

Time, space and structure in an e-learning and e-mentoring project

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Abstract

This study focuses on a project, *EMPATHY Net-Works*, which developed a learning community as a means of encouraging women to progress into employment and management positions in the Logistics and Supply Chain Industries (LaSCI). Learning activities were organised in the form of a taught module containing face-to-face and online elements and e-mentoring with successful professional women in the LaSCI. In this particular research, we have used structuration theory (Giddens, 1979), a social theory which concentrates on the relationships between human agency (micro level) and social structures (macro level). We used structuration as an analytical tool to help us understand what happened within the project e-learning and e-mentoring processes. Our analysis suggests that there were two factors that influenced the way project participants carried out their learning activities: the first one being the issue of absence and presence in online environments and the second issue of time frame changes for online users.

Introduction

In this study, we are interested in learning from our experiences of implementing e-learning and e-mentoring processes as a part of a project, *EMPATHY Net-Works* at the University of Hull Business School (HUBS). The aim of the project was to encourage graduate women to progress into employment and management positions in the Logistics and Supply Chain Industries (LaSCI).

We have used structuration theory (Giddens, 1979) as an analytical tool to help us understand what happened within *EMPATHY Net-Works*. Structuration theory concentrates on the relationships between human agency (micro level) and social structures (macro level) and we use it to explain how the e-learning and e-mentoring structures emerged from the actions of its members and how participants drew on these e-learning and e-mentoring structures to carry out their learning activities.

The aim of this research is to explore time, space and structure in an e-learning and e-mentoring project using structuration theory. In particular, this research addresses two questions:

- How does structuration theory help to explain what happens in e-learning and e-mentoring?
- How do issues of time, space and structure support or hinder e-learning and e-mentoring?

The ENW project

The overall aim of the *EMPATHY Net-Works* project was to encourage graduate or professional women to pursue careers in the LaSCI. The *EMPATHY Net-Works* project involved 60 student/mentees (divided in 4 cohorts), 3 tutors, 34 Mentors and a project team of 5 members. The strategy was to develop a boundary spanning community to help participants to make their journey into the LaSCI (see Figure 1). Once recruited onto the project, the women took part in a taught module delivered partly online and on a part-time flexible basis. In addition, participants were supported by mentors working in the LaSCI. As Figure 1 shows, *EMPATHY Net-Works* is an example of a managed learning community, involving a blend of face-to-face and virtual communications, and crossing the boundaries of home, the university, and the workplace including the LaSCI.

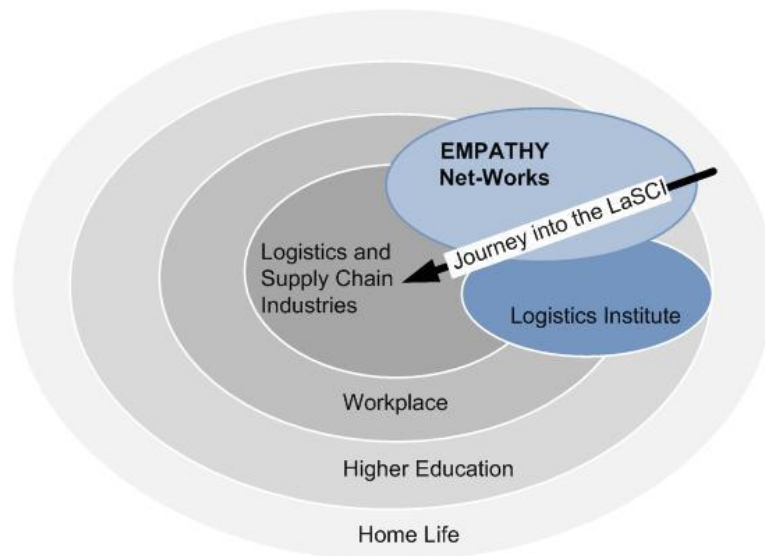


Figure 1: *EMPATHY Net-Works project: working across boundaries and communities, adapted from: Allan, Craig, Loureiro-Koechlin and Robinson (2007)*

The *EMPATHY Net-Works* project used a web-based collaborative communications software called iCohere (iCohere Inc. www.icohere.com) which includes a range of interactive tools such as discussion forums and chat rooms. All of these were customised to fit the needs of the project and this involved establishing two environments, one for e-learning and one to host e-mentoring.

The module was designed to enable students to develop the necessary knowledge and skills to allow them to enter the LaSCI at a management level. The project team developed a taught module involving a mixture of face-to-face and online learning activities using iCohere. Within the iCohere environment the module activities were supported by various resources including discussion boards, chat rooms, self-assessment questionnaires; and learning resources in a variety of formats most of which were produced by the project team. Students who successfully completed the academic requirements of the module achieved 10 credit points at postgraduate level (Level 7). Overall, the project was considered successful in the sense that it achieved the targets set by the European Social Fund. From the university's perspective, both student and external examiner feedback were extremely positive.

Mentoring complemented the module activities and helped the students to move into the LaSCI. Mentoring is a process that involves learning from a more experienced practitioner and it is a well-documented approach to career development and progression in the workplace (Clutterbuck 2001). In the *EMPATHY Net-Works* project the role of the mentors was perceived as important as mentors could act as role models and encourage the student/mentees to change their perceptions about their career potential and the LaSCI.

Although mentoring is a well-established approach to personal and career development, the use of e-mentoring is still developing both within the workplace and higher education. Headlam-Wells, Craig and Gosland (2006) identified its value in terms of supporting women's careers in a flexible manner and they illustrated that e-mentoring can be integrated into an individual's work, studying and/or family commitments. The *EMPATHY-Net-Works* project employed new technologies to extend the potential of mentoring to include e-mentoring. The iCohere environment for e-mentoring contained discussion areas for private (mentor-mentee only) and public interactions (between mentees and between mentors). Mentoring pairs were free to use any other media to communicate.

After outlining the ENW project, this paper explores the development of e-learning and e-mentoring using structuration theory. We have chosen structuration theory as an analytical tool to help us understand what happened in the project at a micro level. We will first introduce structuration theory and its applications in the IT field. We will then explore two issues raised in our analysis which explain some aspects of e-learning and e-mentoring. These issues are then discussed by using structuration theory.

Structuration theory

Giddens' structuration theory attempts to bridge the concepts of structure (the idea that society is a system of relationships that determines the actions of individuals) and agency (the idea that the actions of individuals lead to the creation of society). Giddens (1984) suggests that structure both constrains and enables agency, and that structure and agency cannot be understood separately of each other. Thus Giddens defines structure and human agency as a duality in which both are mutually dependant and recursively related aspects of social systems.

Giddens defines three dimensions of structuration that explain how people make sense of the social structures and act accordingly, and how social structures emerge from these actions (Jones, Orlikowski, and Munir, 2004; Orlikowski and Robey, 1991). A schema showing the relationship between the dimensions, agency and structure is presented in Figure 2. The "Interpretive Scheme" represents the stock of knowledge that help actors make sense of their interactions (Rose and Scheepers, 2001). "Norms" dictate whether conduct is appropriate or not according to moral codes within a community. The "Facilities" are used by people to accomplish their desired outcomes. By making sense of their actions actors are able to establish routines giving rise to a phenomenon called routinisation. Routines are patterns of actions which become institutionalised, that is they become structures of the social systems the actors are living in (Orlikowski, 1992).

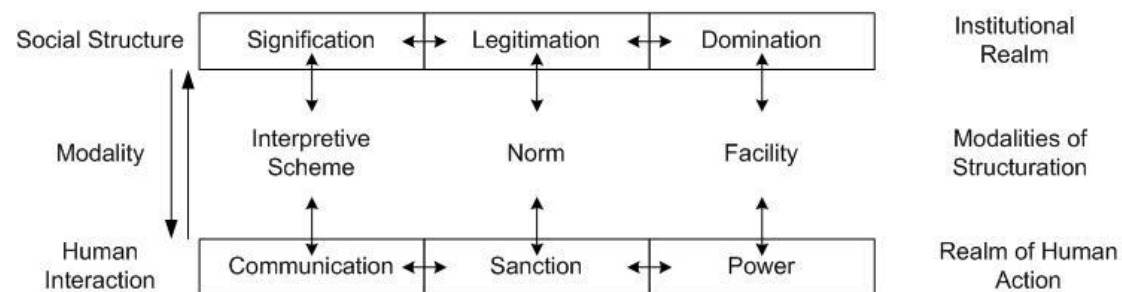


Figure 2: The dimensions of the duality of structure, Adapted from Giddens (1979)

The use of a virtual learning environment (VLE), iCohere, means that some structuration ideas on how technology can influence social action are relevant to this study. In his work, Giddens introduces the concept of time-space distanciation as a key feature of modernity. "This refers to the separation of time and space, which in traditional societies are linked through place, and their recombination in forms which permit the precise time-space zoning of social life" (Walsham, 1998). For example the time and space for a taught module are linked to the classroom. The use of a VLE changes this system so the interactions can take place at different times and from different places (e.g. the participants homes).

One of the most well known uses of structuration in the IT field is Orlikowski's enactment of technologies-in-practice. Orlikowski (2000) separates two aspects of technology: technology as "artefact" and "technology use"; and further defines the latter as technology-in-practice. Using this concept, she then proposes a "practice lens" to understand the recursive interaction between people, technology and social action. Orlikowski (2000) states that, seen through practice lens, structures are not embodied in technology-in-practice but emerge from them

(Orlikowski, 2000). Rather than examining technology and its properties, the practice lens looks at how human action enacts structures through interaction with technology.

The model of “enactment of technologies-in-practice” is shown in Figure 3. Orlikowski explains that users of technology are situated “within a number of nested and overlapping social systems” (Orlikowski, 2000). Therefore the use of technology recreates other social structures apart from technology-in-practice. Similarly, users will draw on many varied social structures when they use technology.

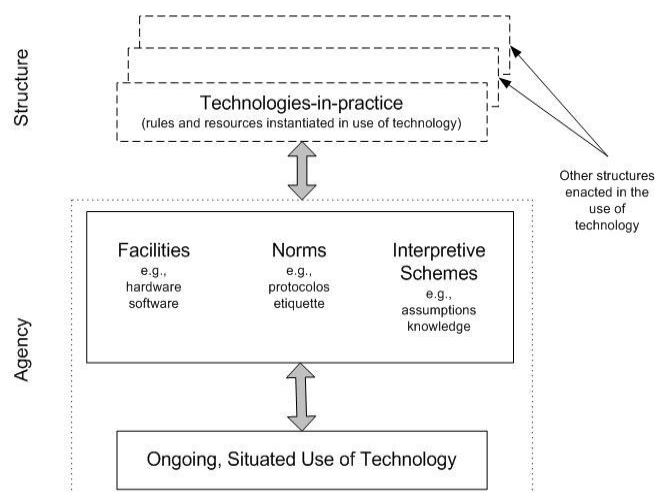


Figure 3: Enactment of technologies-in-practice, source: Orlikowski (2000)

As technology played an important role in the ENW project, we will use the ideas of Orlikowski on enactment of technologies-in-practice and also Giddens’s concept of time-space distanciation in this study. In addition we will draw on Giddens’ structuration dimensions and routinisation as they are useful concepts for electronic learning experiences (Stubbs, Martin and Endlar, 2006).

Issues related to e-learning and e-mentoring and the use of online tools

Presence and absence

One of the tensions of modernity, that arises from the transformation in space/time, is the issue of “presence” and “absence” (Friedland and Boden 1994) and how people perceive these issues. For example, in the context of e-learning and e-mentoring an individual could be perceived as both “alone” in front of their computer screen and also part of an online community and in one-to-one relationships, eg, with their mentor or tutor. Someone may be present in an online environment in the sense that they are logged into that environment and reading discussion group messages but their presence may be invisible to other online participants unless they post messages or engage in online chat sessions. Participation within an online learning environment may be influenced by the individuals’ perceptions of being absent or present themselves and on how they feel the other community members are.

Time

Theorists (eg, Adam, 1995; Eriksen, 2001; Virilio, 2000) argue that society today is characterized by the acceleration and compression of time and space. Eriksen (2001) characterizes this in terms of “fast time” and “slow time.” “Fast time” is linked to the rise in information and communications technologies resulting in increased access to information at ever increasing speeds. Eriksen suggests that this brings advantages to the senders of virtual communications but that it reduces the freedom and flexibility of the recipient. In this context, the work of Dirckinck-Holmfeld, Sorensen, Ryberg and Buus (2004) on the design of virtual learning communities to enable different rhythms of participation becomes

important as they emphasize the need to build in time for reflection. This is particularly relevant to this research as learning and mentoring involves different activities each with their own temporal characteristic. As many of the ENW participants had family and work commitments we chose to use web-based tools to overcome time and geographical issues.

Time is also important in term of structuring learning experiences which may be organised using a temporal framework through a structured timetable. The taught module was organised using a timetable designed to give students time to reflect and complete their activities. As the number and difficulty of the activities increases towards the end of the module, then students need to be able to manage a number of tasks at the same time and balance this with their paid employment and family lives. On the other hand, because of its private and personal nature, the e-mentoring processes had no pre-assigned timetables allowing more flexibility to adapt them to the individual needs of the mentoring pairs. Mentoring pairs were advised to create their own schedule according to their availabilities.

Methodology

In this study, our approach is an interpretivist one as we believe that phenomena can be known through the interpretations of the people involved with those phenomena. Hawisher and Selfe (2007) suggest that this stand point is suitable to study computer mediated communications. Our methodological approach is ethnography, commonly used in both educational (Cohen, Manion and Morrison, 2000) and business and management (Bryman and Bell, 2003) research. Ethnography involves the researcher in immersing and observing the social group that forms the focus of their research. The literature on this approach discusses the issue of participant observation. In this study we are both participants and observers as we were members of the social group under consideration (the *EMPATHY Net-Works* project.)

The data collection process for this study was built into the project management plan for *EMPATHY Net-Works* so as to meet the needs of this study. Data sources included:

1. Project documentation e.g. project plans, steering group meeting minutes, project team meeting minutes
2. Online discussion group messages
3. Online module and mentoring evaluation questionnaires.

In addition, in-depth interviews were held with 12 people: two colleagues in the Business School, four project team members, two tutors, two mentors and two students/mentees.

Our data analysis approach was content analysis using a coding scheme. We carried out a two stage analysis: the first stage involved the identification of activities carried out and issues raised during the taught module and the mentoring process. From this identification three recurring themes emerged: absence and presence, fast time and slow time; and structure and lack of structure. We also identified narrative that appeared important as they were linked to strong emotions in project members. When we analysed these emotive issues we found that they could be linked to the same three themes. The second stage involved interpreting our findings using structuration theory to make sense of individual experiences within the project. Names have been changed in the quotations to maintain anonymity.

Discussion

Presence and absence for e-learning

The taught module was delivered using a mixture of face-to-face and online activities. The data suggests that face-to-face meetings facilitated online interactions especially at the start of the programme. Meeting in person helped students to get to know each other. At the start of the online activities, students drew on their knowledge of face-to-face interactions and tried to mimic those in the iCohere environment. In structuration terms, this means that there was a

connexion between the face-to-face classroom interaction structures and their online equivalents. Over time, students were able to separate face-to-face and online interactions, and develop their own online routine in combination with new online conventions of communication. Their concept of a meeting expanded to include online meetings.

I think that you have a valid point Amanda as the research will help us for our individual work as well. However it may still be a good idea to meet. Is the evening more suitable for you? I don't mind 9pm as that is easier for me. Any ideas Christina and Claire? What about Thursday or Friday evening or any other evening?

Hi Anna. I am glad that you are joining our group. I think that you misunderstood us. We were talking of "meeting" in the chat room. Perhaps you can tell us when you are back on line when you are available to "chat."

Extract 1. Some posts from the Online Group Report Activity

By using structuration theory we can connect the above to the concept of time-space distancing (Giddens, 1990). Learning did not have to be associated to the physical locale called classroom but could be related to the activities carried out online at any time of the day. Module activities could be carried out without meeting tutors and classmates in person but by exchanging information through iCohere. By reading each other's e-mails, students conversed with each other and achieved their learning objectives. Classroom therefore changed from an on-campus physical space to the distantiated relationships which emerged from the online interactions, preceded and boosted by the face-to-face interactions. The evaluation process indicated that the absence and presence duality for e-learning was not perceived as an obstacle but as another dimension of their module activities. Students found that using online communications useful and convenient because of their family commitments and limited time. After having achieved an online routine involving asynchronous and/or synchronous communications (boosted by face-to-face meetings) most of the participants felt that their classmates and tutors were always present and available online. Figure 4 shows this in a structuration diagram.

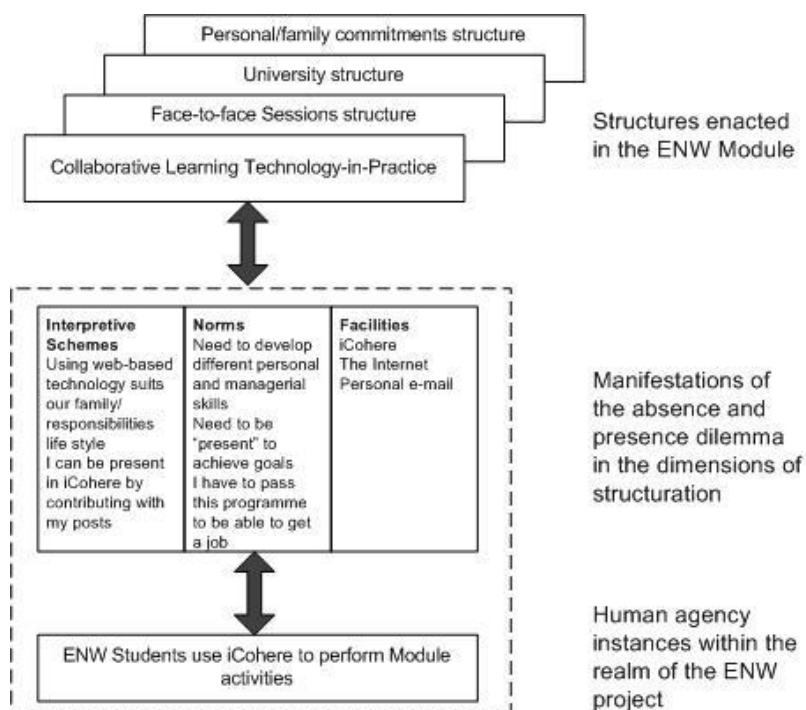


Figure 4: Collaborative learning technology-in-practice enacted by ENW students – the absence and presence dilemma (based on Orlikowski's (2000) model)

Presence and absence for e-mentoring

The mentoring aspect of the ENW project was completely different from the taught module. With a few exceptions, mentors and mentees never met face-to-face. All introductions were done through e-mails and all suggested activities were designed to be carried out using iCohere or other electronic media. Those mentoring pairs who were able to adapt to the online media and to achieve a routine in their communications reported higher levels of satisfaction.

According to our data, the practice of introducing students to e-mentoring and the iCohere environment in face-to-face induction sessions may have given them the wrong impression in terms of what they should expect from e-mentoring. Meeting other students and tutors in person in the taught module may have left them thinking that e-mentoring was a similar process. On the other hand, e-mentors were never given any face-to-face induction and communications between them and the project team were carried out using iCohere or e-mail. These differences in their experiences and expectations resulted in a mismatch of mentoring structures as mentor and mentee expected different things. Their interpretive schemes had been shaped in different ways by previous activities in the project and previous experiences. However, as the e-mentoring activities started most pairs were able to adjust their practices according to their personal taste and availability. Our data suggests that regardless of the pairs' initial thoughts, the mentoring exchanges worked better when both mentor and mentee were enthusiastic and keen to learn together how to carry out mentoring. When pairs achieved a common set of beliefs, interpretive schemes in structuration terms, they were able to establish a mentoring routine whereby they communicated on a regular basis and where mentor was able to answer mentee enquires and both felt satisfied with the exchange. For example, Student X posted the following messages in the general discussion board:

"Hi everyone, I've met with my e-mentor several times on line now and am really enjoying the experience. She has had loads of helpful suggestions on how to build my confidence to look at applying for jobs in this extensive field. She has set me work to do/ goals to achieve. Its really interesting to have someone who doesn't really know you , but is really on your side. We seem to get on well and have arranged a meeting for the future for me to speak to other women in various field within the industry, to see which would best suit me. I hope you are all enjoying the e-mentoring experience as much as me."

Extract 2. E-mentoring experience by student X

Extract 2 shows that student X uses the word "meeting" or "to meet" when she refers to online meetings. It also shows that there is clear evidence of the development of a routine in this mentoring process.

Some mentoring pairs reported that they were not satisfied with the mentoring process. A common reason given for the breakdown in mentoring process was due to the "absence" of either the mentee or mentor. This appeared to be an emotive issue and each of the following examples indicated a difference in expectations of the mentee and mentor. In the first case (Pair A), the mentor complained that their mentee was not available to work with them and an analysis of the situation indicated that the mentor did come online at regular times and engaged with mentoring through e-mails and discussion boards but the mentee ignored suggestions for chat room sessions which were the preferred means of communication by the mentor. This example indicates a mismatch between preferred online communication methods and the mentee clearly preferred asynchronous tool while the mentor preferred synchronous tools. This suggests differences in e-mentoring interpretive schemes.

In another example (Pair B), a mentee complained that her mentor was not available and would not help her. The records indicated that the mentor was working overseas and still responding to e-mails including those from her mentee. However, the mentee's subjective experience was that her mentor was absent. This may be an issue of trust and one of the underpinning features of these cases could be that the pairs had not developed sufficient trust

or appropriate working practices and so they could not negotiate an effective working relationship. In addition, some mentees and mentors had different perceptions about the meaning of a “meeting” and this indicates different interpretive schemes which are related to the time-space distanciation concept. These perceptions appeared to relate to the organisational context of the mentor as individuals working in the LaSCI identified “meetings” as anything ranging from text messages to face-to-face. This contrasted with the mentees’ perceptions which identified meetings as face-to-face, ie, co-located events.

From the examples we can see that mentees and mentors had different interpretive schemes in terms of virtual mentoring practices (time and space for meetings). (See Figure 5) Unlike traditional educational or training programmes, they had not had the opportunity to develop their own interpretive scheme. Pairs enacted different social structures at the beginning of the process. Whereas mentors drew on their experiences at their workplace mentees drew on their experiences at home and the classroom. Where pairs were able to find common grounds, ie, share a unique interpretive scheme by acknowledging the social structures surrounding their partners and act accordingly, they reported more satisfaction with the mentoring process.

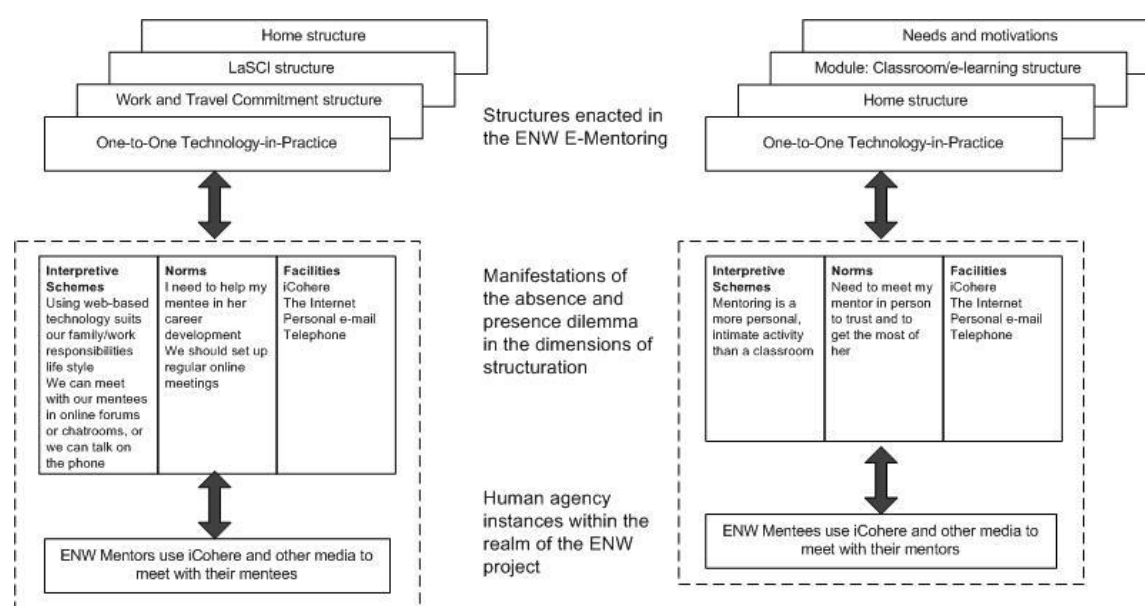


Figure 5: One-to-one technology-in-practice enacted by ENW mentoring pairs - the absence and presence dilemma

Time for e-learning

Each of the cohorts of students began their module and mentoring at different times of the year. However, they were given similar timetables and their experiences were alike in terms of fast and slow time. Before the ENW, many students were located in slow time as they were unemployed (or underemployed) women, with family commitments, ie, they had small children to look after. Many of them had been on a career break for a number of years. As a result of their participation in the project and involvement in face-to-face and online sessions plus homework they began to experience a temporal change. This change happened gradually and, as we see it, with little effects in their reflective capabilities (all students completed their assessments and passed the module). We observed signs of slow-time in students in the initial activities such as the emotional intelligence and the self-assessment tests for which the students were given one or two weeks. For these two activities students commented largely about their emotions at completing the tests and their feelings after knowing their results. This contrasts with the group report and final reflection activities at the end of the module, where students showed signs of experiencing fast time. See extract 3.

Slow Time – Start of the module

"I completed my questionnaire and was surprised how much thought I had to put in to answer questions about myself. The only time I tend to think about my own strengths and weaknesses are periods leading up to interviews, or annual reviews at work. I look forward to reading my report, and like others, hope that I can add more "strongly agrees" at the end of the course."

Fast time – End of the module

"So already it is time to reflect on the course. Ideally I would of like to have given by reflection at a time when I had finished all the assessed work, but I think the fact that I have not completed everything shows reflection from a different angle."

Extract 3. Two posts showing time perceptions at different points of time during the ENW module

Using structuration theory, we think that students drew on their family routine structures at the beginning of the module, and took longer time to participate in the tasks. The early stages of the module involved few activities and this made students enact home structures and stay in slow time. As time passed, the level of difficulty and the number of tasks increased compelling students to move to fast time to adjust to their module activities (including the ability to deal with frequent messages in iCohere) as well as to their family commitments. Structures enacted at that point of time were the module timetable structures which the students came to prioritise (see Figure 6). The existence of an explicit and formal timetable for the module was replicated in the design of the VLE e.g. activities were designed as forum threads where students had to contribute or submit pieces of work. The week of the module the students had to carry out these activities was specified in the name of each forum and thread. Deadlines for submission were detailed in the instructions in the first post of the thread. Additionally, students were sent automatic e-mails with reminders and updates of recent activities. By following the timetables, students enacted the collaborative learning structures that led them to achieving the objectives of the taught module. Although these timetables were designed to organise the material and activities and to facilitate learning, an unintended consequence of these were that they gradually took the students from slow to fast time.

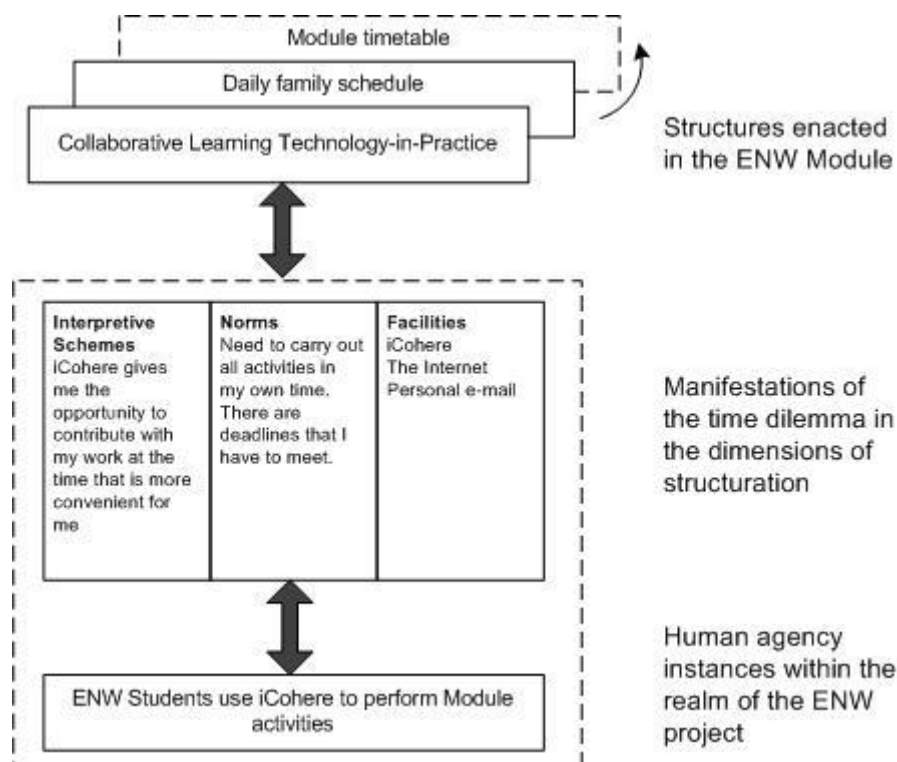


Figure 6: Collaborative learning technology-in-practice enacted by ENW students – the time dilemma

Time for e-mentoring

Our data shows that time perceptions for mentors and mentees were completely different. Mentors coming from a work background in a fast moving industry and with family commitments were located in fast time. However, mentees were located in slow time. Although they were already halfway through the module, turning to a fast time frame for the module activities, mentees located the mentoring process in a slow time frame enacting home structures. One reason for this is that mentoring pairs were not given structured timetables and therefore mentees felt that there was less pressure than the one they had in their module. Another reason for this is the personal and private nature of mentoring. Most mentees felt that they needed time to built trust with their mentors. The following paragraph shows a case where the difference in time frames between mentors and mentees is highlighted:

Mentoring Pair C files indicated that the mentee requested an online meeting with her mentor who responded by providing four alternative dates or times. The mentee did not respond to this message for 10 days by which time the proposed meeting times had gone by. The mentor then responded by offering some additional times for an online meeting plus possible times for a face-to-face meeting. The mentee did not reply for 12 days and the meeting never took place.

This example suggests that the mentee was located in a different time frame to that of the mentor and they were unable to develop a working routine and that there was also a mismatch between their requirements in terms of meetings in time/space. Figure 7 shows the time structures that the pairs enacted.

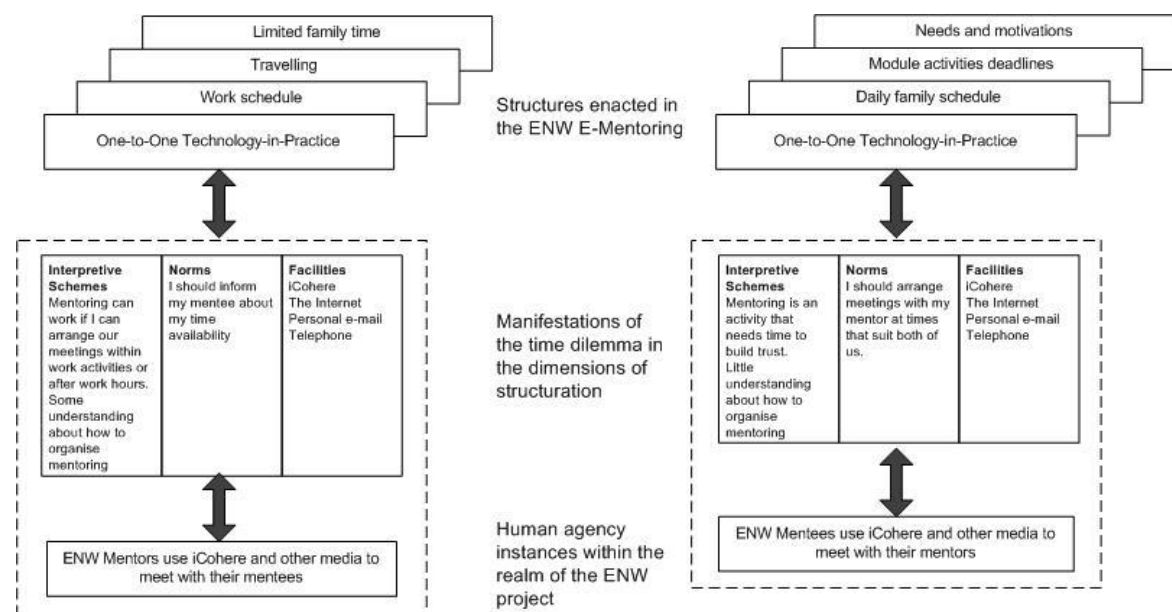


Figure 7: One-to-one technology-in-practice enacted by ENW mentoring pairs - the time dilemma

Our data also shows that mentors were able to accommodate their mentoring activities within their busy work/family schedule. As they were living in fast time their mentoring routine was also framed as fast time. In structuration terms this means that mentors developed interpretive schemes for mentoring that were similar to their work interpretive schemes. That is they treated mentoring as part of their work and therefore planned it as another work activity. Although some mentors chose to carry out mentoring outside of work hours, their routines clearly showed that mentors organised those as work.

Conclusions

This study makes a contribution to the knowledge and practice of e-learning and e-mentoring in a number of ways. The study demonstrates that structuration theory provides a tool for analysing and exploring time, space and structure in the ENW project. We found that ENW participants' perceptions of their learning experiences were influenced by their previous interpretive schemes and the structures they were enacting at the time the programme started. As the taught module with its e-learning element was organised using timetables, and as the tutors were able to make their "presence" visible in the online environment, participants were able to adapt in a comfortable way their learning interpretive schemes from the traditional "classroom" schemes to the new online ones. In contrast, issues of presence and absence arose in some mentoring pairs as a result of their differing interpretative schemas and where pairs were unable to establish a routine then the mentoring process was not successful. The taught module enabled the students to move across different temporal experiences e.g. slow time to fast time. In the context of e-mentoring, some students were unable to match the temporal experiences of their mentors who were working in the fast-paced LaSCI. Finally, this paper demonstrates that the temporal structure of the taught module facilitated learning and was unremarked by the students. In contrast, the e-mentoring process lacked a temporal structure and those mentoring pairs who were unable to create their own temporal framework reported an unsuccessful mentoring experience.

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