24 hrs/week	Computers Count Film Workshop DTP Workshop Web Workshop Computer Club	Web browsing & searching Email HTML authoring Computer graphics Computer animation Digital video Computer Programming Desk-Top Publishing

The Tutor's Tale

Simon, 44, is a graduate in computer science. He began work at the OLC as a part-time tutor in 1997, commissioned with developing ICT-related courses. His initial brief was to run two weekly sessions using the Internet, developing communication, literacy and numeracy skills through the use of email and the World Wide Web. With little published material or best practice in the field to draw on, Simon adopted a pragmatic and exploratory approach to course design. Having been introduced to participatory design while studying human-computer interaction, Simon

encouraged the active participation of volunteers and learners in course development, mainly through group discussions. This proved very successful, with many of the ideas put forward being incorporated into the design of those early courses. During the following year, Simon helped to set up more formal focus groups that involved tutors, learners, volunteers and managers in the design and development of new courses and accreditation structures. In the academic year 2000-01 Simon was the facilitator for Computer Creative, a yearlong, student-centered, project-based ABE course that used new media technologies to develop basic skills. This was organized in response to requests from learners, and fully embodied the design-by-doing approach developed in previous courses. Its success has influenced the design of a further 4 courses at the OLC in the current academic year, and Simon is now working on extending participatory design approaches to other aspects of curriculum development.

Developing Participation: Design-by-Doing in ABE

ABE in the UK has a strong tradition of individual empowerment through learning and has long recognized that best practice should seek to place course activities in the context of learners' everyday lives. This means that most traditional ABE courses already incorporate significant scope for tailoring to the individual requirements of students. Literacy and numeracy are developed through the completion of real and relevant tasks such as dealing with household bills or making job applications. This student-centered approach has also led tutors to become skilled in mapping diverse and often informal activities to the more rigid requirements of ABE organizations' formal accreditation and reporting structures.

One means through which this mapping takes place is the Individual Learning Programme (ILP), a paper-based document that records a learner's needs, long-term aims, and achievements during his or her time in adult basic education. The ILP is an ongoing and collaborative production by learner and tutor that begins with their initial meeting. It also constitutes a log of the learner's activities and achievements that is updated at the end of each teaching session. At six-weekly intervals learner and tutor meet to formally discuss progress toward the long-term aims set out in the document, and to agree on new goals for the next six-week period. Wherever possible it is the learners themselves who inscribe the ILP entries, a valuable exercise in literacy and empowerment. They are encouraged by tutors to see the ILP as a living document, in their ownership, that complements the portfolio of work they build up for each course they take part in. At the OLC the ILP is a boundary object [17] that serves to communicate and coordinate the various perspectives of learners, tutors, volunteers, and managers. Often learners will be assisted by volunteers in keeping their ILPs up to date, and

occasionally managers will use ILPs as a basis for monitoring and discussion.

At the OLC, this pattern of close and regular consultation between learners, volunteers and tutors around a mediating artifact provided the basis from which the greater participation of learners in the design of their course aims, objectives and activities could develop. The friendly, informal and largely non-hierarchical nature of the setting and activities fostered impromptu group discussions and the formation of ad hoc focus groups around issues of interest such as what topics should be covered by a course, or what would be the best design for a website hosting online learning resources.

Another factor in the development of participation in design at the OLC was continuity. The structure of ABE, in recognition of the challenges adult basic skills learners face, allows them to remain in education, moving on from one course to the next, for as long as they continue to have identifiable learning needs. For their part, staff and volunteers tend to feel a strong sense of vocation and have an ongoing commitment to the team in which they participate. Thus, some tutors, volunteers and learners have been involved with the participatory development process at the OLC since it began, and continue to play an active role. The co-constructed artifacts [2] – websites, lesson plans, learning activities, multimedia presentations, etc. – that they have created together constitute a shared history of success and provide the basis for future activities.

Figure 2 shows trends in participation in course design by learners, volunteers and part-time and full-time tutors over the years 1997-2002. The measure “degree of participation” represents time spent on activities directly related to the design of course content and structure as a proportion of the total course hours. Initially, learner input to design was relatively low, but steadily increased as the explicit use of PD techniques became established, reaching a peak with the highly participatory design of the Computer Creative course in 2000-01. The contribution of part-time tutors to course design was much greater than is the case in non ICT-based courses, and at the inception of the courses can be seen as the major input, decreasing in importance as learner involvement grows. Prior to the introduction of ICT, volunteer contributions to course design were virtually nonexistent, but Figure 2 illustrates how volunteer involvement in design activities was significant, especially in the early, pioneering courses. Since 2000-01 the degree of participation of learners and tutors remains significant, but is currently lower as a proportion as more full-time tutors have joined the team, and ICT-based courses begin to make use of outlines established as a result of earlier PD activities.

Figure 3 summarizes PD techniques used in designing

course structure, content and activities at the OLC, and lists some of the artifacts that were significant mediators of the participatory design process. Much of the direct design activity can be described as “design-by-doing” [9, 10] through cooperative prototyping [4], where tutors, volunteers and learners worked together at the computer to create teaching and learning resources directly on the network. In the closing stages of the 1999-2000 courses staff organized a number of future workshops in which learners and volunteers envisioned aspects of the design of the 2000-01 ICT-based curriculum.

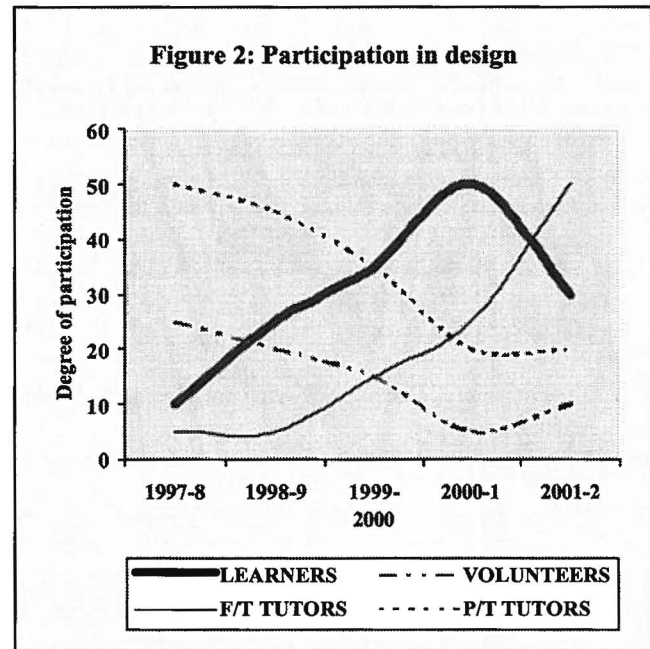


Figure 3: PD techniques and mediating artifacts

	PD techniques	Mediating Artifacts
1997-98	Focus groups Cooperative prototyping	Intranet/Course Web site Personal Web sites Local Area Network Individual Learning Programmes
1998-99	Focus groups Cooperative prototyping	Intranet/Course Web sites Personal Web sites Local Area Network Online 3D virtual worlds Individual Learning Programmes
1999-2000	Focus groups Cooperative prototyping Scenarios Future Workshops	Course Web site Personal Web sites Online 3D virtual worlds Individual Learning Programmes
2000-01	Focus groups Cooperative	Course publicity materials Multimedia applications

	prototyping	Digital video Computer programs Models & puppets Workshop activities Individual Learning Programmes
2001-02	Focus groups Cooperative prototyping	Course publicity materials Multimedia applications Digital video Computer programs Models & puppets Workshop activities Individual Learning Programmes

The Volunteer's Tale

Ceri, 27, initially attended the OLC as a learner in an entry-level literacy class. At school, he had been very interested in technology and computing, but his lack of reading and writing skills meant that he left without any formal qualifications. Since then he had been unemployed or in casual work. Much of his time was spent at home, tinkering with cast-off games consoles and computer hardware. Ceri worked hard in class at the OLC, steadily improving his communication skills and gaining credits in literacy and numeracy. He showed keen interest in all ICT-related activities, and became a volunteer teaching assistant, providing one-on-one support for learners. In time he established himself as a primary source of technical expertise and computer maintenance at the OLC, a role that was essential to the continuation of some courses. Over the next 3 years, Ceri's input to the development of course content and structure was significant. He suggested topics and approaches that were developed into lesson plans; took part in focus group discussions with learners, tutors and managers; developed interactive course materials; found and installed useful freeware and shareware software that supported new activities; and suggested and pioneered the use of online 3D virtual worlds. His involvement as a volunteer, technician, and in the focus group discussions brought him into contact with the Head of School, who recommended him for a part-time technician's post with the college. He is now in full-time employment and continuing his education in evening classes.

Discussion

This account has outlined how circumstances at the OLC combined to provide many of the ingredients needed for participation in the design process [8]. The lack of a clear central policy, little in the way of experience or established best practice to draw upon, and the student-centered tradition in ABE brought about a situation of organizational flexibility. A lack of external technical support meant that available development resources – the network, applications – were under the direct control of the users. Practices already in place in the organization, the presence of suitable mediating artifacts such as the ILP, and the interactive

nature of the technologies involved supported focus groups, cooperative prototyping and future workshops as appropriate development methods. Through the medium of the broadband Internet connection, participants were able to access information relevant to the activities in hand.

At the OLC, the introduction of ICT acted as a catalyst for innovation in both course design and organizational structure. People who, prior to these new opportunities and needs, would have had very limited opportunities for participating in course design, curriculum development and the shaping and use of resources, were empowered to contribute their individual skills, knowledge, ideas and enthusiasm to collaborative activities - creating websites, configuring the network, drawing up lesson plans and so on – that were significant in shaping activity at the Centre. In the unfolding of this process the value of PD techniques have become clearer to participants, and have been increasingly emphasized. However, as in many PD projects, questions of sustainability remain unanswered [14]. In a period of continuing growth and ongoing organizational realignment, the continuance of PD activities in Ponty will depend on the sustained commitment and support of key individuals.

The Learner's Tale

Sarah, 38, has been attending literacy and numeracy classes at the OLC since it opened in early 1997. Her initial assessment found that she was functionally illiterate and innumerate with additional learning and behavioural difficulties. In class she was very withdrawn, often refusing to engage in activities and speaking very little. She did, however, show an interest in ICT, and joined the Internet Club course in September 1997. She was particularly drawn to computer graphics activities, and showed great flair for this work. As she grew more comfortable with the setting she became more communicative, and was soon making an essential and very vocal contribution to group discussions. The next year, suggestions by Sarah and other learners were embodied in the course structure. Sarah's motivation strengthened, she began to gain qualifications, and showed very marked improvement in her communication, literacy and numeracy skills. Sometimes she acted as a mentor to other learners. She went on to become a key member of focus groups and future workshops, participating in the design of course structure and content. Sarah is now becoming an accomplished computer graphics artist. She continues to improve her basic skills at the OLC while undertaking small private commissions, creating greetings cards and brochures for clients.

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