

Informal learner styles: Individuation, interaction, in-form-ation

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Abstract. Web 2.0 has sparked tremendously increased interest in IT-supported knowledge management and technology-enhanced learning in organizations. Although there have been abundant activities of how to benefit from Web 2.0 technologies, information on how to go about deploying these in organizational settings in a coordinated manner are scarce. Based on the findings of an ethnographically informed study, this paper presents three idealized, richly described scenarios of informal learner styles which are used in order to develop theses on the relationship of Web 2.0 and workplace learning.

Keywords: ethnography, informal learning, knowledge leadership, knowledge management, social software, Web 2.0, workplace learning

1 Introduction

A number of developments could be observed over the last years that have affected information-technology (IT)-supported knowledge management and technology-enhanced learning. There is much more awareness about the importance of knowledge as strategic asset, of the design, improvement or optimization of knowledge work [1] and the importance of workplace [2] or informal learning [3] as one way to acquire, transfer or integrate knowledge.

Increasing productivity of knowledge work is topical in a time of soaring knowledge intensity of processes in businesses and organizations. It requires continuous and consequent commitment from all organizational levels. After human-oriented, technology-oriented and process-oriented knowledge management, recently a fourth wave of knowledge management has reached businesses backed by the hype keywords Web 2.0 and social software: collaborative knowledge management. While in many organizations knowledge workers are busy trying out new alternatives for production of contents, for networking and for self-guided learning, questions arise how these activities can be coordinated in most places or, in the best sense of the word, can be led or guided so that they are in line with organizational goals. Moreover, one has to keep in mind that knowledge workers are a quite heterogeneous group of people with differing needs, work routines and learning styles.

Informal learning in workplace situations is embedded in everyday problem solving situations and people learn through mistakes and in interactive negotiations with colleagues [4]. With the increasing penetration of IT in workplace settings, IT becomes more and more important for informal learning. Web 2.0 applications target flexible support of individuals and allow for a less-restricted opportunity to achieve learning goals with the help of IT and thus seem to be a promising solution.

Web 2.0 has been termed a “business revolution in the computer industry” [5]. However, it can also be seen as a “piece of jargon” that reiterates the initial goals of the creation of the World Wide Web [6] which is perfectly understandable from a technology perspective. From a more content or user perspective, one might argue that Web 2.0 marks a change in the rules for success on the Web that focuses on user-generated content and services harnessing collective intelligence with the help of continuously updated, device-independent applications providing rich user experiences that are built using lightweight programming models [5]. Social software is a rather recent concept, a subset of computer-mediated communication, closely related to Web 2.0 that covers software that is used to create and maintain social networks or virtual communities. Typically, this category of software allows for easy-to-use mechanisms to create and maintain online profiles (social identity), build relationships and reputation (social capital), stay aware of a network’s activities (social presence), comment on and recommend to others (social feedback), interact with others (social interaction), organize physical meetings (social planning) and share content (social spaces) on the Internet. With this profile, it does not come as a surprise that this type of software has caught the attention of organizers as support for (informal) learning in organizations. Although many knowledge workers are heavily engaged in attempts to benefit from these new applications, workplace studies are scarce that analyze what is going on in organizations in terms of workplace learning and how guidance of these collaborative knowledge management activities could be designed.

This paper reflects on the activities currently performed in business organizations in the realm of workplace learning. Specifically, the paper presents three richly described prototypical scenarios in order to stimulate discussions about how organizations should go about benefiting from the fourth wave of collaborative knowledge management. The scenarios build on empirical data which was collected in an ethnographically informed field study of a German system house with 400 employees performed in May-June 2008 as part of the EU FP7 IP MATURE (www.mature-ip.eu). The paper concludes with a number of theses that integrate the findings along the lines of the three main strands of workplace learning that we found in the field work: individuation, interaction and in-form-ation.

2 Ethnographically-informed Study

Ethnographical research established in anthropology and social science was developed to investigate new cultures and social settings. Fetterman describes ethnography as “the art and science of describing a group or culture” [7]. In order to allow for a detailed description of cultures and social settings, more than simple

observation is necessary. The key characteristic of ethnography is active participation in social settings to understand why things happen [7-9]. In contrast to field observation which describes what happens, ethnography focuses also on the why and how things happen.

In order to give a detailed description of informal learner types, it seemed that the characteristics of ethnography were appropriate. Recently, ethnography has become more popular in other disciplines, also in computer science and information systems. Ethnography is one of the key approaches for designing CSCW systems [10], but classic ethnographical studies are too time-intensive, costly, unfocused and mostly too inflexible for the fast changing domain of Information Systems. Also, it is difficult to convince business organizations in opening up for ethnographers for an extensive period of time. For that reason, modified versions, like rapid ethnography [11], seem to be more suitable in the fast changing domain of information technology [10], also fulfilling the conditions as found in business organizations. The main idea of that modified ethnography is to save time by narrowing the focus, use several observation techniques, work collaboratively and use tools for the analysis [11]. Usually, these studies are realized in workplace situations, with highly situated work practices and a need for specific support [12]. Especially in those highly situated work practices, workers often solve problems without being even aware that a problem has occurred [8]. Because of the ability to catch those situations and to describe them, rapid ethnography, or as we would like to call it, an ethnographically informed field study, seems to be a more comprehensive approach for investigating such situations.

Only until recently there was a general lack of workplace studies which has been resented for quite some time in organization science [13] which is equally true for studies in organizing the use of information systems. In the literature some descriptions of learning practices can be found in [4] or [14]. Studies describing learner types which can be associated to one person or linked to information technology are rather scarce.

Approaches distinguishing routines and dimensions can be found in the literature. Eraut and Hirsh distinguishes an individual and a social perspective on learning and describes modes for learning at work [15]. In the field of pedagogy a broad variety of learning styles can be found, [16] provides a good overview of the 13 most influential models in the field. The concept of situated learning postulated learning as highly situated and depending on participating people [17]. To identify common types of persons that could act in different situations and to describe them in an idealized way is the aim of this paper.

With the help of our ethnographic study, we were able to identify typical informal learner styles and to describe them in a detailed manner. By using ethnographic principles, we were also able to describe motivational and social factors influencing informal learning. It would have been difficult, if not impossible to investigate these factors by merely relying on questionnaires or interviews. But we think that these factors are crucial for the understanding of informal learning scenarios and the development of technical support.

We realized our ethnographically informed study within the EU FP7 IP MATURE¹ in a German IT systems house. The company was chosen based on a prior long-

¹ <http://mature-ip.eu/en/start>

standing relationship during which the authors of this paper had performed consulting work and also helped the organization with an internal project which resulted in close personal relationships with many of the people involved in the field work. We used a time-division grid approach to use our scarce time more effectively. We started with one week of intensive ethnographic fieldwork. Thereby, each author of this paper worked intensively as an ethnographer with one small team and selected people for the phase of self-description. In the following three weeks, selected people should identify situations in which they handle knowledge in a non-routine way and report them to the ethnographers. During that period, ethnographers were continuously in contact with the employees. Finally, a second week of intensive fieldwork was realized and the reported situations from the three prior weeks were discussed. By applying that study design, we were able to collect data about a five weeks period by staying only two weeks in the company. Furthermore, during a period of about five weeks, people were engaged in different tasks and phases of projects, which gave us the opportunity to draw a richer picture of informal learner types.

During our field work, writing field-notes and reflecting them, we realized that informal learning is the dominant way of knowledge transfer. We discussed about the different types of informal learning that occur and about the associated persons. By doing that, we identified three idealized informal learning types which could be confirmed by our field data. In the following these three idealized informal learner types are described in an exaggerated way, based on our collected field data.

3 The Do-It Yourself Type

Sally works as system developer in the department of software development of our company. She shares her office with five co-workers, engaged in similar tasks and problems. Her tasks require a wide variety of knowledge and this volatile knowledge highly depends on involved systems and clients. Thus, Sally has to continuously acquire new knowledge to fulfill her tasks. Sally's demand for learning occurs during execution of work tasks. She needs knowledge about e.g., configuration parameters and their consequences, systems interfaces and underlying procedures or client decisions.

If Sally has a problem and she needs knowledge to solve it, her first approach is to try something. In case of system functionalities, she changes several parameters and looks at the consequences. After some unsuccessful trials, she opens the system help or manuals. She has local copies of manuals and training presentations and she searches in her local data. By browsing through documents, she usually has some new ideas and starts some new trials in the system. Should these tests be unsuccessful as well, she starts searching in the Internet. She uses well-known developer pages or search engines to find relevant information. Again, she experiments with new solution ideas directly in the system and applies her search and test approach for a longer period of time. Typically, she is successful after a longer period of time and returns to her works tasks. In the case of no success, she writes a request in a developer forum or tries to delegate the task to a colleague (typically sitting in the same room) via e-

mail. After getting a response in the developer forum, she occasionally writes a short thanks note to the anonymous or pseudonymous provider of the information the identity of whom she does not care about.

Sally principally dislikes discussions or other verbal interactions with her colleagues. If a discussion occurs in her office, she ignores the discussion and concentrates on her current tasks. If one of her colleagues asks her for something directly, she answers if she has a proper solution in mind. In the case she has only an assumption or a vague idea, Sally refuses the answer. In the best case from her perspective, she can show solutions directly on the affected systems. Therefore, she moves to the colleague's computer and demonstrates the solution. In this way, she avoids long explanations and discussions with asking colleagues.

Sally likes the time early in the morning and during the lunch break, because she can work unhurriedly. Routinely, tasks are distributed in our company per email or task assignments in the collaboration system. Sally's project or line manager or sometimes consultants delegate tasks to her. Anyways, she likes precise task descriptions and written documentations. If some parts of her task remain unclear, she will think about it and investigate the problem by browsing through related documents. Her last option is to write a tight e-mail that makes the receiver understand that his or her request was imprecise.

Between two and four times a year, Sally has to participate in formal trainings. Typically, she feels uncomfortable because she is outside her familiar environment and cannot work on her tasks. Her motto is "If I have not seen it working, I do not believe it anyways". Welcome are trainings closely related to her current or upcoming tasks with concrete solution procedures. She avoids general trainings or trainings without relation to her tasks whenever possible. However, she always asks for the training materials, e.g. presentations, and stores them on her local disk. She thinks these materials and hints for further documents are the most interesting and valuable part of a formal training.

4 The Communicative Type

Igor works as IT consultant in the consulting department of our company. He works in different project teams, offices and stays mainly in client offices. Typically, he works together with two or three other people from our company and shares small offices. His tasks require a wide variety of knowledge and highly depend on involved systems at client side and on clients themselves. Thus, Igor has to continuously acquire new knowledge, especially about client's circumstances, to fulfill his tasks. Igor's demand for learning occurs during execution of work tasks. Especially, knowledge about clients and their routines are highly relevant, which is not part of formal trainings. On the one side, specific knowledge about clients is usually not transferable to other clients, but on the other side previous experiences and best practices are crucial to fulfill Igor's job. Besides technical knowledge and knowledge about the client, knowledge about other people and their knowledge are highly relevant for him.

If Igor has a problem and he needs knowledge to solve it, his first approach is to ask people currently in his room. He has no stoppages and lives with the motto: “There are no stupid questions, only stupid answers”. If nobody in the room has a proper answer or knows another person who can help, he initiates a discussion about the topic regardless of what tasks his colleagues are currently engaged in. Different ideas and perspectives on the main problems are discussed. In many cases, solution ideas could be generated or the discussion team can refer to somebody. At least, a more concrete and comprehensive problem understanding is the output of such a discussion. After discussions, all participating people have learned something about discussed topics no matter whether they need it right now or not and become more aware of Igor’s activities.

If the discussion is unsuccessful, he moves to other relevant people in the building or he calls people outside the building. If Igor has the opportunity to move to a person physically (person is in the same building) he would prefer that. Personal meetings allow him to interact with persons in a more personal way and to amplify social relationships. In case nobody could help Igor and he has no helpful contact in mind, he starts searching in the Internet by using a search engine.

Igor has a good network and maintains relationships to other people intensively. If he meets new and interesting people, especially people from clients, he tries to have a small chat in order to scan their skills and to exchange contact information. In that way he can access these people more easily in case he needs some help. Igor is somebody known all over the place and he attends every informal event he can. Lunch and coffee breaks are sacred for him. He uses these breaks to get information about other people’s work and activities or to discuss own work problems. Thus, he has a comprehensive picture of the ongoing activities and is constantly well informed.

On the one hand, Igor asks many people for help and on the other hand many people ask Igor for help. Igor has good knowledge and a lot of experience and he likes to help other people. Usually, Igor has a proper answer in mind or at least an idea which he explains to the asking person. Many times such an explanation ends in a discussion in which Igor involves other people. Furthermore, Igor could name other potentially helpful people.

Between two and four times a year, Igor participates in formal trainings. He likes such events because it gives him the opportunity to have a break from the busy consulting business and he has the opportunity for networking. Welcome are trainings related to Igor’s activities and generally applicable to many different cases. Training materials, e.g. presentations, are not really important for him. Contact details of all participating people and especially from the trainer are most valuable.

5 The Anchorwoman

Aisha leads a group of seven people responsible for operation and maintenance of productive business application systems according to predefined service levels. However, since her recruitment, she has been involved in an innovation project concerned with the development of internal competencies about a new product being promoted by a big vendor of standard enterprise systems which is the primary

business partner of our company. The process started with Aisha and her colleague, Hans, who came from the same University, setting up a test installation of the product and experimenting with it. After successfully convincing the innovation manager of our company, Aisha was manager of an internal project with the goal of the product's deployment within her company. She kept with the project until it matured into a product being now sold to leading customers. Due to the fact that Hans left the company, Aisha was the only person in the company who had profound knowledge and long-standing experiences with the product. Consequently, she is still heavily involved in software development and is the network centre for every aspect of this product. The network dealing with the product not only consists of the seven people supervised by Aisha, but also includes business consultants, software developers and infrastructure managers of other departments of our company.

Aisha builds on her profound University education. She is a Master of Management Information Systems. For the last two years, she has had a number of formal training courses provided by the vendor of standard enterprise systems and thus is now a certified analyst for the product she is responsible. But most importantly, she had plenty of time to experiment with the product. During this time, many problems could not be solved immediately or sometimes not without a new patch from the vendor so that she gradually built a huge network of partners at our company, but also at the vendor. From the time of being responsible for the roll-out of the product at our company, she has got to know a large number of people from diverse departments. Recently, she has knitted a tight network with the main customers of our company as well due to the fact that the product requires integration with a number of application systems and thus involves a large amount of communication.

From all these experiences, Aisha has learned not only to rely on personal communication and her network, but that once the product had left the experimental state, formal agreements gradually grew important. When she was promoted to manager of a group responsible for application development she felt the dramatically changed role and the need for formal approval of even the tiniest change that would be made to operative business applications.

Due to the fact that the product Aisha is responsible for is in high demand, her schedule is consistently filled to capacity. Thus, she has learned quickly how to organize her work well. She entirely relies on putting whatever content or messages she receives into formal documents or formal communication channels. This translation from the informal, experimental and explorative world of innovation to the formal, routinized and productive world of operative business applications is what she excels in.

When she is addressed with a new problem, she always first tries to be helpful by transferring a pointer towards a formally approved source of content. If that does not work out, she then starts her own interrogation and updates the formal documents in the employee portal, specifically the quality management space so that the problem will be solved according to the rules next time. She typically communicates very efficiently. Telephone calls rarely last longer than 2-3 minutes. Emails usually consist of a sentence and a link. This is important because she receives a large number of phone calls, emails or personal questions every day.

Aisha does not have any content or documents that are not part of the organized content space coordinated by the organization which she constantly uses to support all

aspects of her work. This includes her personal information management system (calendar, address book and task list). All her documents are accessible by her co-workers. Due to her own experiences, her motto is “There is nothing, but experiencing it by yourself, so try and make errors, however, if we should translate it into a (customer) product, it needs to go formal”.

6 Theses

The three scenarios contrast quite different work and learning styles which are typical for the knowledge workers we worked with. In the following, we briefly summarize the main findings out of the three scenarios described above as theses:

Web 2.0 in organizations means individuation, interaction and in-form-ation

Web 2.0 applications in organizations are used for three distinctive activities handling knowledge and learning resources: individuation, interaction and in-form-ation. Individuation means the visible linking of contents with individual employees. Sally for example collects contents for her own personal portfolio on her personal notebook and “signs” all her contributions with her name and links them to her profile. Interaction means networking and sharing of knowledge in informal processes. Igor is mostly engaged in networking and heavily uses social networking tools. In-form-ation literally means bringing into a form and is required when the boundaries of work groups or communities who share a common understanding of a domain should be surpassed. This involves the bundling of diverse strands of developments signed by individuals in individuation and shared among a group with strong ties in interaction in order to create new organizational competencies, products, services or improved business processes that can be handed on to people outside the group with strong ties. Aisha strongly relies on formally approved, coordinated structures as can be found in employee portals and wikis which are consequently and continuously updated.

Figure 1 shows that these three activities can be aligned in a process that starts from investigating a new idea and appropriating this idea to an individual (individuation), interacting to share the knowledge and finally putting it into a form that is understandable to knowledge workers who are not part of a closely related community (of practice or interest). These activities are the essence of workplace learning in organizations supported by Web 2.0 applications and social software. The figure also shows drives, motives as well as typical actions and knowledge elements involved in these activities (for a detailed description Maier et al. 2008).

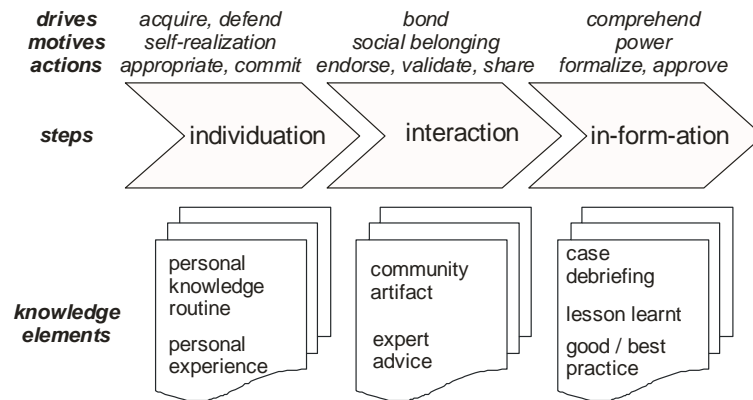


Figure 1: Individuation, interaction and in-form-ation in a knowledge maturing process (Maier et al. 2008)

Diverse learner styles are currently not or at most weakly supported by IT tools. Igor intensively uses tools that support the management of contacts or profiles respectively and offer communication and networking functions. Sally relies more on content management tools, particularly for searching, retrieving and storing in her own portfolio. This includes micro-blogging not to forget any one of her quick fixes to problems. Aisha has a say in designing coordinated organizational tools to which she is strongly committed. She does not see any advantages in opening up communication channels or content spaces that have no organizational legitimation. However, organizationally coordinated tools are typically optimized for requirements other than learning requirements, e.g., business process management, quality management, customer relationship management.

Learner styles are contingent entities.

The three identified learner styles are idealistic. In real settings, knowledge workers continuously mix these learner styles, but differ in the shares of the learner styles. The actual shares depend on personal characteristics, the community of which the knowledge worker is currently a member, the task at hand and the prevailing IT regime.

Informal learning does not necessarily mean that the learning material used is informal.

Particularly Aisha shows that informal learning results are consequently translated into formal documents which are then prescribed for further learning processes. Formal documents are also considered an important input by Sally who would then go about trying the suggested solutions and make her own experiences. Only Igor almost entirely relies on informal communication when he goes about learning.

Workplace learning activities are uncoordinated, although individuals develop learner style-dependent knowledge routines.

Although most knowledge workers in our company are more or less enthusiastically engaged in the application of Web 2.0 technologies to facilitate their own productivity in handling knowledge and learning resources, nobody has ever thought about guidance of these individual activities. Thus, individuals develop their own knowledge routines in a trial-and-error procedure. Due to communication between individuals, routines are slowly and gradually also taken over by others so that patterns as the ones described above emerge in larger numbers. This process is driven by curiosity and by the demand to be an acknowledged member of a group engaged in using trendy tools rather than by the need to increase productivity of workplace learning.

Tool innovation is driven bottom-up, not top-down

New tools are introduced in a bottom-up pattern of innovative use in a small community before they are eventually officially legitimated and their use reinforced throughout the organization. For example, Sally uses several new Internet-based platforms that are not known by anybody else in our company unless Igor drops in. Igor always uses trendy communication platforms which are officially not supported in our company. Once Aisha has been convinced of the usefulness of new tools, she eagerly helps in establishing structures and policies needed for the roll-out in our company. Igor and Aisha act as filters ensuring easy use, playfulness and social acceptance (Igor) as well as official legitimation, integration with other tools used in our company and adherence to company policies (Aisha) in this process from individuation over interaction to in-form-ation.

7 Conclusion

In this paper, we presented findings of an ethnographically informed field study of an IT system house that were amalgamated into three scenarios. These scenarios describe typical, although idealistic, patterns of behavior with respect to how knowledge and learning is handled on the work place by knowledge workers. Building on these richly described scenarios, a number of these has been formulated that help to inform initiatives that go about implementing Web 2.0 technologies in organizational settings. Corresponding activities have been taken up well in many organizations. However, these activities are mostly uncoordinated and individual knowledge workers develop their own routines that are shared haphazardly.

The authors of this paper believe in the usefulness of concentrating on the three activities individuation, interaction and in-formation as building blocks for a maturing process that should be supported by, in the terms of the Web 2.0 jargon, a mash-up of contents and services. Design of this process as well as assignment of people driving the steps of the process should ensure guidance of workplace learning activities. This would also imply that the fourth wave of knowledge management is not only about management anymore, but also about knowledge leadership.

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References

1. Blackler, F., Knowledge, Knowledge Work and Organizations: An Overview and Interpretation. *Organization Studies*, 1995. 16(6): p. 1021-1046.
2. Illeris, K., Workplace Learning and Learning Theory. *Journal of Workplace Learning*, 2003. 15(4): p. 167-178.
3. Rogers, A., Informal learning in lifelong learning, in *Informal Learning and Digital Media: Constructions, Contexts and Consequences*. 2006, Danish Research Centre on Education and Advanced Media Materials: Odense, Denmark.
4. Collin, K., Connecting work and learning: design engineers' learning at work. *Journal of Workplace Learning*, 2006. 18(7/8): p. 403-413.
5. O'Reilly, T. Is Web 2.0. Design Patterns and Business Models for the Next Generation of Software. 2005, URL: <http://www.oreilynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>.
6. Berners-Lee, T. developerWorks Interviews: Tim Berners-Lee. 2006 [cited; Available from: <http://www-128.ibm.com/developerworks/podcast/dwi/cm-int082206.txt>].
7. Fetterman, D.M., *Ethnography Step by Step*. Second Edition ed. Vol. 17. 1999, London: SAGE Publications Ltd.
8. Jordan, B., Ethnographic workplace studies and CSCW, in *The Design of Computer Supported Cooperative Work and Groupware Systems*, D. Shapiro, M. Tauber, and R. Traubmueller, Editors. 1996, Elsevier: Amsterdam, Netherland. p. 17-42.
9. Lamnek, S., *Qualitative Sozialforschung*, 4. Auflage. 2005, Weinheim: Beltz Verlag.
10. Harper, R.H.R., The Organisation in Ethnography: A Discussion of Ethnographic Fieldwork Programs in CSCW. *Computer Supported Cooperative Work*, 2000. 9(2): p. 239–264.
11. Millen, D.R. Rapid ethnography: time deepening strategies for HCI field research. in *conference on Designing interactive systems*. 2000: ACM Press.
12. Plowman, L., Rogers, Y., and Ramage, M. What Are Workplace Studies For? in *fourth European Conference on Computer-Supported Cooperative Work*. 1995. Stockholm, Sweden.
13. Barley, S.R. and Kunda, G., Bringing Work Back. *Organization Science*, 2001. 12(1): p. 76-95.
14. Dehnostel, P., Molzberger, G., and Overwien, B., New Forms of Learning and Work Organization in the IT Industry: A German Perspective on Informal Learning., in *International Handbook of Educational Policy*. , N. Bascia, Editor. 2005, Springer: New York. p. 1043-1063.
15. Eraut, M. and Hirsch, W., *The Significance of Workplace Learning for Individuals, Groups and Organisations 2007*, SKOPE Research Centre: Oxford & Cardiff, UK.
16. Coffield, F., et al., *Learning styles and pedagogy in post-16 learning A systematic and critical review*. 2004, Learning and Skills Research Centre: London.
17. Lave, J. and Wenger, E., *Situated learning: legitimate peripheral participation*. 1991, Cambridge: Cambridge University Press.