

Why is the Inpud-Community so successful? Informal Structures, Trust and Social Proximity Cultivating Knowledge Transfer

Isa Jahnke

(University of Bochum, Information and Technology Management,
Institute for Applied Work Science, Germany
isa.jahnke@rub.de)

Thomas Herrmann

(University of Bochum, Information and Technology Management,
Institute for Applied Work Science, Germany
thomas.herrmann@rub.de)

Abstract: This contribution describes the Online-Community INPUD. The authors' point of view is to explain the online community as an approach to cultivate knowledge transfer. The case study gives insights into the relations of informal structures, social proximity and trust. On this basis the success factors for knowledge transfer are described with a theoretical approach, which emphasizes the relevance of social roles and derives design aspects for socio-technical knowledge systems in general.

Keywords: Online Communities, Informal Structures, Social Proximity, Roles, Trust, Social Capital
Categories: C.2.0, J.4, K.6

1. Introduction

A lot of contributions and research projects with regard to online communities and knowledge transfer systems in the field of technology and organizational management are available (for example in the Conference Proceedings "*Communities & Technologies*" 2005, Milan).

Knowledge management studies reveal that online communities or "communities of practice" (Wenger 1998) positively promote knowledge transfer processes in organizations. They initiate and enhance knowledge exchange among many people in different departments (e.g. Lesser & Prusak 1999; Wenger, McDermott & Snyder 2002 etc.). The difference between organizations and communities is characterized by two different forms of communication. Organizations include business processes, working processes as well as work contracts and formal relationships (e.g. organizational charts). However, Communities do not so, they have more informal relationships. "*Communities are defined as collections of individuals bound by informal relationships that share similar work roles and a common context.*" (Snyder 1997, in: Lesser & Prusak 1999). Community members are bound together by a socio-emotional character and **strong ties** (Granovetter 1973, p. 1361). Online communities and knowledge transfer systems which are computer-mediated forms of communication emerge as new forms of social organizations or – as we would say – as **socio-technical systems**.

A lot of empirical studies and practical projects give insights how to initiate, support or cultivate a community of practice (in particular Wenger et al. 2002) and describe how to do that. However, it is hard to explain why several - for example freely-built communities (e.g. Open-Source Communities) - are successful and others are not (e.g. community cultivating in organizations). This paper explains the success of a community by referring to the concepts of informal relationships, social capital, social proximity and trust. Section 2 presents the empirical case study. Section 3 derives theoretical findings which are based on the case of the "INPUD-Community".

2. Case Study Description: the INPUD Community

The analysis of the community, the success factors and problems was based on an explorative empirical study including interviews and questionnaires. We interviewed 14 participants face-to-face (8 students and 6 professors/lecturers) to create a standardized questionnaire. The standardized questionnaire was sent out and 384 completed returns received. This was a total of 20 percent of all computer science students enrolled in basic courses (2002). Furthermore we interviewed 8 experts in the field of course guidance as well as experts of the "university organisation" and evaluated the social relationships of the Inpud-Community (based on content analysis).

The **Inpud-Community** is an online knowledge transfer system for students of computer science study at the University of Dortmund. There are discussion boards which were embedded into an information website included facts about course guidance as well as maps about basic coursework. Both together is called "*Inpud*" (Informatics Portal University of Dortmund.) and can be found at <http://inpud.cs.uni-dortmund.de>. (Note: German universities offer multitudes of lectures and students have to create their own semester plan of lectures; meaning they can choose which lectures at which time they attend)

INPUD includes an overview of all *classes and lectures* ("Lehrveranstaltungen") which are offered during the current semester ("Wintersemester 2004/05"). The information about the lectures include learning groups (when they are being held), course materials, notices for examinations, lecturer contact information and often an own discussion forum (e.g. "Rechnerstrukturen"). There are also *news* ("News") and *search* functions ("Suche"). The discussion boards ("Forum") include discussions about selected lectures (recently 12 lectures are on-line, each with a facilitator). On the discussion board it is possible to discuss exercises and their solutions. Furthermore there are information- and discussion boards initiated by the people of *course guidance* ("Studienberatung"). The discussion forums include questions and answers about course guidance. For example "how/ where to register for written examinations", "where to find the university calendar", "what is the content of computer science study", "which semester is best suited for studying abroad".

INPUD has a continuous growth of participants: **1,074 registered participants have written more than 21.100 contributions** (as of 8.3.2006). The registration and login is only necessary when contributing. Reading is possible without registration and without logging; each user can read everything. Inpud catches more than **50 percent** of students from the computer science study. Since the launching of INPUD in September 2002 the participation has developed as follows: The number of requests has grown consistently and at the beginning of a new semester the access rate usually

peaks. In Oct. 2002 there were “only” 171.408 requests. A year later (Oct. 2003) there were 292.155 and Oct. 2004 there were 491.330 requests (see Jahnke 2006, p. 126). This growth holds on yet today.

In February 2003 a survey was conducted at the department of computer science. The outcome was that 96 percent (n=186) of all students enrolled in computer science at this university know INPUD. Not less than 80 percent have used INPUD at least once, and 41 percent use it regularly. The high number of participants is an indicator that a lot of students appreciate this form of knowledge sharing. They discuss, ask questions, also answer them, come up with new ideas and help each other.

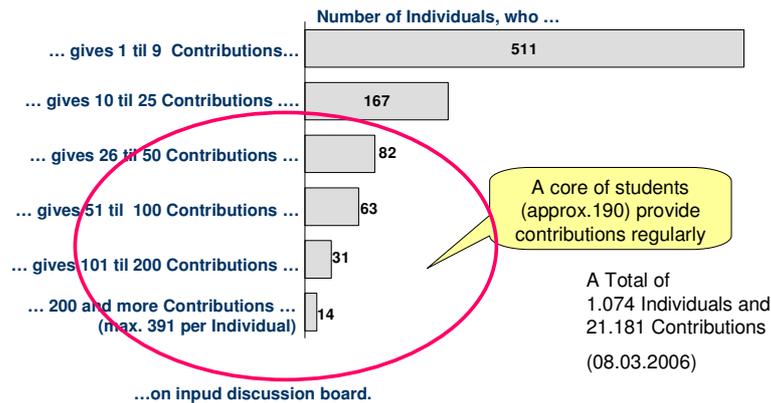


Fig. 1: INPUD Discussion Forum: Number of Contributions per Individual

Figure 1 shows the analysis of the communication structure: 108 individuals wrote regularly between 51 to 391 postings (questions/answers) per individual(!). That is quite a lot for 52 weeks a year. Furthermore 249 individuals provided 10 to 50 contributions. Inpudforum provides an awareness feature, which displays who and how many users are on-line at the same time. (Note: The community grows without marketing or advertising.) INPUD integrates different roles, which are visible (role-awareness): There are students, but also lecturers and tutors as well as consultants of computer science course guidance. Students see the role name a person has taken during on-line discussions. Thus, it is possible to differentiate between postings by students and other roles.

The explanation for the quantitative development of participation in INPUD refers to the evolution of social relationships between its users which is mirrored in the kind of their contributions. A clear willingness of being helpful for each other can be observed. The students developed an interest in the career of others although they knew them only via INPUD. By the activities of its users, INPUD became a continuously growing, helpful database for questions about the successfully organizing of the course of studies. Although INPUD did not include technical features as they are discussed with respect to **Web 2.0**, the success of this community was evidently driven by the spirit underlying Web 2.0: The evolution of reliable, social relations and the development of a valuable basis of content were highly interwoven; this process was

based on free willingness, on a minimum of formal regulations or control, and on only very moderate interventions of facilitators.

3. From empirical findings to a theoretical approach – what can we learn about Inpud?

Lave & Wenger define communities as follows: “A *Community of practice is a set of relations among persons*” (see Lave & Wenger 1991, p. 98). Wenger added later: “...*who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis*” (Wenger et al. 2002, p. 4).

And based on the Inpud-Community we may add yet: *...without formal bondage, by social proximity and personal closeness which are based on informal relationships and mutual trust.* The Inpud-Community shows that the students trust each other although they are in an anonymous group with a lot of other students. The only thing they can disclose to other participants is the form and the content of communication (for example the questions and answers with regard to the study of computer science). So they expect that they are all in the same role: students. And they have all the same goal: to graduate the study.

A community emerges when factual interests also produce personal interests which are related to social proximity and strong ties (Doering 2003). A community is a set of people who are willing to help each other. A Community give mutual support and collaboration with the purpose accomplishment their own tasks (see Koch 2002). Thus a community can establish socio-emotional relationships. The members form a “*joint enterprise and the community continually renegotiates itself through its members*” (Wenger 1998) and they act faithful, they trust each other, although they normally would not act that way: I will help you, even if you do not immediately help me because I know you, or another community member, and you or others will assist me when I need support (Putnam 1995). This increases active participation as well as common or collaborative learning (e.g. Doering 2003; Wenger 1998; Koch 2002). Mutual support is given for example through feedback, annotations, idea exchange, answers to questions, mutual reviews etc. This kind of social communication and resources of relationships – social capital – within a community enables the members to fulfil their organizational tasks better or more effectively (Wellman et al. 2001, 1997). It is one reason why social organizations (e.g. enterprises) should support formal as well as informal relationships such as (online) communities. With words from the perspective of the Inpud-Community, the actors (students) exchange their knowledge in order to complete their own study of computer science, e.g. how and what to study which lectures at which semester, to discuss solutions of exercises and so forth.

3.1 The influence of social features: social capital, trust and social presence

In the beginning of the 20th century Hanifan explains the reactivation of the community engagement in small towns and local groups with the term social capital. He used the term first in 1916 (see Putnam 2001, p. 16). The term disappeared and was revisited not until before 1950 by the Canadian sociologist John Seeley (see: Putnam 2001, p. 17). Many persons follow the discussion about social capital and several different

definitions were the result - for example, Jane Jacobs (1961), Pierre Bourdieu (1983), James S. Coleman (1988) und Robert D. Putnam (1995).

“*Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition*” (Bourdieu & Wacquant 1992, p. 119). In others words social capital is the potential access of social relationships resources and all the inherent power of the social network which can be mobilized. Nahapiet & Goshal (1998) differentiate three dimensions of social capital:

- The **structural** dimension identifies the „*patterns of connections between actors-that is who you reach and how you reach them*” (p. 244).
- The term **relational** dimension describes the form of “*personal relationship people have developed with each other*” through social interactions or computer-supported communication over time (p. 244). Trust plays an important role. Fukuyama says that social capital is the social capability which can be developed when trust in a social system exists (Fukuyama 1995, p. 26)
- The **cognitive** dimension identifies the “*shared representations*”, norms and “*systems of meaning*” (p. 244).

Social Capital is a social capability that arises from the prevalence of trust in a society or in certain parts of it (Fukuyama 1995, p. 26). “*Trust is the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms*” (Fukuyama 1995, p. 26). By contrast, persons who do not trust one another will end up cooperating under a system of formal control and regulations which have to be enforced. Informal structures are missing. To put it with words from the Inpud-perspective, trust is essential for cooperative work and knowledge transfer because each student act faithful when s/he answer or ask something, because s/he expects that the other students act also faithful.

Schmidt (2000) specifies into three factors of trust with regard to internet communities and online settings general:

- Trust into the **identity of the counterpart** (*alter ego*): who is the person behind the name which I see on my computer screen?
- Trust into the **interests of the counterpart**: Which interests does s/he follow? Why does s/he communicate with me? Does the counterpart act faithful and give s/he honest statements?
- Trust into the **expertise of the counterpart**: Does s/he know enough about the things to help me?
- And we add **trust into the social role** of the counterpart: not only the personal identity but also the social role s/he has taken is relevant for the communication. The social role shows which expertise the actors have.

Trust into persons in online communication processes depends on whether and how the actor can perceive the anonymous counterpart as an owner of a social role. The degree to which a dialog partner during computer-supported communication perceives the counterpart as an individual owning a concrete social role is named as “**social role presence**” or social role-awareness. For example, to become active themselves students at virtual seminars or lectures require a certain degree of social role presence of the lecturer and their fellow students in the virtual online setting. For example, the Inpud-Community shows the social roles of the people of course guid-

ance. If course guidance people contribute in INPUD online they sign their roles with the role name (“Studienfachberatung”).

Short et al. created the **social presence** theory in 1976. Social presence is „*the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships*” (Short et al. 1976, p. 65). They empirically examined the qualities of different media of telecommunications (phone, video-conference and so on) in contrast to face-to-face communication. The increase of social presence of actors leads to an improved perception of the participants that means that the participants could better assess and evaluate who the counterparts are and which interests they have.

Transferring social presence to online settings means that the frequency and quality of contributions of concrete persons – **social on-line presence** – determine on the one hand whether the actors can subjectively perceive the individual counterparts and on the other hand how social proximity and trust is formed or not. Although when physical or regional proximity is present, social proximity can be absent. An example is large cities: people who live in a proximate neighbourhood are nevertheless anonymous.

It may be expected that in virtual settings **social proximity** helps to cultivate knowledge transfer. The degree of social proximity is considered as the quality of social relationships of actors which is based on computer-supported communication. Social proximity means the relative proximity among persons i.e. how socially close they are, what are their feelings and which relationship do they have or create. The social proximity of relationships increases with regard to the growing of the personal closeness i.e. „*emotional intensity*“ and „*intimacy*“ of the actors (see Granovetter 1973, p. 1361). The students of the Inpud-Community created social proximity in the beginning of the on-line community – but not before – because the technical system gave them the chance to communicate with each other.

Transferring these considerations to online settings, social proximity of the actors develops by the personal closeness to the social role of the counterpart and the intimacy which can lead to more trust. Some actors have closer relationships as other actors due to the fact that they have more intimacy and trust to each other. To put it into a nutshell, a “**social role presence online**” of anonymous actors can lead to more trust and supports the development of social proximity among the actors. Social proximity and trust affect each other (see figure 2).

A creation of trust leads to a positive influence causing more social presence, supporting social proximity and therefore promotes social relationships. The fostering of social relationship leads to more social capital; hence the participants have an access to more resources of relationships. The results of the empirical study reveal that social role-presence as well as social proximity is an essential factor to cultivate socio-technical communities and knowledge transfer systems.

3.2 The attractiveness of a socio-technical system

Nowadays for most forms of the distribution of information and the accomplishment of information processing tasks, computer support is indispensable. However its success depends on the interplay between organizational and technical structures. Therefore, it is the **sociotechnical system** as a whole which has to be analyzed and de-

signed. The most important criteria of attractiveness (see Schmidt 2000, p. 39) of socio-technical knowledge exchange systems are the following:

A socio-technical system needs

- (1) **a critical mass**, a sufficient number of contributors (see Markus & Connolly 1990) who use the technical system in order to communicate with each other. This phenomenon is also discussed as “*cold start problem*”. Markus & Connolly shows that in cooperative settings the use of the technical system increases with the number of actors, during the individual costs for the use stays stable and the individual benefit increases. If the number of actors is too less, the cost/benefit balance is negative.
- (2) a certain **social dynamic**: Do the participants constantly read new documents, annotations and so on? Do the actors immediately reply to inquiries and questions from other participants?
- (3) **support for interactions and communication**: Does the online community accept new contributions of (new) actors? Could (new) actors react on contributions of other actors, and how? Is the interaction between new user and actors – or among actors in general – complicated?
- (4) a sufficient quality of **content**: Which information is presented with regard to a topic? How is the online community composed, which kinds of actors take part?
- (5) support for **further development**: Is there a chance for the individual to get personally developed, for example receive a higher status, which gives the participants more trust and prestige? Do the participants have the possibility to influence the structure of the technical system in accordance with their needs?
- (6) support of **integration**: Is there any chance that the participants could exchange their knowledge between several communities?

In Sections 3.1 and 3.2 a new community model is outlined. A Community exists of technical and social elements, which are combined and interwoven. Such an online community starts from the cultivation of social relationships. Under specific conditions the actors mature or develop a common domain of knowledge or a joint topic, which leads to common social practices (norms, social values, social procedures etc.). These common social procedures and a similar social behaviour affect the social relationships of the participating actors (e.g. students of the InpuD-Community). The creation of social relationships depends on on-line role-presence, which affects the development of social proximity and the supports trust. These lead to more social capital. An online community is a social phenomenon which also depends on the technical system. An online community only arises and sustains by the reason that the technical systems is sustaining (see Figure 2). Figure 2 summarizes the indispensable ingredients of a functioning on-line community.

We strongly assume that these ingredients are the fundament on which the further emergence of Web 2.0 technology is based.

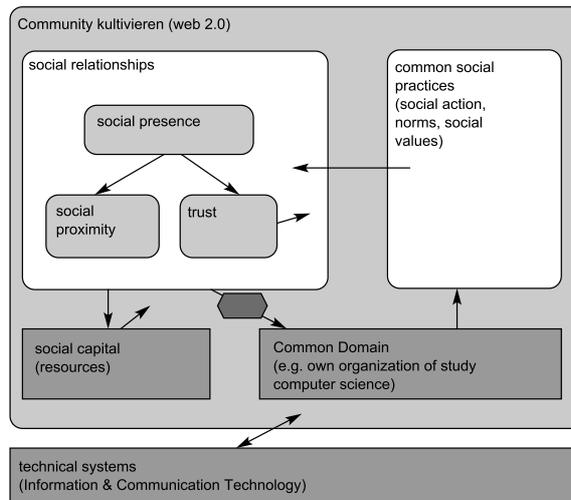


Fig. 2: Model of Online Communities

References

- Bourdieu, Pierre (1983): Ökonomisches Kapital - Kulturelles Kapital - Soziales Kapital. In: Kreckel, R. (Hrsg.): Soziale Ungleichheiten. Sonderband 2. Soziale Welt. Göttingen: Schwartz. S. 183-198.
- Bourdieu, Pierre & Wacquant, Loïc (1992): *An Invitation to Reflexive Sociology*, Chicago.
- Doering, Nicola (2003): Sozialpsychologie des Internets. Die Bedeutung des Internet für Kommunikationsprozesse, Identitäten, soziale Beziehungen u. Gruppen. Göttingen: Hogrefe. 2. Auflage.
- Fukuyama, Francis (1995): Trust. The Social Virtues and the Creation of Prosperity. New York et al: The Free Press.
- Granovetter, Mark S. (1973): The Strength of Weak Ties. In: American Journal of Sociology, Vol. 78, No. 6, pp. 1360-1380.
- Jahnke, Isa (2006): Dynamik sozialer Rollen beim Wissensmanagement. Soziotechnische Anforderungen an Communities und Organisationen. Wiesbaden: DUV.
- Koch, Michael (2002): Interoperable Community Platforms and Identity Management in the university Domain. In: The international Journal on Media Management. Bd. 1, pp. 21-30.
- Lave, Jean & Wenger, Etienne (1991): Situated learning. Legitimate Peripheral Participation. Cambridge: Cambridge University Press.
- Lesser, Eric & Prusak, Larry (1999): Communities of Practice, Social Capital and Organizational Knowledge In: Information Systems Review 1, No. 1, 3-9. Online.
- Nahapiet, Janine & Goshal, Sumantra (1998): Social capital, intellectual capital and the organizational advantage. In: Academy of Management Review, Vol. 23, No. 2, S. 242-266.
- Putnam, Robert D. (1995): Bowling Alone: America's Declining Social Capital. In: Journal of Democracy Vol. 6, No. 1, S. 65-78.

- Schmidt, Michael P. (2000): Knowledge Communities. München: Addison-Wesley.
- Short, John; Williams, Ederyn & Christie, Buce (1976): The social psychology of telecommunications. New York: John Wiley & Sons.
- Wellman, Barry; Hasse, A.; Witte, J. & Hampton, K. (2001): Does the internet increase, decrease or supplement social capital? Social networks, participation and community commitment. In: American Behavioral Scientist, 3 (45), pp. 437-456.
- Wenger, Etienne (1998): Communities of Practice. Learning as a social system. In: Systems Thinker, June 1998, Vol. 9, Issue 5. Online.
- Wenger, Etienne; McDermott, R. & Snyder, Williams M. (2002): Cultivating Communities of Practice. A guide to managing knowledge. Boston, Massachusetts: Harvard Business School Press.