Consolidating Knowledge for Aggregated Enterprise in Tourism SMEs

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ABSTRACT

The authors present the design and evaluation process for a prototype learning platform that can assist micro-organizations to work together in the interests of local or regional development. The prototype addresses important issues in knowledge management. These include ways in which the tacit knowledge of one group may be extended across other groups as a public good; the extent to which social learning may be 'engineered' within and across organizations; the extent to which sustainable communities of practice may be formed in problem-based or scenario-based learning settings. The context of the project is micro-enterprises in the European tourism industry (traditionally a highly fragmented group), who, as part of an EC policy to improve global competitiveness in the SME sector, have been encouraged to aggregate into networked organizations with sufficient critical mass and 'presence' to compete with larger agencies in global markets. The team have drawn on theories of distributed cognition and communities of practice to design and evaluate the modules and have focused on the preparation of materials for two groups: learners and facilitators. The material for facilitators has been constructed with the help of professional 'trainers' in the tourism sector, who have strong ties with local and national government agencies. Each of these groups may be important champions of the learning platform if it is sustained beyond the prototype stage, and opportunities for long-term evaluation of the materials (e.g. have virtual 'destination management enterprises' formed in give regions) will depend on their support.

BACKGROUND: CONSOLIDATION OF SMEs IN THE EUROPEAN COMMUNITY

In 1998, the EC awarded a grant to a four-partner (Napier University, University of Trento, Fraunhofer Institute, Technical University of Crete) consortium to develop innovative problem-based learning packages for SMEs in the tourism sector. The resulting project, Net Quality, is nearing completion. SMEs in Europe face a number of challenges as globalisation erodes their trading position. A number of EC funded initiatives have sought to address the crucial problem of establishing sufficient local mass to compete globally: SMEs are the largest employer in the European economy, and within this group, micro-enterprises dominate. One approach to sustaining employment and diversity in this sector, while allowing small operations to remain competitive with larger enterprises, is to establish 'virtual enterprises' which use the technologies and techniques of e-commerce to link SMEs into flexible and adaptive aggregate organizations that can compete with larger enterprises. [21]The training requirements for

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[21] For more details on this background, see Davenport, E. Localisation, globalisation and SMEs in European tourism: the 'virtual enterprise' model of intervention. InN D. Kraft (Ed.) *ASIS 2000: Proceedings of the 63rd ASIS Annual Meeting Chicago, IL, November 12 – 16, 2000.* Vol. 37. Medford NJ: Information Today Inc, 309 – 319. This section draws on that material.

such structural shifts are complex. The extent of absorption of new concepts and processes will vary from sector to sector, and will be influenced by the degree of technology penetration in each. Individual motivation will vary as managers are challenged by the unfamiliar concepts and procedures that activate new structures.

The use of technology to enhance global presence in SMEs and cognate organizations (e.g. agencies, advice centers) has been explored in a number of analyses and interventions sponsored by the European Commission (EC) under the Fourth Framework Program of research (FP4), and its successor, Fifth Framework (FP5) (European Commission, 1999). There is widespread agreement on what the issues are. The authors of a 1997 European Observatory report (European ObservatoryA) note that growth in the SME sector happens by a complex process of entry and exit, as new enterprises better suited to new market situations replace stagnant or declining enterprises. In this context, high quality products and services and adoption of appropriate new technology are critical success factors, as is the ability to establish working partnerships, traditionally formed for the most part through informal networks and based on good personal relationships with known partners. SMEs in general do not take advantage of external advice, as they are inhibited by lack of awareness, lack of resources to locate and exploit such advice, and by a perception that external advice is not pertinent to their goals. The report identifies poor access to external information as one of four major inhibitors for SMEs: the others are poor infrastructure, restricted local industrial environments, and lack of qualified labor.

The report recommends a 'localization approach', or endogenous development strategy as a general strategy for sustainable SMEs in less favored rural regions (highlighted as a specific problem area) to create dynamic learning industrial environments consisting of networks of enterprises and local institutions. (EuropeanObservatoryB) A 1998 conference in Edinburgh (Euro Info Centres, 1998) explored SME visions of 'my business in 20 years time'. A survey of delegates revealed that managers are the main users of IT, that they use the Internet primarily as a way of accessing information which they already know about, and that they see themselves as loyal to certain sites. Several problems were identified: as SMEs lack certain categories of personnel (e.g. specialist marketing and financial personnel) managers are 'over responsible' for functions like IT, and they are reluctant to use outside skills because they are not confident of assessing the work done. The recommendations from this meeting re-iterate the need for SMEs to organize into networks and form alliances that will afford new opportunities for development and innovation, and the report stresses the need for education and training programmes to disseminate understanding of new technologies, specifically understanding of ways in which Internet may be used strategically to integrate enterprises into networks.

THE CASE OF TOURISM

These themes have been explored in greater detail in the tourism sector under the rubric of a 'new age' of tourism (Werthner and Carter, 1998) This denotes a market where consumer demands are characterized by individual expression and differentiation, with greater emphasis than hitherto on quality and value for money. The structure of the market for 'new age' tourism is shaped by globalization, deregulation and liberalization, and environmental pressures. Those participating in the market must adopt new strategies based on 1) the differentiation and segmentation of well defined target groups, 2) increased speed and flexibility of reaction to market changes, 3) cooperation and association with other SMEs, and 4) integration and coordination with other economic agents engaged (directly or indirectly) with tourism. For such strategies to be realistic, SMEs in the tourism sector must be prepared to adapt and adopt new technology and pay concomitant attention to human resource development. If they do not, they will remain at a considerable disadvantage when faced with competition from large companies, who can exploit the expertise of managers who understand commercial processes like promotion, exploitation of new technology, access to capital, and inter-firm co-operation. An Arthur Andersen report on yield management commissioned by DGXXIII (an EC division responsible for Enterprise that funds Net Quality) in 1997 (Arthur Andersen, 1997) also stresses the need for cooperation, and identifies similar problems in the adoption of systematic management methods by SMEs. Net Quality addresses these issues by offering situated, problem-based learning packages in a number of pertinent areas. The Napier team has been heavily involved in the design of the overall learning approach, and is responsible for specific design and evaluation in three areas:

- visibility on the world wide web
- building and extending a social network
- effective customer/tourism information services.

The design and evaluation rationale for modules in two of these areas – social networking and information services – is discussed in detail in the text that follows.

THE PEDAGOGIC FRAMEWORK: SITUATED LEARNING

Early studies of 'situated learning' (e.g. Lave and Wenger, 1991) discuss highly physical workplaces: midwifery; butchery; check-out desks, and the nature of the knowledge transferred and acquired in context, face to face and over time. What the studies share is the search for insight into how novices gain multiple understandings of practice in the workplace that are characteristic of mature employees and that are largely acquired informally. In the field of education, situated learning underpins a number of pedagogical approaches with different names (deep learning, learning by doing, action learning) that attempt to combine rich simulations of the world within a secure and secluded learning environment. A novice learns by observation, by shadowing, by asking on the spot: a major component of situated learning is learning how to behave in a given group and understanding what resources to use

for which purpose - recognizing cues, knowing which form to use, understanding when to cut corners. Learner and teacher seek to establish comparable understandings of each one's expectations of the other. Fleming, for example, states that situated learning draws on the "ordinary, everyday, finely detailed methodic practices of participants to an activity in specific settings" (1994, p. 525) and learning, in this context, means being able to participate appropriately in the settings ... "where the subject or discipline is being done" (op cit, p. 526).

Fleming suggests that situated learning can be dis-assembled into constituent parts, using the following:

- a structural anatomy -- how are sequences of actions assembled and constructed in the specific settings in which they are used
- a functional anatomy -- the use to which methodic practices are put on a given occasion
- an understanding of the machinery by which such activity works -- how do descriptions, facts, processes work together to produce what participants in the dialogue recognize as an explanation of the phenomenon in question?

Gherardi and her colleagues (2000) have demonstrated that situated learning can contribute to effective management education. It allows a traditionally 'tacit' process, learning by watching and doing, to be made amenable to formal description, which, in turn, can be archived for the purposes of social learning. While acknowledging Star's (1995) caveat that over-formal representation can inhibit flexibility in organization, we believe that such representations have value. They may contribute to reflective practice, by capturing material to prompt self-evaluation, and may be the basis of 'virtual apprenticeship' (Davenport and Cronin, 1991) or knowledge of how to behave in online learning communities.

Situated learning is doubly pertinent to the Net Quality agenda. It contributes to our efforts as course designers as it provides a pedagogic framework for the community of online learners that are the target clientele of the Napier design team. But it can also help those learners understand how organisational learning may happen in the 'virtual enterprises' that Net Quality seeks to promote. Participants in the virtual enterprise, like participants in the virtual classroom, will have to grapple with issues of how to proceed in the absence of physical social cues, a critical component of orientation strategies for novices. The design team have also drawn on theories of 'situated action' in preparing the course modules. Much of the learning material draws heavily on learners' experience as a resource for problem-solving. Peer learning may act as a diffusion mechanism for micro-level innovations of the sort described by Suchman (1987) in her accounts of ad hoc technical fixes and workarounds. An archive of experiential problem solving can transform 'situated action' into a more stable resource for social learning.

Situated learning and situated action will not contribute to effective course design without an appropriate infrastructure – in the first case, infrastructure that consolidates knowledge; in the second, infrastructure that allows knowledge to be diffused. The course team have attempted to build a platform that is both affordable (many of the learners will work with constrained resources, as have the module design team) and affording (the

platform must provide cues that are appropriate for a learning environment). Affordance is achieved by using templates across all modules, with generic exercises and problems, that allow learners to see what is expected of them: all Net Quality modules have the same shape - they follow the 'five phase' pattern described in the next section. To make Net Quality modules affordable, we have drawn heavily on publicly available web resources rather than proprietary technologies (this is discussed in more detail below). In addition, the team have attempted to provide social infrastructure (or 'cultural affordance')[22] by focusing heavily on learning spaces where expectations and interactions may be discussed and negotiated. These spaces, we hope, will contribute over time to the formation of trust (Lewicki and Bunker, 1996) – among peers who are required to work together, and between learners and tutor.

THE NET QUALITY MODULE TEMPLATE

Problem based learning is premised on the principle that learners best understand problem solving by doing it, and that their starting point will always be to identify what is known and not known about the problem. This allows them to identify what information they need to address the problem, and both of these (what they know and what they need) can be captured in a 'problem statement' that is grounded on the circumstances that exist, or that are discovered through ongoing research. A second premise of the Net Quality approach is that learners will share information, working as part of a team, exchanging views, viewing information from multiple perspectives, and thus creating a range of possible solutions to problems. Learners thus acquire the habit of looking past the first 'right answer', and learn to determine what limitations affect the final choice be it activity, or decision. This leads to a further stage where learners assess the 'fit' of their proposals - they can be benchmarked, for example, against previous successful practice: will the solution work? can they defend it with evidence from reliable sources? what has worked well and what has not worked in the process of problem solving? what have they learned that can contribute to a toolkit for problem solving in the future?

The Net-Quality consortium has agreed to conform with a learning shell based on five phases. In Phase One, goals are set for the learning group and they complete a simple diagnostic test based on sample problems; with help of their tutor, they are introduced to the 'social learning' process, and the topic of the course is explained. Each of the course modules has been designed to address a question common in the world of SMEs (hence the 'How do I build up my social network?' and 'How can I answer visitors' questions more effectively?'' format). Learners are introduced to a suite of ICT tools, and are encouraged to discuss any enthusiasms and misgivings in a discussion list or newsgroup forum (the Napier team are using Yahoo!Groups for these functions). In Phase Two, learners are asked to undertake exercises in pairs, and find and share knowledge that is required to solve a problem – these are not 'given' problems, but emerge from the discussions of learners' own work experience, shaped by the tutor into a working exercise. The pair work is intended to give learners confidence in the use of appropriate IT tools for co-operative problem solving online. Phase Three prepares the learners for group work: they evaluate their experience of working in pairs, and develop strategies in

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[22] This term has been used by our colleagues at Napier, David Benyon and Phil Turner, to capture the phenomenon of 'behavior breeding behavior'

a larger group for group working, gaining competence in the use of groupware applications. They are asked to 'pool' their insight into the problem that was set for investigation in pairs, and consider how a richer picture of how to solve a problem may emerge from a larger group. In Phase Four, a new problem is set - which will require a group approach. An important part of this will be the writing of a group strategy – which can be a source of reflection as the group work progresses. At the end of the module, learners are asked to complete a post-module questionnaire. They will also be referred to further Net Quality learning material (if appropriate), and will be invited to join an online community of Net Quality alumni. (Such 'moves' are intended to foster long-term trusting relationships).

Assessment is formative, and consists of a number of different approaches that range from playful exercises to self-assessment. At any stage learners can repeat a section if they are not confident that they have achieved what they expected. At present three modules have been produced by the Napier team and these will be tested from early April 2001 to early May. Each has a slightly different 'look and feel' – this is partly due to history (the overall learning approach has emerged as the consortium has worked together) and partly deliberate – the project has a research dimension, and we need to have different articulations of the the Net Quality learning philosophy to allow for comparison.

One area for investigation, for example, is the role of multimedia in consolidating knowledge. As explained above, the Napier team have consciously used multimedia at a low level, to support the learning experience – and have use technologies that are cheap and usable. Learners are encouraged to bring their own images, graphics and sounds to the learning space (as these may well enhance their business presence outside the course) – a possible incentive to achieve basic multimedia literacy. We have thus drawn heavily on learning resources that are currently on the web. This overcomes at least two potential problems: updates and maintenance are in the hands of the vendors/producers who have made this material available (and are thus not a burden on the Napier development team); they are easily accessed by standard commercial platforms. The downside is that commercial multimedia components may change or disappear (the absorption of e-groups in to Yahoo!Groups is a case in point). We have attempted to overcome such problems by embedding a critical evaluation of the multimedia tools in the core skills of the tutor – so that tutors may find comparable tools to address problems and exercises if the current infrastructure is not available. At present we have experimented with Yahoo!Groups (all of the functions including polling); Macromedia CourseBuilder (for assessment exercises), Flash (for interactive quizzes, games and assessments – SMEs might develop these for their customers) and ActiveWorlds. With the last, learners may build a representation of the 'destination', a virtual village with different buildings holding different types of tourist information on services and attractions and people who are 'in the know'.

CAN THE TEMPLATE CONTRIBUTE TO CONSOLIDATED KNOWLEDGE?

In addition to a production agenda, the Net Quality team have a research agenda. From this

perspective, the modules may be seen as 'probes' that will allow the team to evaluate certain theories about organisational learning. In designing the Napier modules, we have drawn on theories of communities of practice (CoPs) and their role in organisational learning, specifically a 'learning framework' developed in a recent paper co-authored by one of the authors (Davenport and Hall, 2001a). This suggests that CoPs, supported by appropriate 'social infrastructure' (SI), are sites for three types of learning: situated learning (SL), situated action (SA) and distributed cognition (DC), and that participants who experience communities of practice acquire habits of social learning that consolidate knowledge in diverse forms of organisation (Hutchins, 1991). The modules have been designed to accommodate the signature learning types list above, and they provide an opportunity to address the following research issues:

- how may the tacit knowledge of one group may be extended across other groups as a public good?
- can social learning may be 'engineered' within and across organizations?
- can sustainable communities of practice may be formed in problem-based or scenario-based learning settings?

In terms of a CoP framework, the 'practice' of Net Quality learners is collective destination management, and the 'community' comprises individual small firms who must work together as collective intrapreneurs. The portfolio of learning 'units' has been designed to 'entrain' managers working with a CoP learning framework, which will prepare them for their subsequent interaction in a network of CoPs that may contribute to a regional virtual enterprise. In taking this approach, the project team conform with Wenger's (1998) advice that CoPs should be seen as a fractal phenomenon, and that small CoPs will themselves participate in, and augment distributed cognition, in larger CoPs.

The Net Quality template can be mapped on to a CoP model in the following way. The Phase One of each unit establishes an 'SL' environment, by capturing the expectations and motivations of participants, and introducing them to the 'ways' of the unit: the tools, processes and the etiquette that shape the online learning space. As explained above, participants will use narratives of their own experience ('SA') as a starting point in answering the questions. The role of the 'broker' or tutor ('SI') has been carefully constructed. Tutors are responsible for managing distributed cognition ('DC') by synthesising, shaping, and archiving the insights that emerge as learners work first in pairs, then in larger groups, to provide suggestions and insights on the problem areas using appropriate artefacts (auch as discussion lists and news groups). At each stage, the output from groups will be archived for 'social learning' ('SI') purposes. The archives may, in turn, be the source of to 'patterns' of the kind currently invoked in a number of knowledge management studies. (e.g. Falconer, 1999)

As we indicate above, the templates are intended to entrain learners in working as a community to address the questions that comprise the unit topics. To encourage distributed cognition, for example, a number of exercises have been provided. These range from simple puzzle solving, to designing common information architecture for the destination that learners wish to manage together. Trust is a critical factor here, as there

can be little social learning where sources are not recognised as credible or legitimate. It is important to know who you are working with at any stage of the 'learning process'. The design team are aware of the importance of a sense of presence in online communities, and, within the resource constraints of the project, have provided components of the learning platform that provide at least simple indications of who is online with any individual (when groups are working in synchronous mode) or who has been online (in asynchronous mode). In addition to contributing to a sense of solidarity among learners, such features are invaluable tracking aids for tutors (Hardless and Nulden, 1999). At present the pilot modules provide Yahoo!Groups as the main mechanism for this, though ActiveWorlds (as mentioned above) as a possible development in the next update: according to Holstrom and Johanssen (2001), it has been used successfully in management training. In addition, the team is aware that not all interactions need be public, and have provided spaces on the platform for private dealings. Recent research on online learning communities (e.g. Haythornthwaite, 1999) indicates that backchannels can relieve stress among learners who prefer peer to peer help facilities, or learners who wish to dialogue privately with tutors.

THE TUTOR AS BROKER

The role of the tutor as facilitator or impresario is of immense important. Wenger suggests that facilitators are an important of the infrastructure of communities of practice, as they contribute to the diffusion of knowledge across and between communities (the traditional 'gatekeeper' role). This role within in the firm is treated in depth by Wenger (1998, pp. 235-236), who classifies such brokers into three types: 'boundary spanners', 'roamers', and 'outposts'. The Net Quality design team have devoted much of their effort to accommodate the role of 'tutor as boundary spanner'. The tutor/broker takes the learner through a process of socialization that mirrors the social networking process itself, from individuals interacting with a tutor, to individuals working as pairs to pairs participating in group problem solving. At each stage, the tutor encourages learners to expand their experience (by showing indivudals, pairs and groups what lies beyond their 'closed' understanding), and to make their thoughts visible on the public discussion spaces available in the course platform.

Though the project started with a strong focus on the 'learner', the consortium quickly recognized that the tutor role needed equal attention, as the profile that is required is very different from the IT 'trainers' that have characterized investment in tourism training to date. Tutors need experience in adult education, domain knowledge, and an ability to synthesize and extract common knowledge on the hoof. They may on occasion have to justify peer learning and other innovations to skeptical learners whose earlier educational experience has been very different. The profile is not unrealistic – we have worked closely with experienced trainers in the Edinburgh area, who have confirmed that our approach is in line with recent initiatives in the area to develop a sense of pride in one's place and have established a number of innovative workshops, including a 'city safari' that may be aligned with the Net Quality module on answering tourists' enquiries.

HOW 'STICKY' ARE THE MODULES?

We have chosen to design the modules that we describe above within a communities of practice framework for a number of reasons. As the target micro-enterprises do not at present work as 'virtual firms' there is little financial incentive to acquire the habits of social learning or to think in terms of business objectives that reflect the health of the destination rather than one's own business. A reflective, rather than a performative framework is thus appropriate at this stage[23], and the 'stickiness' of the learning outcomes is not guaranteed. In the longer term, the understanding and experience gained on the modules may lead to a more formal contractual modus operandi – but that is not something that the current Napier courses are attempting to achieve. (It may be something that can be developed if Net Quality sets up in business.) It may be that the modules are most efficacious under a very narrow set of circumstances – where the learners in each cohort are in the same sector in the same destination for example (this raises the issue of how to define a 'destination'), and when they are subsidized to adopt social learning by regional development agencies, who can train and provide tutors, and who may offer incentives in the form of endorsements and accreditations[24]. As part of the dissemination plan for the project, the Net Quality are developing a number of scenarios – as part of the imminent evaluation, we will seek learners' and tutors' views viable development paths.

ACKNOWLEDGMENTS

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[23] We are aware of a possible conflict between non-performative and performative approaches to communities of practice. The former stresses the explanatory power of the concept ('this is how organizational learning under certain circumstances appears to happen') and the latter its prescriptive power ('design one of these and increase your learning/innovation capabilities'). This issue is explored in Davenport and Hall, 2001B.

[24] We hope, for example, to develop (with our regional tourism authority) a mini 'information' icon that might be included in the 'properties' of tourist attractions in guide books

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