

Effective e-Learning by Thoughtful Design

Gordon Joyes¹

Abstract

This paper provides an insight into an e-learning design approach that has been used by the author in a wide range of contexts in Higher Education as part of an ongoing enquiry into transforming online teaching and learning within sustainable 'real' courses. A key driver has been the need to engage learners in Higher Education in moving from consumers to producers of knowledge and to engage in communities of practice through the use of online tools for learning. These developments use an analytic framework to support thoughtful e-learning design and insights into the ways this framework has been applied are presented through a number of case studies. This work is shaping Web2.0 technologies to match a learning rather than a social agenda by casting them in particular learning activities within specific contexts for particular learning purposes.

Keywords: e-learning, activity theory

1. Introduction

This paper illuminates the ways effective e-learning can be designed by thoughtful analysis of the learning context. It does this through the discussion of a number of case studies. These developments use an analytic framework based upon Engeström's (1987) Activity Theory (AT) to focus on the mediating roles of tools, culture and the roles of the actors (subjects) engaged in learning activities. The paper begins with a discussion of AT and its relevance to e-learning design. The ways the approach has been applied to several case studies are then described.

Activity theory as a framework for e-learning design

The approach uses an activity system (Engeström, 1987) which is informed by AT (Leont'ev, 1978; Vygotsky, 1978). This conceives of knowledge as being socio-culturally constructed and mediated by tools such as language, writing, digital artefacts etc. AT is increasingly being applied to aspects of technology-supported learning because of its emphasis on the mediation of tools and social factors on human activity. It has been used in the study of Human-Computer Interactions (Nardi, 1996) in research into online

Assoc. Prof. Dr. School of Education, University of Nottingham, gordon.joyes@nottingham.ac.uk

collaborative behaviour and distributed learning (Andreassen, 2000) and for supporting the e-learning design process (Jonassen & Rohrer-Murphy, 1999).

It has been argued that e-learning activities that involve collaborative learning can be seen as types of learning support and can be represented as an activity system (Oliver & Herrington, 2001). An activity system represents an activity composed of a subject (a person or a group engaged in the activity) and an object (the objective of the activity), mediated by a tool. The mediation can occur through the use of many different types of instruments or tools, e.g. material tools as well as psychological tools, including culture, ways of thinking and language. E-learning tools might be an online discussion forum, an online or paper notebook, the study approaches that support effective learning or an e-tool. An activity system (Engeström, 1987) shown in Figure 1 is a way of visualising the total configuration of an activity.

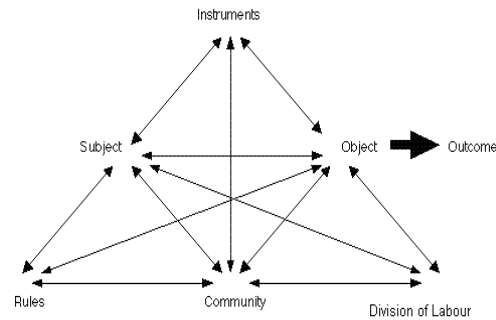


Figure 1. Model of a human activity system (Adapted from Engeström, 1987)

Online tools for learning are considered to be important in the learning process and are viewed as neither neutral nor autonomous but as ambivalent (Feenberg, 2002) – having the potential to shape the learning experience and learner identity for societal good. A key driver in the e-learning discussed here has been the need to engage learners in Higher Education in moving from consumers to producers of knowledge and to engage in communities of practice through the use of tools for learning. As such this work is shaping Web2.0 technologies to match a learning rather than a social agenda by casting them in particular learning activities within specific contexts for particular learning purposes. The following cases of e-learning by thoughtful design are discussed. Each case has been the subject of research in its own right however in this presentation the intention is to illuminate how their development was helpfully framed by an AT analysis.

Case 1: *Supporting the professional development of online tutors within an online community of practice (Joyes, 2008a).*

The tutor plays an important role in mediating online learning and behaviour is influenced by their understandings of effective pedagogy. An activity system analysis of the context revealed that exploring practice can be problematic, with the potential for tutors to be unwilling or defensive about their current practice and there are apparent differences between espoused beliefs about teaching and learning and actual practice or enacted beliefs. It can be argued that differing abilities to reflect on personal pedagogic practice as well as the diverse pedagogic language used by different lecturers and subject disciplines could account for these differences as well as the nature of the instruments used (Richardson & Hamilton, 1994). The challenge was to design an online tool to support an online activity that would provide a means for a group of tutors to individually describe and explain approaches they would use to support students by analysing an already existing online learning activity. The aim was to design a tool that would allow tutors to focus on actual strategies and notions of effective practice to illuminate the pedagogic beliefs and understandings they held. Using this tool the tutors would be able to share their analyses online and engage in an online discussion around effective practice. The resulting Learning Activity Analysis Tool (LAAT) was itself based on an activity system analysis approach for use by the tutors themselves and was developed within the HEFCE funded eChina-UK programme <http://www.echinauk.org/>

The design started with an activity system analysis of the research question. How is it possible to engage online tutors in sharing their beliefs about effective online tutoring to shape effective practice? This recognised that subjects would be more likely to be critical of some existing online learning (rather than one of their own or their colleagues) that would require their mediation and that this context would allow for a debate about effective learner support strategies. Discussion about practice needed to be private and constructive, held within a closed online community. This would allow tutors /the subjects to take ‘risks’ in sharing and be ‘honest’ in their discussions. This recognised that the power relations within the culture could mean that tutors might not willingly share their ideas about effective practice if they felt judgments could possibly be made about their effectiveness as tutors.

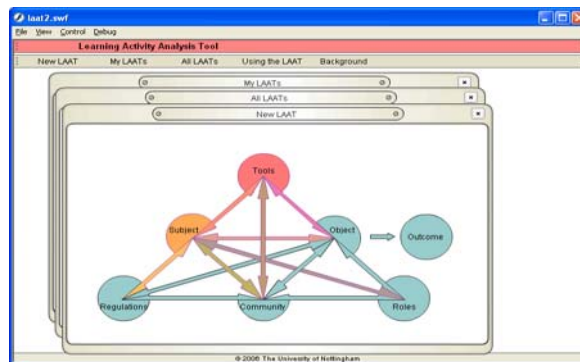


Figure 2. The LAAT –home screen

The LAAT shown in Figure 1 was developed around a series of questions specific to each component of an activity system and is a means of operationalising this. These questions are shown in Table 1.

Table 1. The Learning Activity Analysis Tool (LAAT) - Adapted from the 8 step model (Mwanza, 2002)

Activity component	Support issues
Activity of Interest	Is the nature of the activity clearly stated? Is it clear how this is related to other activities? How and when should the tutor check whether the learners have interpreted this correctly?
Objective	Do the objectives need clarifying and how might this be achieved?
Subjects	Who are the learners? What are their backgrounds? How ready are they? Do they currently have the skills/knowledge needed to carry out the activity?
Tools	Do the learners need support in selecting and using the tools that might be useful to use?
Rules & Regulations	What are the cultural norms involved? Is the activity compulsory or optional? Is the nature of the task something the learners would expect to carry out as part of their studies? How can difficulties due to any conflict in expectations be overcome?
Division of Labour	Is there a need to support the learners in understanding and carrying out their expected roles?
Community	What is the nature of the learning environment? What are the learners' expectations in relation to community? How can their roles be supported?
Outcome	How will learners know if they have achieved the outcome? How can feedback be provided to support the achievement of the outcome? Is the assessment of the outcome aligned with the nature of the task?

Six Malaysian distance education tutors used the LAAT within the eChina-UK programme to analyse an online reading group activity which was originally designed to be studied by learners on an online MA in English Language Teaching course for use in China. In this activity a video clip of an experienced student working with two fellow students is viewed and the reading group activity is explained by this experienced student who acts as the chair person. This involves the students in reading a book chapter and providing a written report on the chapter which they then read to each other. The experienced student then sets the same reading group activity to the online learners who are viewing the online video presentations. The learning design sets out to model good practice in effective reading at Masters level, but it raises a number of issues in relation to what is effective reading and how this task might be carried out with the intended online learners.

Each tutor completed the LAAT online. This involved them selecting each element of the LAAT – each element reveals a screen containing prompt questions (shown already in table 1) and a space to complete the analysis – see Figure 3.

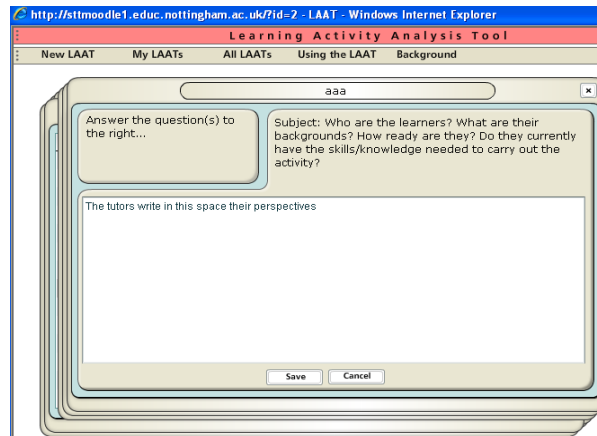


Figure 3. The LAAT – tutor completion screen

On completion of all of the elements of the LAAT the tutors were asked to complete a summary section in which they listed a number of strategies that could be used to support the learners, then to select one of these with an explanation for their choice. The tutors could return to edit any part of their analysis and when they were satisfied with this they were then asked to share this with the other tutors. The six shared LAATs could then be viewed by selecting ‘All LAATs’ from the top menu bar – see Figures 1 and 2. This sharing was followed by an online asynchronous discussion about similarities and differences in the nature of the support they would offer.

Analysis of the data from this research revealed the efficacy of the LAAT in supporting sharing of beliefs (Joyes, 2008a), but highlighted the importance of the discussion around the actual practice the tutors would undertake to mediate the learning. The latter required some intervention by an experienced tutor who could highlight key issues that were arising from the discussion. Interestingly the tool on its own was less effective and this fits with the underlying Vygotskian Activity Theory perspective that learning requires some intervention by a more knowledgeable person or persons.

Case 2: *Supporting beginning research students to develop a researcher identity (Joyes, 2008b).*

This involved the construction of a video narratives website Virtual Resources for Online Research Training (V-ResORT). This was developed with funding from the Higher Education Funding Council for England (2004-8) and is a freely available online tool for

learning designed to support the training of educational studies research students at master's and doctoral level. This can be found at www.v-resort.ac.uk. The project began with the recognition that the 'legitimate' and formal forms of presenting research can be difficult to engage with and that research students may struggle to develop an understanding of the nature of research, research language and the 'refined' and reified forms (Wenger, 1998) in which it is presented, e.g., journals and conferences. Students find narratives of researchers talking about their research journey through a project more accessible and this can act as a bridge between the students and the research community they are beginning to explore. V-ResORT was consciously designed to address this issue and is a flexible online learning experience that incorporates the use of videos of researchers providing narratives about their research. An initial activity system analysis was carried out to develop an understanding of the contexts in which research methods lecturers and research supervisors as well as their students worked and how they might engage with the online materials. A summary of this is shown Table 2.

Table 2. An activity system analysis for the teaching of research methods.

	Research Methods Lecturer	Research Student
Objective	Teaching the research process, methodologies, methods, ethics etc	Understanding the research process, methodologies, methods, ethics etc.
Subjects	Successful researchers expert in engaging with the formal language and concepts surrounding research	Beginning researchers unfamiliar with the formal language/concepts and needing to be inspired by 'researchers' discussing their research. Needing to feel part of a researcher community.
Tools	Teaching is face-to-face. Paper based materials used. If they were to use them they would want to be able to search a resource easily to find a useful activity to use in their face-to-face teaching..	Receptive to engaging in using online materials, much of their activity outside taught sessions is completed online.
Rules & Regulations	Research is reported in research journals/ seminars using formal structures and language. They would only recommend a high quality produced online resource to their students	Students are presented with a rather sanitised and formalised version of the realities of conducting research. They find this initially difficult to relate to.
Division of Labour	They might be willing to share a narrative of a video if this gave access to a larger resource.	They would be willing to share their narratives of their research in an online community.

Community	The lecturers community engages in formal reified accounts of research which they are wanting to induct their learners into	The students wish to join the community of researchers but the ways the research is presented initially daunting and often misleading.
Outcome	An intended outcome of students engaging in research like activity and showing a deep understanding of this.	The students can struggle initially to achieve the intended outcome and need some bridging mechanism between formal ways of describing research and narrative approaches which are more accessible.

For the lectures and supervisors this revealed that the tools they used for teaching were rarely online ones, the teaching was predominantly face-to-face and they tended to create their own materials/activities for teaching rather than collaborate with others. Although this indicated a need for pedagogic change, these lecturers seemed unlikely to use the materials and promote its use with students unless they could access the resource online very easily in a lecture or seminar. They would only recommend high quality resources to their students and therefore might deem the narrative approach to discussing research too informal and not suitable.

The design focus therefore was to be on the students who had a clear need for this less formal induction into the research process. The activity system analyses for the students revealed that they were keen to be part of a community of beginning researchers, collaborate with others and were receptive to the use of online tools for learning. Importantly they required less emphasis on formal representations of the research process and a greater emphasis on the real life narratives of the research as told by a range of researchers, i.e., those who had just completed their masters or doctoral studies as well as more experienced researchers. Figure 4 shows the home page of the researcher narratives on the V-ReSORT website. The navigation is based on the research journey consisting of developing a research question, to planning and conducting the research and analysing the data and sharing the findings. The messiness and iterative nature of this journey is represented by the How, When, Where, Who question which focuses on the narrative around the field work.

Figure 5 shows a researcher narrative, one of many contributed to the online resource by the UK universities involved in the project.

Virtual Resources for Online Research Training

Home • About Us • Contact Us • Help (FAQs)

1 Select each question to see a summary of the framework, then choose the video narratives from steps 2 and 3.

2 Name, Skills or Discusant

3 Select video

Where did the ideas for the research come from?

Communication

Name

Greg Brookes
Lindsay Davies
Carolyn Jackson
Sandra Kanj
Paty Palokosta
Louise Poulson
Paul Size
Linda Taylor

Skills

Discusant

show/hide dogs

Figure 4. The V-ResORT researcher narrative home page showing the navigation

http://wikisworthi.nottingham.ac.uk/v-resort/narratives/Paty/q4/Approach/Approach_files/

Approach

How did you collect data to reflect the experiences?

- Initially I started with an exploratory study
 - Which was opportunistic not planned
- When I started my PhD I decided to:
 - Work part-time in school as a teacher assistant in order to;
 - Practise the knowledge I had from my masters degrees
 - Have some additional funding

in order to put into practice the knowledge I had from my masters degree and to have some additional funding.

Approach
Case study in school

0:00:38 / 0:02:17

Figure 5. A researcher narrative

Interestingly this narrative was popular with beginning doctoral and master students as they could identify with this young researcher nearing the end of her doctorate, This was found to be more accessible than the narratives of more experienced academics that can be found on the website. In order to ensure the materials were easily navigable so as to facilitate their use by lecturers in taught sessions a search facility is also provided on the website. This can be used to find any video clip that relates to key concepts within research methods, such as ethics, quantitative, qualitative, interview, focus groups etc.

The evaluation of the use of the website revealed some 80,000 users in its first year with the majority of these being students. An online survey and follow up interview with a sample of respondents revealed that the lecturers who were using the website had tended to use this to support their own research and only through this had they recommended it to their students. In spite of the sophisticated and easy to use navigation on the website we only found one lecturer who was using the materials in a face-to-face teaching situation. This provides some confirmatory evidence of the power of the activity system analysis approach as a predictor for the design focus. This led to the highly student centred design with its focus on narratives rather than more formalised accounts of research. As a result students choose to use this resource themselves and its popularity is as a result of them recommending the resource to each other.

Case 3: Supporting the professional development of classroom teachers within an online community of practice (Joyes, 2008c).

This involved the design of the Virtual interactive Platform (ViP). The project began with the recognition that teacher professional knowledge could be valuably shared, that the teacher as a practitioner enquirer was an effective professional development approach and that Web2.0 approaches could usefully connect groups of teachers in collaborative approaches to enquiring into their own practice. An initial activity system analysis was carried out to develop an understanding of the contexts in which an online community of practitioner enquirers might be developed. A summary of this is shown Table 3.

Table 3. An activity system analysis for teachers enquiring into classroom practice

	Teachers as practitioner enquirers
Objective	Teachers developing understanding of classroom practice through sharing and discussing their own videos of practice
Subjects	Teachers in schools who are expected to demonstrate engagement with professional development activities and who rely mainly on external providers for this or carry this out within postgraduate courses.
Tools	Teachers are expected to be ICT literate and use computers in teaching preparation and delivery. All will be aware of social networking tools , some will be part of networks of teachers, most will use the

	Internet as consumers rather than producer s.
Rules & Regulations	Teachers are expected to respond to changes in policy and strategy and develop effective pedagogies to manage these within their classrooms. All stakeholders expect high educational outcomes. Sharing of video of classrooms is problematic and needs to be within private and secure areas
Division of Labour	Teachers will often share resources and discuss practice –however this is often when they experience difficulties in the classroom. They do enjoy talking through practice with each other when given the time to do this.
Community	Teacher communities tend to be within the same school / year group and/or subject area. There are some online networks emerging though communities of practice within them are rare.
Outcome	An intended outcome of teachers working within communities of practice to enquire into and develop a deeper understanding of effective classroom practice.

This analysis revealed that opportunities to observe each other's classrooms and to have a guided tour through a lesson or a part of one would be an effective starting point for discussion of practice. This would serve to form an online community and to promote further work in classrooms and sharing of practice – the focus being the teachers own agendas. Sharing of video online would achieve this, but this would have to be completed in a private group and allow teachers the opportunity to construct a narrative (a guided tour) to explain the lesson and the activities. A discussion that allowed key parts of the video to be shared would also support the sharing and co-construction of knowledge. It is difficult to hold a discussion around a video if you are not able to point directly to the short clip or clips that are being referred to.

The ViP was designed from this analysis. This allows users to upload video to the ViP server and construct a text-based narrative around this. It allows distributed or at a distance learners to share their own 'home made' video footage of classroom events or episodes with other professionals. It allows them to provide a personal commentary and reflection of the videoed episodes. This describes the particular aspects of practice being shown; outlining the aims of the lesson, the rationale for the approach, the strategies used and so on. A group of teachers can then take part in a text- based discussion around the video in which a group member can select and link to one or more video clips of the classroom practice being shown. This allows for multiple perspectives around practice to be revealed and discussed. The ViP is currently being used as part of a research collaboration with UKM, Malaysia

exploring understandings of the use of ICT in classrooms in SMART schools as well as a range of other contexts at the University of Nottingham.

2. Conclusion

The above discussion has outlined the efficacy of an Activity Theory based approach to the design of learning activities. The author uses the activity system analysis approach as a precursor to designing all the learning activity development with which he is engaged. These currently include the development of modules on mentoring and coaching and on research methods within an online Master in Education as well as using Google docs and sites to support an online cohort of professional doctorate students through the research phase of their course.

The author's research students are also engaged in using this approach to develop understandings of learning contexts, for example:

- blended learning within project work in an undergraduate computer science module within a Malaysian University;
- using face book to develop a community of practice for work based learning in a web design undergraduate module;
- developing and sustaining a community of practice from within an established Caribbean Education Network.

The author is currently working on the text of a book that will outline for new lecturers how to use this approach to develop more effective and efficient learning activities.

References

- Andreassen, E. F. (2000). *Evaluating how students organise their work in a collaborative tele-learning scenario: an activity theoretical perspective*. Unpublished master's thesis, University of Bergen, Norway.
<http://www.ifi.uib.no/docta/dissertations/andreassen/index.htm> accessed on 4/9/2009
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki, Orienta-Konsultit.
<http://communication.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm> accessed on 4/9/2006
- Feenberg, A. (2002). *Transforming technology: a critical theory revisited*. Oxford: Oxford University Press.
- Jonassen, D. & Rohrer-Murphy, L. (1999). Activity Theory as a framework for designing constructivist learning environments. *Educational Technology Research and Development*, 47(1), 61–79.
- Joyes, G. (2008a). An Activity Theory approach to researching tutors' perceptions of effective online pedagogy. *Educational Media International*, 45(3), 231–243.
-

-
- Joyes, G. & Banks, S. (2008b). Integrating eLearning and eResearch In F. McSweeney (Ed.), *Applied E-Learning and E-Teaching in Higher Education*. Idea Group Publishing.
- Joyes, G. (2008c). Challenging online learner identity through online learning tools. In Hello! Where are you in the landscape of educational technology? *Proceedings of the 25th Australasian Society for Computers in Learning in Tertiary Education Conference* (Ascilite), Melbourne, Australia.
<http://www.ascilite.org.au/conferences/melbourne08/procs/joyes.pdf> accessed on 4/9/2009
- Joyes, G. & Wang, T. (2007) A generic framework for the training of eLearning tutors. In H. Spencer-Oatey (Ed.); *eLearning in China: eChina Perspectives on Policy, Pedagogy and Innovation* HK Research Press.
- Mwanza, D., (2002) Conceptualizing work activity for CAL systems design. *Journal of Computer Assisted Learning*, 18(1), 84-92.
- Nardi, B.A. (Ed.). (1996). *Context and consciousness: activity theory and human-computer interaction*. Cambridge, MA: MIT Press.
- Oliver, R. & Herrington, J. (2001). *Teaching and learning online: A beginner's guide to eLearning and e-teaching in higher education*. Mt Lawley, Western Australia: Edith Cowan University.
- Richard, V. & Hamilton, M. (1994). The practice argument staff development process. In V. Richardson (Ed.), *Teacher change and the staff development process: A case in reading instruction*. New York: Teachers College Press.
- Vygotsky, L.S. (1978). *Mind in society: the development of higher psychological processes*. Cambridge, MA, Harvard University Press.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge, New York and Melbourne: Cambridge University Press.
-