JOHN STEVENSON & CHARLIE MCKAVANAGH

USING ACTIVITY THEORY TO FASHION INSTRUCTIONAL APPROACHES FOR INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) IN HIGHER DEGREE RESEARCH SUPERVISION

Abstract. This paper proposes a framework for improving higher degree research supervision. It adopts activity theory as a framework for describing and understanding this complex phenomenon, as it gives weight to the cultural, historical and technological influences that shape human activity. The paper seeks to map the elements involved in research higher degree supervision, using activity theory, in order to visibilise troubles and their possible sources. It is suggested that this kind of mapping has potential to develop a better nexus between supervision and ICTs. To this end, the idea of expansion in transforming activity systems to overcome tensions is advanced.

1. INTRODUCTION

The context for instructional design in relation to higher degree supervision in Australia and other countries has undergone significant changes. As argued by McKavanagh et al (2004) these changes, in Australia, have resulted from the creation of a unified system of higher education (Dawkins, 1988). Under the previous binary system of colleges of advanced education and universities, only universities were allowed to run research higher degree programs. Now, the right to offer research degree programs has spread to the thirty-six universities in the newly created unified system, with a significant increase in enrolments. In addition, there has developed a stronger governmental controlling interest in tertiary education generally (DEST, 2000; DETYA, 1998), and in research higher degree (RHD) programs in particular (Kemp, 1999a, 1999b), with a strong linking of RHD programs to economic needs. There is a governmental view that universities are not doing a very good job (DEST, 2000) in terms of the quality of supervision of RHD students and the high dropout rate.

As in other countries, there have been consequent increases in the numbers of part-time candidates and associated difficulties in interactions between supervisors and candidates. There has also been increased pressure on traditional face-to-face interactions between supervisors and students. Associated with these changes, there have been greater time commitment demands on both students and supervisors arising from government pressure for students to complete research degrees in shorter periods.

For all these reasons, there is an increased emphasis on the ‘connection’ of prospective RHD candidates and their supervisors through the Internet as they live and work in an increasingly ‘online world’. The connectivity offered by the World Wide Web enables access to a greater range of information sources and interactive communication. One possible instructional design response to these challenges is to
utilize information and communication technologies to achieve more flexible communication and interaction between RHD supervisors and students. However adoption of ICTs to enhance communication and interaction is not as straightforward as it may seem because it involves the introduction of new mediating artifacts into an existing activity system with existing, historically derived, shared ways of doing things for agreed purposes. Hence the blind adoption of ICTs as substitute communication tools may not be possible or desirable because this may impose new tensions in research higher degree activity.

To understand the nature of these tensions in RHD supervision and how they might be addressed, Cultural Historical Activity Theory (CHAT) is introduced and discussed in the remainder of this paper. CHAT (Engeström, 1987; 2001) offers a way in which to understand changes in the activity of research higher degree supervision, and can be used to generate ways in which to manage a transition to effective use of information and communication technologies (ICT).

2. APPLYING CHAT TO RHD SUPERVISION

Engeström (1987; 2001), basing his work on Vygotsky (1978) and Leont’ev (1981), depicts the structure of a human activity system as shown in Figure 1.

![Diagram of Human Activity System](image)

*Figure 1: The structure of a human activity system (after Engeström, 1987 p. 78)*

In this generalised depiction, activity by subjects is directed to an object, which provides the motive of the activity. This activity is mediated by instruments and occurs in a context consisting of a community with implicit and explicit rules and with a division of labour. Elements are related to each other, and tensions can develop within and between the elements.

Tensions can arise in various ways. Engeström (1987, 2001) differentiates primary, secondary and tertiary tensions. For instance, a primary tension may arise in any of the elements or a secondary tension may develop between elements. A tertiary tension may develop between two or more activity systems themselves. Resolution of tensions, which arise in the activity system, may lead to transformation of the system.
USING ACTIVITY THEORY

Figure 2 exemplifies one of the ways in which the activity of research higher degree supervision could be depicted, in an idealised way, using CHAT. It needs to be noted that this is merely a speculative depiction, which would have a particular form in a particular situation and it is provided as a background to the data derived in the study reported below. In the figure, it is assumed that there is an agreed object, which provides the collective motive for various individual actions. That is, it is the agreed object of, say, knowledge advancement (sometimes now called ‘research training’ in government policy and funding documents) that gives meaning to the actions involved in literature searches, writing, supervisor feedback, collecting data, finalising a dissertation, supervisor reports, examination processes etc. (Each individual action is said to have a goal and to consist of various operations). So the object of advancing knowledge motivates and gives meaning to the various actions.

![Diagram of an idealised structure of an activity system for thesis supervision]

Figure 2: An idealised structure of an activity system for thesis supervision
3. USING CHAT TO IDENTIFY TENSIONS IN RHD SUPERVISION

In order to examine the activity system of research higher degree supervision, interviews were conducted with 13 students and 14 supervisors at the authors’ university. In each interview, respondents were asked open-ended questions about the elements of the supervision activity system, use of technologies in supervision and tensions or problems. These interviews were transcribed and analysed for tensions.

From the interviews, the major groups of tensions could be collated into sets related to supervisor-student feedback, uses of technology, expectations and ownership. Table 1, 2, 3 and 4 provide extracts from some of the transcripts, together with suggestions about which elements of the activity system are involved in tensions related to feedback, uses of technologies, expectations and ownership respectively. From Table 1, it is clear that a major source of tension in RHD supervision relates to the instrument of supervisor-student feedback, with both supervisors and students experiencing problems. The problem is in being able to determine what feedback to give, how to give multiple kinds of feedback, how to ensure the feedback is acted on, how to avoid doing the work for the student and, from the student point of view, how to prepare adequate material and to understand and take action resulting from feedback. Thus the problems are in the instrument itself and also in the relationship between the instrument and the division of labour.

Thus, many of the problems are not due to technologies per se. However, as seen in Table 2, technologies are also problematic, even when they are used as instruments to overcome other problems. That is, technologies, which are expected to assist RHD supervision, can actually create new tensions. A major source of tension relates to the Division of Labour. The technologies appear to create an expectation of immediacy and impose additional tasks on the supervisors. Moreover, many supervisors are uncomfortable with the kind of feedback that some
technologies facilitate and with the losses of freedom and control. Implications of this CHAT analysis are discussed in the following section.

### Table 1. Tensions related to instrument of feedback

<table>
<thead>
<tr>
<th>Elements</th>
<th>Extracts from Transcripts (Source, interview number and paragraph number in parenthesis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>I tend to look at feedback in a couple of two or three different layers. Initially I focus very heavily on the big picture, whether they are adequately telling the story of the research, whether the story is sufficiently sophisticated to make a claim to be making a contribution to knowledge… so early on it’s a case of getting a sense of structure, argument, sequence and so on. Then I try, though I think in reality I don’t really succeed to leave the minor and grammatical and similar sorts of problems out of focus and concentrate on how well the argument’s going (Iv 111, para 10) That first two or three feedbacks from … were just overwhelming…it almost buried her (Supervisor, Iv111, para 30)</td>
</tr>
<tr>
<td>I-DOL</td>
<td>…how do you get it down on paper, and then how much help do I give?…So you might say ‘here is an example of how to do that’ but I suppose then you’ve got to step back and say ‘well now you go and try yourself and make a few mistakes’. I suppose the tension is to try and not to write too much for them you know. Because people give you helpless looks and say ‘how do I do this and can you give me’, and I suppose you can get sometimes trapped into pushing them along a bit. (Supervisor, Iv142, para 58)</td>
</tr>
<tr>
<td>I-DOL</td>
<td>…I’m unsure of what directions to go, at times I get reluctant to write for fear of I’ll write all this spiel and blurb and I’ll give it to someone and they’ll say ‘Look you’ve gone completely off in the wrong direction” …I don’t know whether … sees that I don’t really know whether he understands the difficulties that I have because I’ve never told him about them… He’s working on a different level to what I am that’s for sure, intellectually (Student, Iv009, para 62)… I still nod and say’ yeah righto mate I know what that’s all about’ even though I really haven’t got a clue. I suppose sometimes I’m a little embarrassed to actually say ‘Hey listen mate what are you talking about there?’ … So I’m using email, I find it a lot more fair, I can take my time, I can think about what I’m writing, I can think about what he’s written (Student, Iv009, para 66)</td>
</tr>
</tbody>
</table>
| I-O      | In the middle of the formative process, developing the person’s understanding and capabilities and granting skills and all the other damn things. The summative proves gains the high ground, gains the emotional focus, and I don’t think any change in the configuration will really alter those facts unless you take the
J. STEVENSON & C. MCKAVANAGH

summative character out completely. Then that would substantially undercut the reason for its being there in the first place, so you’re stuck (Supervisor, Iv111, para30)

Table 2. Tensions related to instruments of technology

<table>
<thead>
<tr>
<th>Extracts from Transcripts (Interview and paragraph numbers in parenthesis)</th>
<th>Elements (Fig. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>So an awful lot of the work has to happen through email exchanges and attachments. And the problem then is you really lack the ability to negotiate the heavy stuff in a way that minimises the impact and your really spend, I mean hours thinking about how the hell I’m going to say some things. Whereas if I was doing it spontaneously face to face I might make a stuff up of it but I can retrieve it very much more easily than I can if I’m sweating on a reply (Supervisor, Iv111, para 34)</td>
<td>I</td>
</tr>
<tr>
<td>The mode … has changed but the actual intellectual engagement hasn’t really changed. …you can clarify a whole lot of issues in a matter of 15 minutes which would take you weeks by email. The reason is the asynchronous communication … slows everything down enormously… I’d rather they phone me up (Supervisor, Iv112, para 61)</td>
<td>I</td>
</tr>
<tr>
<td>I wouldn’t accept, for example, a thesis that’s two-thirds written that is emailed to me. I expect it to lob in on paper in the mail, simply because I don’t have the inclination to go printing it off, and worry about whether the printer’s got enough paper in it or whether it’s going to run out before the thing…But I don’t want them to send it to me by email and say here it is, jump. (Supervisor, Iv112, para 21)</td>
<td>I-DOL</td>
</tr>
<tr>
<td>But I don’t want to change their file. I think it’s their work and as a supervisor I can give guidance and suggestions on how things could be improved (Supervisor, Iv135, para 26)</td>
<td>I-DOL</td>
</tr>
<tr>
<td>… to mediate electronic conversations between more than two becomes messy and because it’s so jolly time consuming…. there are chat groups and all sorts of ways of achieving this, but they’re time consuming. They take much more time than sitting down with candidates jointly and resolving issues…Teleconferences we do use, but setting those up is sometimes a nuisance too. (Supervisor, Iv121, para 22)</td>
<td>I-DOL</td>
</tr>
</tbody>
</table>

Table 3. Tensions related to ownership

<table>
<thead>
<tr>
<th>Extracts from Transcripts (Interview number and paragraph number in parenthesis)</th>
<th>Elements (Fig. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>… earlier on I was wondering … would I get enough …direction. But now I’ve gone further down the path, I can see that I was getting pointed in the right directions and it was up to me to actually to research and work it out for myself (Student, Iv001, para 58)</td>
<td>DOL</td>
</tr>
<tr>
<td>I’d like him to do the work for me but I know he can’t and I certainly</td>
<td>DOL-O</td>
</tr>
</tbody>
</table>

90
USING ACTIVITY THEORY

don’t ask him to, but it’s frustrating … I know where I stand, I know where my place is, I know what I have to do, that he’s just a facilitator, he’s not going to do the work for me (Student, Iv 009, para 94)

The student in the relationship has a responsibility to produce some goods that can then be given feedback on…maybe these students don’t work that way (Supervisor, Iv133, para50)

Table 4. Tensions related to expectations

<table>
<thead>
<tr>
<th>Extracts from Transcripts (Interview number and paragraph number in parenthesis)</th>
<th>Elements (Fig. 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>…the question gets narrower, becomes more confined, becomes more theoretical. There’s a tension there because we’ve moved a fair way form the very general notion the student may have at the very beginning to something they can actually do (Iv113, para 14). …The tensions between focus and purchase on the one hand and utility and breadth on the other, actually resolves in favour or narrowness and focus (Supervisor, Iv113, para 18)</td>
<td>O</td>
</tr>
<tr>
<td>I have been concerned about the increased pressure on completing. Partly because I think it isn’t very closely related to the educational process as it is developed in Australia (Supervisor, Iv131, para 59)</td>
<td>O</td>
</tr>
<tr>
<td>…some of them may be rearing to go and collect their won data, but that’s not really productive (Supervisor, Iv135, para 6)</td>
<td>O</td>
</tr>
<tr>
<td>… grappling with the difference between an EdD and PhD and the difficulties that confronted… you’ve done all this coursework and it didn’t actually help with the research project (Student, Iv006, para 62)</td>
<td>R</td>
</tr>
<tr>
<td>I mean I’ve had a major drama with getting to grips with study. Like I’ve had to make submissions to people, committees and stuff like that which I had no idea about, and sometimes you feel as though you’re supposed to… You know it’s like well all you do is you just make a submission to the committee (Student, Iv002, para 58)</td>
<td>R-O</td>
</tr>
<tr>
<td>So I need to know what is passable and what is not passable and at this point in time I really don’t know (Student, Iv009, para 94)</td>
<td>R-O</td>
</tr>
</tbody>
</table>

4. IMPLICATIONS FOR INSTRUCTIONAL DESIGN

This paper suggests how an activity theory perspective can provide a frame for describing and analysing supervision practice, and identify the tensions that instructional design needs to resolve in transforming practice. The nature of the Object and the Division of Labour were found to be a pervasive source of tensions, which have been exacerbated by uses of technology. Technology has shifted responsibilities in many ways ranging from run-of-the-mill issues such as availability, printing and immediacy, through to issues to do with the nature and quality of feedback, ownership and responsibilities. Some of these tensions appear
to be connected with the intrinsic tension involved in the simultaneous formative and summative aspects of RHD supervision.

In instructional design for RHD supervision, then, it is inadequate to look just at one aspect of the system, e.g. facilitating interaction through email exchanges. Care must be taken in considering not only tensions in the instrument itself (e.g. supervisors managing multi-level and multi-purpose feedback), but also what effect this has on the Division of Labour (e.g. students taking responsibility for and having ownership of their work). That is, by using activity theory, the focus is not just on the instruments themselves, but also on the interactions with other elements.

Thus, based on this study, the potential advantages of using CHAT to think about instructional design in relation to the use of ICTs in RHD supervision include:

- Being able to view, in a systematic way, the entire activity system that is involved in instructional activity, and the interactions among elements
- Identifying the elements, their contributions and their interactions
- Highlighting the tensions in the system, including those which arise as the with new instruments, such as ICTs
- Having a framework to synthesise new instructional approaches in relation to their possible effects on inter-related parts of the system

Further studies could be directed at using technologies to overcome these kinds of tensions. In order to overcome tensions, it may be necessary to reconsider the object, especially the tension between formative and summative actions directed at the object of advancement of knowledge. One approach may be to expand the object (accommodate more inclusive future possibilities (Engeström, 1994)). In this case, it may involve relating the technologies to different formative and summative functions at different stages of the supervision process, and/or developing ways in which multiple level, multi-purpose feedback can be generated, exchanged and interacted with. Thus, activity theory appears to have considerable potential for more comprehensive instructional design in this field.

AFFILIATIONS

Professor John Stevenson is the Director and Dr Charlie McKavanagh is the RHD Coordinator of the Centre for Learning Research, Griffith University, Queensland, Australia

REFERENCES


USING ACTIVITY THEORY


