Connecting technology and university teaching:

An interview study

A report by the Client Relations Team, Oxford University Computing Services

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1   EXECUTIVE SUMMARY

The overall study has been designed in response to an increasing rejection of technologically deterministic approaches to researching ICTs in HE, and the call for more in-depth, grounded research of what university teachers are doing with technology and why. This study explores the relationships between university teachers' experiences and perceptions of teaching, learning, and ICTs in order to foster a deeper connection between the learning technologies community and the academic communities that it seeks to inform. This exploration adopts a case-study strategy and is based on in-depth interviews conducted with ten university teachers' at the University of Oxford. First level coding and categorical aggregation were used as a means of analysing the data, teasing out patterns that emerged across the interviews. Individual teacher vignettes are also available to place experiences and perceptions within context.

The case-study provides a rather different picture to that painted by the dominant discourses about ICTs and HE. Experiences and perceptions of ICTs are multi-dimensional, influenced a great deal by experiences and perceptions of teaching and learning. In particular, in this study the Oxford pedagogy is shown to play a very strong role in shaping interviewees' perceptions of ICTs and their place within teaching and learning. Findings included the identification of four principle themes relating technology to university teaching; interaction; information and knowledge; dependency; and professional identity. These four patterns illuminated why some teachers chose to adopt certain technologies in their teaching, whilst others did not. Along with these themes motivations for the adoption, and non adoption, of ICTs were constituted. Recommendations based on these findings have been made to aid project management processes, marketing, and services at OUCS. In summary the research highlighted a mesh of interrelating factors that are at work when using ICTs

in teaching and learning, and the importance of considering the full range of experiences and perceptions when embarking on ICT ventures.

2   INTRODUCTION

To be able to support and enhance university teaching with ICTs we must first find out how academics are currently teaching their subjects, and why they teach in certain ways. To be able to embed technology successfully within teaching and learning we must understand how teachers' experience and perceive teaching, learning, and ICTs and the mesh of factors that motivate them to adopt, or not to adopt technology. The aim of this study was to identify some core themes that are of significance when implementing ICTs in university teaching, and in doing so be able to respond to needs, alleviate fears, and the illuminate benefits of using ICTs in teaching and learning.

The key questions that informed this research were as follows:
- How do university teachers' teach?
- What are these acts of teaching focused towards, what is the teacher seeking to bring about by them?
- How does the teacher use or wish to use ICTs?
- How does the teacher perceive the role of ICTs within their teaching context?
- What are the particular motivations for teachers to adopt ICTs?
- What are the particular motivations for teachers not to adopt ICTs

3   METHODOLOGY

This study required a detailed, qualitative approach along with a close review of other research in the field. A case-study strategy was used, with in-depth interviewing as the main method of data collection. Interviews were conducted with 10 lecturers from a range of disciplines, and with a range of experiences using ICTs as table 1 shows:

Table 1: Summary of Individual Cases[1]			
Code	**Age range**	**Discipline**	**ICT Project**
David	50-65	Philosophy	Yes
Phillip	50-65	Modern History	No
Margaret	50-65	Modern Languages	No
June	50-65	Religious Studies	No
Peter	35-50	Physiology	Yes
Stuart	35-50	Chemistry	Yes
Chris	35-50	Business Studies	Yes
Karen	35-50	Medical Sciences	No
Rosa	25-35	Modern Languages	Yes
Alice	25-35	Geography	No

The General CRT interview schedules were developed specifically for use within this project and the data also fed into the CRT Admin Burden Project.

The majority of the interviews were transcribed and first level coding and categorical aggregation were used to analyse the data and identify common themes and patterns. Summaries of the interviews can be found at in the CRT interview summaries section, and full transcripts are available upon request. Pseudonyms have been used instead of the interviewees' real names. However, any reader who feels they can relate descriptions and comments to individuals should ground their views within a previous and whole knowledge of that person, and not in the way they have been portrayed in this study.

4   FINDINGS

4.1   Patterns of experiencing ICTs

Five of the interviewees had been involved with specific ICT innovation projects of varying complexities. Others had taught themselves various packages to enhance their teaching materials, while some, had used a smaller selection of more administrative technologies to 'make life easier'. However, for all of those interviewed certain ICTs had become part of the blend of their everyday working practices. Nearly all of the respondents commented that they would frequently direct students to useful URLs or

library Internet resources, use online catalogues to find resources, and use e-mail as a first port of call for communication.

According to their accounts, interviewees mostly used technology to aid the administration of teaching (producing course materials, contacting students, collecting course feedback), or to enhance learning (use of PowerPoint in delivering lectures, online reading lists, formative assessment) rather than to substitute any part of it. Whilst some embedded technology extensively in their teaching, it was still additional to the traditional teaching techniques of the lecture and the tutorial. The ICT innovation projects in which some interviewees had been involved in, were 'add-ons' to enhance traditional teaching practice. These included online formative multiple-choice questions (MCQs) to aid revision by David (philosophy) and Chris (business studies); and the use of flash animations to teach chemistry by Stuart. Rosa used the VLE extensively to introduce her students to a range of materials. Peter's TeaLeaves project was an exception within the group in that the project replaced a practical class.

4.1.1 Use of the institutional VLE

WebLearn is currently the preferred VLE system supported and hosted by the University. The interviews revealed a great deal of awareness about the presence of WebLearn, with four of the interviewees using it to host materials on a regular basis. Others, however, had little practical experience of using it, and three of the interviewees used alternative departmental or college intranets instead. In all instances WebLearn was used purely for the administration of course content rather than for any form of learning activity.

4.2 Patterns of experiencing teaching

Experiences of teaching at Oxford tended to focus on the tutorial, a technique that largely consists of the tutor teaching a student on their own or in a small group. At Oxford the tutorial largely consists of a tutor exploring a topic in greater depth with a student face-to-face, this may be through discussing and debating essays, problems, or readings. The majority (seven) of university teachers interviewed held regular undergraduate tutorials on a one-to-one basis, the remaining held slightly larger

tutorials with two or three students at one time. In relation to the aims of the tutorial, comments included: 'enabling each student to learn at their own pace;' 'giving immediate feedback' on a student's work and performance; 'two minds working on the same problem;' 'guiding intellectual growth;' and 'an academic demonstrating scholarly skills to enable the student to become an academic themselves.' In the interviews the tutorial was seen to focus on the individual student, assisting them to develop their own learning style, directing them in their studies, but also giving them some freedom of choice in what they studied. June, a tutor of religious studies, commented 'I give them a range of essay titles so they can think flexibly around a particular subject; it gives them mental agility'. The tutorial process puts student and tutor face-to-face in a way that is affected by distinctive personalities and approaches, and thus becomes a highly personalised learning experience.

A number of the interviewees expressed that the role of the tutorial was not to deliver information or facts, or to bring students 'up to speed' for their exams; rather, it was to 'contest knowledge' and 'articulate argument', fostering in students scholarly skills so that in time they would become less dependent on their tutor's guidance. This opinion, however, was not shared across the group, and others indicated that knowledge was accumulated rather than challenged, within the tutorial process. For instance teachers from chemistry, medical sciences, and philosophical logic felt that the main aim of the tutorial was to go over particular problems that the students were having with the course material. Some interviewees also commented that there was a fine line between the tutorial essays and the examination questions:

> June: I give them alternative questions which are often from previous exam papers, because I say to them, "you'll never get exactly the same question I'm giving you on an exam paper, and as you approach the material you need to have a flexibility of mindset about the issues involved in this week's work".

> Alice: I do give them past exam questions in the tutorials. If they can get feedback from me then they will be able to go into the exams with more confidence. I guess that this is not really the Oxford way, but it's what the students want. They want to pass their exams.

The tutorial was perceived to be at the very heart of the teaching experience, with other aspects of the learning environment, such as lectures, classes, labs and private

study, feeding into it. Experiences of group teaching were largely more information-focused. Interviewees commented that they gave traditional 'performance style lectures': 'it's just me at the front talking really'. Some interviewees broke up their lectures with activities and used visual stimuli like Peter had described, but there was usually little room for discussion or debate, in many cases because the group was too large to do this effectively, or because the students were unresponsive. As one teacher commented:

> David: Once upon a time I left a time at the end of the lectures for people to ask questions, no one ever did. And so there was just no point. And now what actually quite often happens, is that they wouldn't ask questions um actually when everyone else was there but they'd come up after the lecture and ask the question, which they much prefer.

Lectures were largely seen as a means of delivering facts and information to the students, the tutorials as a place to articulate understanding and critical thinking.

4.3 Patterns connecting experiences and perceptions of teaching to experiences and perceptions of technology

Overall, relating teachers' perceptions of teaching to their use of ICTs through the transcripts was a complex task and varied immensely within the group. After the process of analysis four main themes in particular emerged from the interview responses of the group. Discussed in order these are; face-to-face interaction versus virtual interaction; dependence versus independence in learning; knowledge versus information; and lastly old versus new teaching styles.

4.3.1 Face-to-face interaction versus virtual interaction

A significant theme that emerged was a concern about the potential reduction of face-to-face contact if ICTs were used increasingly for teaching. Oxford University has a favourable tutor-to-student ratio and teachers perceived the majority of their teaching commitment as organising and holding tutorials. They expected to have a high level of face-to-face contact with their students, and said they believed that their students felt the same way. Further, face-to-face contact was considered to affect a student's motivation to learn in a positive manner:

I: Why do you feel that a tutorial is beneficial?

David: It's important that the student has the opportunity to develop their knowledge of the subject physically with some one who can push them and take them down different avenues of understanding. Through having tutorials the student is motivated to read, prepare and write and this is constant throughout their university life. Um, it's a lot of pressure but that's what makes these students so successful isn't it.

One interviewee commented that what online learning environments, like VLEs, were in effect trying to achieve was the contact that one gets through the Oxford tutorial:

Stuart: The majority of VLEs are trying to replicate online the Oxford tutorial, effectively we have it so we don't need to replicate it online, it's as simple as that really. The VLEs are just ways of engaging students in a one-to-one way with either themselves or with a tutor, that's really what most VLEs dream of having, the sort of interactivity of an Oxford tutorial. We already have that here, and I think that's difficult to do.

The perception that ICTs could not replace or enhance what Oxford already had in terms of the tutorial was widespread across the group. Teachers often mentioned that they were 'sceptical' about the advantages of using discussion tools in this environment, and that they were 'not convinced' of the benefits any form of online interaction could bring to their teaching and their students learning. Some teachers who had tried online discussion forums, or had seen their colleagues do so, commented that online discussion facilities would not be used as students social networking patterns were already well established, largely due to the collegiate structure of the university. Comments included:

Peter: We've made available things to discuss but they don't really get used . . . So they must have other mechanisms, social networking which they think are more amenable.

I: Do you think that's something that's kind of specific to Oxford, or do you think it's more general?

Stuart: I think it's very specific to Oxford. I think it's because the relationship that the staff have with their small group of tutees means that the discussion board, for example, is completely resented within our general courses within Oxford. . .your community of students is fairly collegiate, so they help each other out who are the same halls of residence, they certainly don't have a community feel for the whole course…if there isn't a big community, having a discussion forum would fall apart, I think.

In those subjects heavily reliant on fact (chemistry, Turkish studies, physiology) more debate and discussion were not perceived as aspects of learning that would be beneficial; for instance, one chemistry teacher commented:

> Stuart: The opportunity to have a discussion in there is limited really because either the student knows what you are talking about or needs help…whereas in many other subjects, for example English, you can debate about what an author wrote in his book…it's debatable and it's not in chemistry and not in a lot of the sciences.

Interviewees felt that there was no real need to 'rescue students from their loneliness' as students were placed in highly supportive and effective networks consisting of their tutor and their college peers. When engaged in lecturing to much wider groups some interviewees commented that they had used e-mail lists, or created question and answer web pages, to answer any questions concerning lecture content. However, more often than not these points could be clarified in tutorials and these mechanisms were largely unused or not needed.

Further, often entwined within the role of tutor was a more pastoral aspect of general support and care of the student through their academic career, and it was not seen as desirable to use technology to provide this. Many of the group felt that they had come to know the students whom they tutored. By providing other forms of interaction new technologies challenged the very basic formulae of what 'makes Oxford work', and a shift to new technologies for communication purposes would require an organizational change that saw the dismissal of the tutorial, an aspect of teaching that many of the group felt was an important aspect of their professional identity (the group regularly referred to their role as 'tutor' rather than 'lecturer' or 'teacher').
In the case of graduate students, some of the group felt that there could be scope for using technologies to aid communication, especially for doctoral students. Interviewees met their graduate students on a one-to-one basis much less regularly (once or twice a term), usually to discuss research projects rather than any form of teaching they were receiving. Communication between tutor and student was largely conducted through e-mail, and efforts were made in some disciplines to place research students in groups with other students covering similar topics. These met on a regular

basis or, in the case of science subjects, shared the same laboratory. However, connecting to the theme of independency of learning discussed earlier, tutors also felt that at this stage students should not rely so much on the support of their tutor, as Phillip states:

> [T]hey can't have the sense that we are permanently available'. Those interviewees who felt they would consider using discussion facilities were sceptical of the amount of time that they would have to commit to make them beneficial.

4.3.2 Dependence versus independence in learning

Commonly recurring themes in the interviews were those of dependency and independency within student learning. Teachers who held the perception that teaching was about guiding and assisting students to develop understanding, knowledge and techniques felt that increasing uses of ICTs would 'spoon-feed' students, encouraging forms of dependency. As the teachers' experiences of ICTs were largely as information delivery systems, rather than activity-based learning tools, ICTs were seen to encourage passive learning. An important aspect of developing a learning style was the ability to be able to conduct 'independent research', learning to use online databases and bibliographies to find relevant material and explore connections between them, rather than being given links to such resources directly. Examples of these are some of the interviewees' comments about electronic reading lists which contained hyperlinks to journal articles:

> Peter: I'm adamantly against linking the references, I find it tacky and counterproductive, you know. How are they ever going to learn to find things for themselves?
>
> Phillip: Lets say I create those reading lists with embedded links to journal articles, surely one of the by-products of that is that they no-longer have familiarity with using a catalogue, and one of the things I would like them to do is find out things for themselves . . . it's a generation of students who think that research consists of going to Google and pulling something of the internet, that that's what research is, and it's profoundly alien to what we do. Although I'm very much in favour of electronic resources, there are still quite serious issues about how people learn from them, the relationship between the electronic world and the learning process.

Chris: Finding resources yourself rather than linking directly to them, well I find that it's a scholarly skill to be able to do this, you know, people are astonished sometimes that you can find stuff out, for example, about companies that we're dealing with. But if you're a bit more persistent and you spend a bit longer at it and a bit more systematic, you can actually find all sorts of stuff out that the lazy person can't. I think also there's an awful amount of skill in searching and we don't actual teach any of our students, even research students, how to do it very effectively. So that's possibly something we need to think more of.

An interesting comment was made by Phillip, who expressed the concern that new means of communication afforded by ICTs (e.g. discussion boards, synchronous chat rooms) would actually encourage the students to depend more upon their tutor:

[T]here is something about the electronic world which determines what I call the open beak, little birds in the nest with their open mouths expecting things to be dropped in. And that is something that ever more rapid communication does, because then people expect instantaneous responses to every kind of enquiry…they can't have the sense that we are permanently available, as it were, permanently downloadable.

Interestingly, none of the interviewees voiced the opinion that ICTs could encourage students to take responsibility for their own learning. Being able to 'develop' learning styles and techniques, conducting 'independent' research and developing 'complex understandings' was seen to be very much a part of the 'Oxford experience'.

4.3.3   Information versus knowledge

A further important pattern that emerged from the interview responses was the perception that information differs significantly from knowledge, and that only a real teacher can guide a student. As discussed previously, the role of teacher as tutor is largely experienced as assisting the student in constructing and contesting knowledge and in developing learning styles though guidance, tutoring and personal attention, not by disseminating information. The boundless amount of information available on the Internet might enrich what is learnt from a teacher but it does not substitute it for the latter. This was expressed by one teacher's comment on the problems of using the Internet as a mechanism for resource discovery:

Phillip: I suppose the majority of students do it all on Google and think that if it doesn't come up on Google, it ain't there. Well, of course, many bibliography

results don't come up on Google searches because Google can't drill into the database. …This is a problem There's an awful lot of stuff, high grade material, that students, won't get through Google... It's more about how you train users to develop the skills of a scholar and how to process that information. Because information isn't knowledge, you can't develop complex understandings of information just by looking on the Internet.

Information is more accessible through the Internet, but a teacher is needed to help mould this into meaningful knowledge.

4.3.4 Old versus new teaching styles

Although, Rosa and Peter both conveyed that their teaching styles had changed to encompass new technologies in their teaching; this shift in method was raised as a concern by a number of the other teachers interviewed. Many of the teachers felt that ICTs would bring about a change in their roles within the teaching and learning context. However, perceptions varied as to what those changes would be. Interestingly, in contrast to the perception discussed above that ICTs would not encourage an independent and self-conscious learning style, some teachers voiced a concern that technology would reduce their control over the learning situation:

> Alice: I don't like to spoon feed them but I don't want to give them too much freedom to teach themselves. There is so much information available on the World Wide Web and many of them don't have the skills to assess what is scholarly and what isn't. I mean I need to know what they are doing so I can guide them. If it was all virtual that would be more difficult I think.

Other teachers feared that an increased use of ICTs would force a greater focus on administration rather than teaching within their work. Comments included:

> June: I love tutoring. I don't have to give many lectures and I'm not engaged in research so it really is my main activity. I could use IT more than I do and I imagine it would be quite interesting but the thing is I like how I do things now. I don't want to have to shift from that to spending more time preparing materials and e-mailing, that would take time away from actually working with the students and that is what is really important.

> Karen: Research and the administration of running a research group is my main role and second to that, a long way away, is teaching…as far as I'm concerned more IT means more admin and I really don't want to do any more of that.

I: Why do you feel more IT would mean more admin?

Karen: Well I'd have to learn the technology, then set up all the stuff in WebLearn, give all the students instructions, constantly check e-mails, discussion things, check it was working as it should be. It's a lot of work.

The online university teacher takes on the roles of facilitator, administrator, technical support and evaluator, the focus in this change is seen to shift away from the student to the general running of the course.

4.4   Principle motivations for university teachers to adopt, or not to adopt, ICTs in teaching and learning

In addition to the above themes, a number of other points arose specifically in relation to motivations for adopting, or not adopting ICTs in teaching practices.

4.4.1   Principle motivations not to adopt ICTs in teaching

In addition to the concerns emerging in the themes discussed above, other barriers for using ICTs for teaching and learning were: demands on time; lack of incentives for using ICTs; lack of evidence in terms of educational benefits; and lack of technical infrastructure, skills and support. Some teachers perceived that ICTs would require a greater amount of administration, both in authoring teaching materials and in maintaining an online environment. Whilst Rosa felt that in the long term ICTs had helped her to reduce her workload, other teachers who had incorporated technologies within their teaching felt that it had been far more time-consuming, especially when used as a supplementary teaching method. Chris discussed his worries over another university teacher who was assisting him in creating formative online MCQs for undergraduate business studies students:

Well one of the things is just finding the, you know, the time to do it. He was just coming up to tenure at that stage and it was very vital he finished the book. And he is a sort of obsessive, when you saw the things he did, they were all immaculate and beautifully done because he spends lots of time on that sort of stuff, and this could have become a tremendous displacement activity for him. I wanted him to focus on his other work… You know, I wish we had the resources to do more but it's absolutely not an IT issue, it's just having the people around to do it.

Similarly, Phillip admitted to difficulty finding the time to create online materials for his students:

> I'll get it and I can do it when I can, which is probably going to be in an evening, not in a daytime because there's no time in the daytime, for me anyway.

Like Margaret, other interviewees were interested in increasing the use of technology in their teaching but were discouraged by the increase in workload they perceived it would demand. As Karen commented:

> I need to start using the WebLearn. Students are starting to expect it you know, having access to handouts, reading lists ect. online, but I've heard that it's not that easy to use and I just don't have the time at the moment to sit down and work it all out. The amount of administration I have to do for my research group is massive, and that really takes up most of my time.

A lack of incentive for using ICTs was also a key point raised by some of the interviewees, in terms of both staff and student commitment. There was a general feeling that teaching and learning were held in low self-esteem in comparison to research activities, which were generally rewarded with promotion. Chris discussed the response of his colleagues to the e-learning MCQ project which the department had undertaken:

> The main response from the School officially was great – 'we can tell people that we're doing something on e-learning'. But I think most people were thinking in terms of well that sounds like a lot of work, what do you get out of it, you know. And because I think it is something that that you're doing for just pure educational benefit and not even for all students, many of my colleagues would say well why bother. But generally it just reflects of course that there is no instrumental value in interesting in teaching because no one appraises you or evaluates you on teaching.

In terms of the benefits that students could gain from using educational technology, most of the teachers interviewed did not perceive any clear obstacles or barriers to which ICTs could provide a solution. Chris also raised the issue that, while the online MCQs had been 'a valuable adjunct to learning' for some students, he explained that this was only for students who felt the need to test their knowledge: 'I'm sure many

students just wouldn't bother to engage with it routinely'. The question of whether a student would feel motivated to engage with online formative assessments is closely connected with the perceived educational benefits of using ICTs within the Oxford educational system. As Stuart succulently summarised:

> The question is why would students do them? At other universities, I think you can be far more creative in how you give students credit for what they do. There is zero opportunity or very little opportunity to have that here, because we don't have continual assessment in any of our courses, whereas almost every other university probably does. So therefore using multiple choice, what's the incentive to do it if you are not getting any credit? OK, the incentive is that a student might think they're going to learn something, but that's not everyone, and the way we teach the subject is very much self-discovery in textbooks really…And what's the driver for change, our students are quite successful at the end through using our tutorial system, why should we change to do something else when they actually learn quite effectively by telling them they're going to have to write an essay on such-and-such by next week? It's quite a high pressure way of teaching the subject because they have to go away and research it and come back and be knowledgeable about that subject. And would you get that same knowledge if you just gave them some multiple choice questions? No.

There was also some concern over the technical infrastructure and support needed to use ICTs within teaching. Four of the interviewees commented that the lecture theatres that they used were not set up with the data projectors or the Internet connections that they needed to use technology in their lectures. Some teachers also voiced their concerns over dealing with 'technical glitches' that may occur when using ICTs for teaching and confessed to a fear of appearing to look incompetent in front of their students:

> David: I had problems with the data projector on a number of occasions and one student commented on this in their end of term feedback. I thought this was a typical smart arse in their first term knows everything and thinks of people of 60 haven't any idea how to use equipment. It did put me off.

Some interviewees perceived the support to aid the implementation of ICT into teaching and learning as inadequate. For instance two of the interviewees who used WebLearn were discouraged that they had to use a mailing list to have their questions answered, preferring support on a one-to-basis. Others felt that the they required more pedagogical support rather than technical support, as June stated 'Well, I'm sure I know how to use some of the technology already, or it would be easy enough to learn,

but I wouldn't know how it use it you see. How do I know where and when I should do it?'

4.4.2 *Principle motivations to adopt ICTs in teaching*

All those interviewed who had used ICTs were asked what the main motivations was for implementing them within their teaching. The responses could be classified into four areas: addressing a practical need, enriching course content, personal rewards, and institutional recognition.

Peter and Rosa shared a common theme in their reasons for adopting ICTs - each had experienced situations in their teaching that had required them to look for enhancement from elsewhere. Peter needed to substitute lab activities and Rosa needed to address a lack of material available to teach Turkish studies. Others had used ICTs to 'liven up' or 'enrich' their teaching, through the use of PowerPoint presentations and multimedia to make the content more 'interesting' for their students. As Chris commented on his use of electronic visual aids in his lectures:
Pictures break up all the words, because I think if you have too many words and slides it makes it hard to digest. I use a lot of video clips too, they serve as pure breathers, just really to break up the flow of the lecture, give people some intellectual relief, something else to look at. Some of them are useful because they are provocative in their own right and, you know, they help get people thinking.

Another main motivation discussed in the interviews was the personal reward teachers received from using ICTs. Some interviewees cited a personal interest in using technology as reason for adoption, and some their interest in teaching issues, often prompted by professional certificate in teaching in HE or a similar course. Some institutional rewards, such as available funding or development time, awards for best practice, or the occasional committee responsibility or post, were mentioned. However, it was evident that institutional factors were not of great importance in motivating the more innovative teachers to use ICTs.

5   SUMMARY

The results from the interviews were varied. They showed the many different ways that the teachers used ICTs in their work, and highlighted the tendency within the group use technologies to enhance and enrich learning rather than to transform or substitute it. Perceptions of teaching, learning, and ICTs clearly influenced the ways in which the teachers used technology, and in many cases perceptions were highly influenced by the established Oxford pedagogy of the tutorial. Although perceptions were multifaceted they largely revolved around notions of interaction, dependency, information, knowledge, and professional identity; allowing for the identification of some common themes. Additionally, the findings from the interviews highlighted some principle motivations for university teachers to adopt, or not to adopt, ICTs in their teaching. Time; lack of incentives; a lack of evidence for educational benefit; lack of defined problems; and technical provision and support; were seen as barriers to the uptake of ICTs; whilst, practical need; enriching course content; personal reward; and institutional recognition were seen as levers to adopt ICTs.

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