

## **Reflected Action Learning - a Method for Collective Competence Development**

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### **Abstract**

The aim of this research is to suggest a method for collective competence development among IT-consultants. IT-consultants are involved in many challenging situations. They need to manage different organisational, semantic and technical issues. Managing this complexity requires a variety of competences. Examples of competences needed are business development, project management and information system development. The competence developed is often individually based. Due to the competition between consultancy firms it is not sufficient with an individually based consult competence; rather the IT-consultants have to carry joint work procedures of the organisation. A consultancy firm possessing a high organisational competence is selling more than working hours; they are selling a reflected development approach. The competence of the IT-consultants is decisive concerning the outcome in the clients' organisations.

The reasons for suggesting a reflective and structured approach for collective competence development are: 1) many IT-consultants are exchange experiences only hastily and at random. This means an ad hoc development of joint competencies. 2) IT-consultants often collaborate with clients rather than with other IT-consultants. If the IT-consultant is the only representative from the IT-organisation the interaction with other consultants is limited. The character of the IT-consultants' work situation means that there is a risk that the competencies resides only on an individual level and that they will not be properly transferred to the collective and organisational level.

We have been inspired by theories such as: experiential learning, organisational learning, knowledge-in-action and storytelling. The method development has been based on empirical data from two IT-consultancy firms. The main message of the paper is to argue for the need of a structured collective competence development process and that it is not sufficient to rely on sporadic and occasional knowledge exchange.

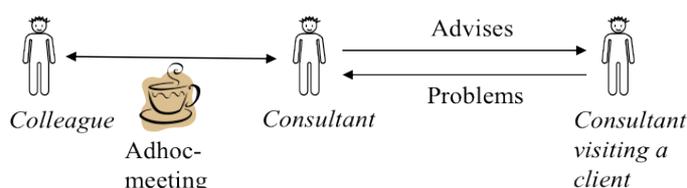
**Keywords:** Competence development, organisational learning, knowledge-in-action, knowledge transfer, knowledge management

### **1. Introduction**

The aim of this paper is to suggest a method for collective competence development in IT-consultancy firms. IT-consultants need a variety of competence. They need to handle complex organisational, semantic and technical issues. In addition, IT-consultants often work under a time pressure since they are expected to deliver result within tight project conditions. It is not an underestimation to say that IT-consultants have to face many challenging situations. IT-consultants need to carry, develop and integrate different competencies such as business development, project management and information system development. These competencies form the core working procedures of the organization that can be seen as a competitive tool. To be a successful consultancy firm there is a need for selling more than working hours; the consultancy organisations should apply a reflected development approach. Therefore, the competence of the IT-consultants is decisive concerning the outcome in the clients' organisations.

An IT-consultant is usually allocated an assignment from the consultant manager. The assignment can vary in time (from a few days to several years). The IT-consultant's workplace is usually located at the client. That is, the IT-consultant spends much time away from his own organisation that makes it hard to transfer competence between individual consultants and to build up an organisational stock of knowledge within the consultancy firm. We assume that much competence transfer among consultants occur rather unplanned. One familiar situation for competence transfer between IT-consultants might be an ad-hoc meeting in front of the coffee machine and hastily exchange

experiences (see figure 1). According to our understanding it is unusual with planned activities for competence transfer. As we see it, there are at least three motives for scheduled activities and using a structured method for competence transfer instead of ad-hoc meetings: 1) IT-consultants often work individually and invent individual working procedures, 2) it is not unusual that IT-consultants spend a lot of time outside their ordinary working place since their business is taking place at the clients' organisations and 3) IT-consultants often collaborate with clients rather than with colleagues (other IT-consultants). If the IT consultant is the only representative from the IT-organisation the interaction with other consultants is limited. To summarize, the character of the IT-consultants' work situation means that there is a risk that the competence resides on an individual level and will not be properly transferred to the collective (organisational) level.



**Figure 1:** Example of ad-hoc meeting

Beside the motives listed above, organisational competence is not static. A consultancy firm needs to dynamically develop competence in order to be competitive. A relevant and updated competence is especially relevant for IT-consultants due to the fast technical development. Therefore, interactions concerning exchange of experiences between IT-consultants, and between IT-consultants and managers are something that should be planned for and carried out in a structured way (see figure 3 in section 3). This introductory section is followed by a discussion of the theoretical basis used (see section 2). In section 3 the research approach is described and section 4 contains a brief description of the cases. In section 5 we present the method for collective competence development and finally in section 6 conclusions are drawn.

## 2. Theoretical basis

Sveiby (2001) views knowledge as a process consisting of a complex set of dynamic skills and know-how that is constantly changing. As mentioned in section 1, IT-consultants need a variety of integrated competences. The changes in competences needed require continuous learning. This study is about organisational learning. Organisational learning is processes of making knowledge inter-subjective and shared among different organisational actors. Organisational learning can be considered as either as a process of disseminating what is already known by some actors or a process of developing new knowledge for improved organisational performance (Ford, 2008). The aim of our study is similar to the latter process; we want to discover new action possibilities and thereby develop the consultants' competence.

Our view of learning is that individuals are learning through action and reflection. Reflections upon daily actions will give rise to new competence. We share this view with several scholars who have described learning through action. The term action learning was coined by Revans (1982) and refers to a practical group learning and problem-solving process. The idea is that the group meets regularly in a setting where group members are encouraged to learn and share from experience. Senge (1990) advocates innovation and creativity views when discussing learning organisations since the aim is to get people to share what they know (Pauleen et al., 2007).

In order to develop a method for collective competence development we have been inspired by the learning cycle suggested by Kolb (1984). According to Kolb (1984), learning occurs through a cycle of four phases: concrete experiences, reflective observation, abstract conceptualization and active experimentation. According to Pauleen et al (2007) the cycle of action and reflection activity does not flow in a linear and sequential fashion. It is far more dynamic and learners move back and forth among the phases. Kolb (1984) suggest two dialectic processes: action vs. reflection and experience vs. abstraction. We find both these processes relevant for generating knowledge about collective competence development.

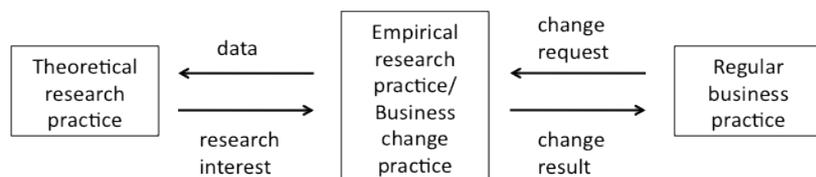
Kolb's cycle of individual learning can be expanded to a collective level. According to Høytrup (2004) and Kupers (2008), colleagues can through dialogues, participate in collective reflection and

abstraction. Dialogues and interaction for reflection and articulation of knowledge are an essential part of our research method (see section 3). According to Polanyi (1958), actors apply certain knowledge when acting in different situations and they are not fully aware of the applied knowledge since it often resides as tacit in the background.

According to Dewey (1938) and Argyris & Schön (1996) the starting point can be a problematic situation. Therefore it is important to start with the consultant's own experiences. In order to reduce the consultant's private and taken for granted explanations we will start with concrete examples (compare with the first phase in Kolb's learning cycle). If the actor expresses his explanations in an already generalized way, neither the complexity in the problematic situation nor his colleagues are used as genuine resources in the inquiry process. Asking for concrete examples can be compared to story telling. According to Abma (2003), concrete storytelling is a good starting point for organisational learning. Using story telling can be compared to Kolb's second phase in the learning cycle. Stories can be reflected upon and abstractions can be made which can work as a base for suggesting new concepts and action strategies (phase 3). These new strategies can later be tested out in new organisational actions (phase 4). Kolb's cycle of learning have been used as theoretical inspiration source to develop the method for collective competence development.

### 3. Research Approach

The research approach can be described as action research (e.g. Lewin, 1946; Checkland, 1991; Avison et al., 2001; Baskerville, 2001). Action research encourages researchers to intervene in a change process. Our research approach has been based on a close collaboration between the researchers and an IT-organisation. There are different ways to describe action research. According to Susman & Everett (1978) and Davison et al. (2004) it is a process consisting of five recurrent phases: diagnosis, action planning, action taking, evaluation and specifying learning. According to Cronholm & Goldkuhl (2004) action research can be conceptualized as three related practices (see figure 2).



**Figure 2:** Three related arenas (Cronholm & Goldkuhl, 2004)

The three practices are: theoretical research practice, empirical research practice/business change practice and regular business practice. Theoretical discussions and the development of the method for collective competence development have taken place at the theoretical research practice. The practice in the middle can be viewed from two directions. From the research direction it is viewed as an empirical research practice and from the business practice direction it is viewed as a change practice. We refer to this practice as the reflection arena. The regular business practice corresponds to the consultancy firms' regular consultancy practice. From the consultancy firms' perspective the reflection arena has been used for collective competence development. We have used a number of reflection themes for collective competence development. Common consultancy assignments have been used as a base for identifying interesting themes to reflect upon. Themes that have been reflected upon are client competence, resource allocation, the consultants' relation to customer support, systems integration, systems maintenance, the need of formal agreements, distribution of assignments, and strategies for recruiting competence. All together 11 themes were reflected upon in two different consultancy firms.

From the research direction the reflection arena has been utilized for collecting data in order to develop a method for collective competence development. Data have been collected through the usage of videotapes and by taking notes from the discussions themes mentioned above. A new version of the method has been developed between almost every new theme reflection. That is, the method developed has evolved through iterations. In order to generate categories to be part of the method we have been inspired by question batteries proposed by Strauss & Corbin (1998) and Cronholm & Goldkuhl (2005). Example of questions asked were: "What was this discussion about?",

“Who were involved in the problem situation discussed?” “What competence was needed?”, “How was the problem solved?”, and “Which tactics were used?”.

The research approach we have used has meant that we have shifted between two roles. When we have reflected upon discussion themes we have taken the role as a facilitator. That is, based on the evolving method we have supported the reflection, articulation and abstraction of the actual themes discussed. In parallel, we have also taken the role as a researcher. That is, we have *reflected upon the reflections of the discussions* and the actual version of the evolving method used in order to further develop the method.

#### 4. Briefly about the IT-consultancy firms

The two consultancy firms (A and B) differ from each other in several ways. Firm A has mainly clients from the municipality and the length of their assignments is normally of shorter time period (less than 3 months) but can be longer. The consultants’ physical work place is normally not located at the client’s organisation. The velocity of circulation considering the employees is considerable low. Several of the employees have worked for firm A for several years.

Firm B has clients both from the industry and from the government. The consultants have usually long-term assignments (over 1 year). The work place of the consultants employed by firm B is located at the client’s organisation. They are rarely visiting their own organisation. The velocity of circulation considering the employees is considerable high. While this research project was running, nearly half the consultants where replaced by other consultants. None of the two organisations have had scheduled meetings for exchange of experiences. We had separate meeting with firm A and B and approximately ten consultants from each organization participated in the themes reflections. Both genders were represented and there was considerable difference in the individual consultants’ experiences. There was also a variation in age.

#### 5. A Method for Collective Competence Development

The aim of the method is to support competence evolution and transfer from individual level to the collective level. At the reflection arena the competence is evolved through reflection, abstraction and articulation (see figure 3). A facilitator supports the competence evolution. The competence evolved is implemented in a computer supported dynamic competence tool. Though this tool, we hope that the externalized collective competence will be easy accessible for individual consultants and can be immediately utilized in new assignments.

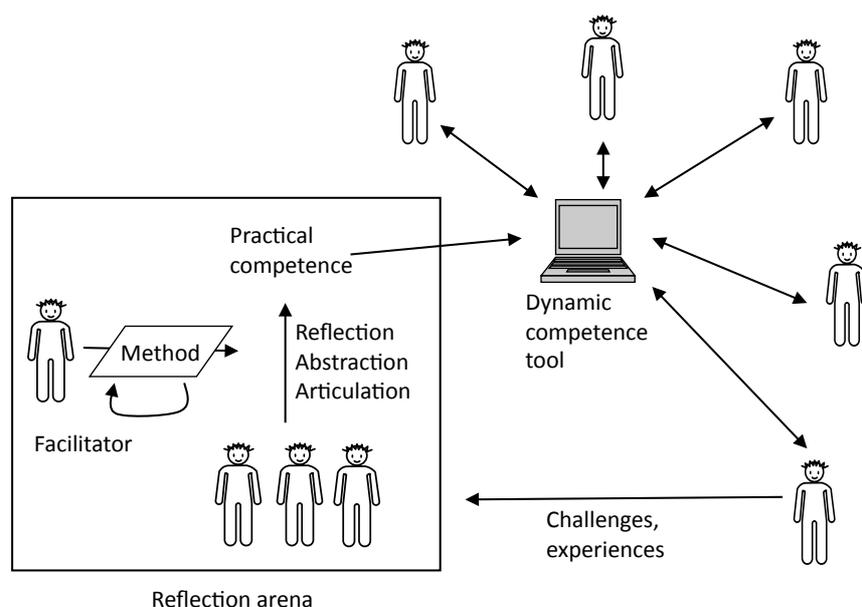
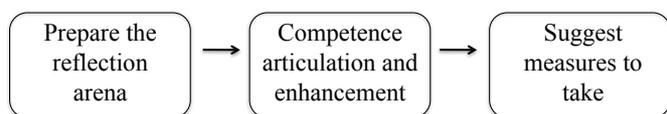


Figure 3: The reflection arena

The method consists of three major phases: Prepare the reflection arena, competence articulation and enhancement, and suggest measures to take (see figure 4). Besides these three phases the method recommends using the “tools” 1) shift between abstraction and concreteness, 2) ask progressive questions and 3) relate to what is known (these tools are originally developed in Cronholm & Goldkuhl, 2006). The aim of the tool *shift between abstraction and concreteness* is to support transfer of competence from one assignment to another assignment. Through abstractions and generalisation the competence will be possible to transfer from one specific situation to another situation. The aim of the tool is also to support the other way; move from the abstract to the concrete. Sometimes descriptions can be too abstract to fully grasp. In these situations there is a need to move to the concrete preferably by asking for examples.

The aim of *ask progressive questions* is to get more information about the problem situation discussed. Examples of progressive questions are: What experiences exist?, How do you usually solve the problem?, What measures are taken?, Are there any resistance for the actions proposed?, Are there any goal conflicts?, Are you aware of other similar situations? and What are the consequences?

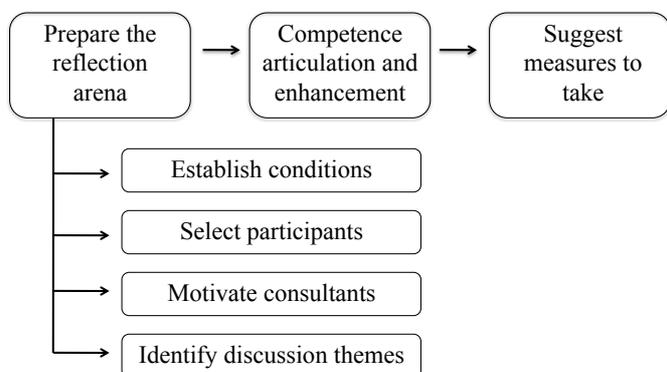
The aim of *relate to what is known* is to get high participation in the reflective part. The conditions for having active participants will increase if the IT-consultants recognise the problem situation. Our experience is that themes that are recognised by many consultants will be more engaging and therefore these themes will end up with rich descriptions.



**Figure 4:** The major phases of the method

### 5.1 Prepare the reflection arena

The preparations consist of the activities: establish conditions, select participants, motivate consultants and identify discussion themes (see figure 5).



**Figure 5:** Activities in phase of prepare the reflection arena.

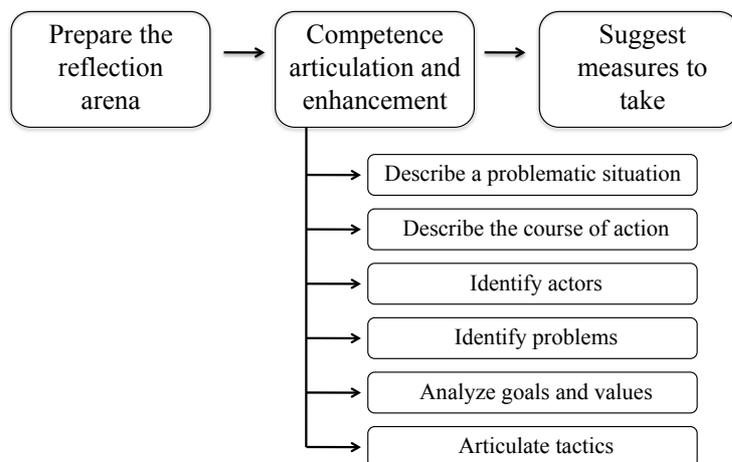
The aim of the preparations is to establish conditions for achieving as good competence transfer as possible. Conditions to consider are: available resources, level of ambition, delimitations, who is the assigner (who should the project report to), who is the client and expected effects. This phase also includes selecting participants. According to our experiences a number between five and eight is appropriate. If the group consists of fewer than five people, there is a risk that the articulation and the reflection of a theme both can suffer from precision and richness that can make the theme hard to generalize to other similar situations. If the group consists of more than eight people, there is a risk that consultants don't get an opportunity to bring forward their opinions. To select a group also includes nominating a motivated and knowledgeable facilitator and a person who is responsible for the documentation. The preparations also include motivating the consultants. The aim is that the consultants should share their competences (in a manner of giving and receiving). This requires a

group climate among consultants should that includes outspokenness, leaving prestige behind and don't being afraid of informing about mistakes.

Finally, an important thing in this phase is to identify possible discussion themes. We have identified three complementary ways: 1) in advance, interview consultants individually, 2) gather themes collectively through walking round the table (other consultants can be inspired by themes proposed by colleagues and refine or improve how they are formulated) and 3) be sensitive in order to catch new themes that are emerging when other themes are discussed. A list of all the suggested themes is compiled. Select themes that are interesting and engage as many consultants as possible.

## 5.2 Competence articulation and enhancement

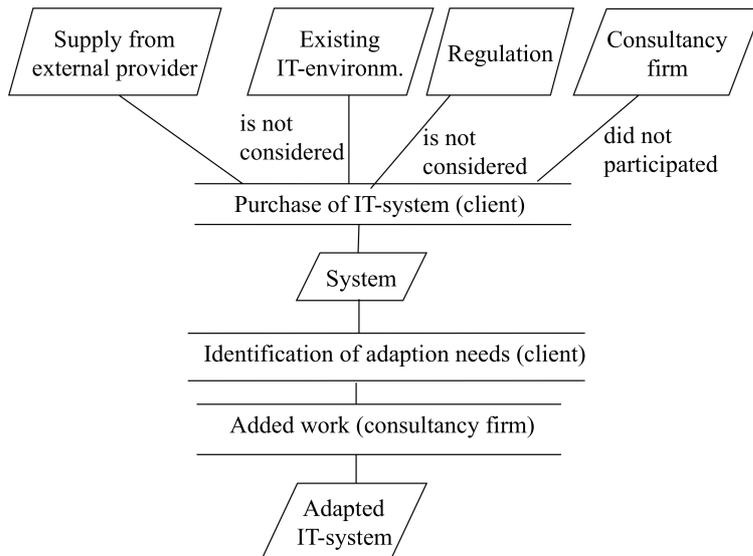
The phase competence articulation and enhancement consists of the activities problem situation, course of action, actors, problems, goals and values, and tactics (see figure 6). In order to support the description and explanation of the method an example concerning client competence has been used.



**Figure 6:** Activities in the phase of competence articulation and enhancement

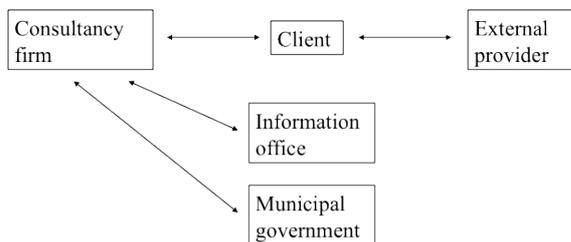
In the activity problem situation, one of the consultants starts with describing a problematic situation. This part of the method is similar to story telling and creates a common point of departure (e.g. Gadamer, 1976). Usually the colleagues recognize the situation described and add experiences in order to get a richer description. The idea is to start with something well known and that is described on a concrete level. The description includes an overview of problems experienced, actors involved and actions taken. A summary of the problem situation client competence reads:

*“The client (a unit in the municipality) has purchased an IT-system from an external provider in a way that is not in line with the regulation. The client has bought a cheap IT-system that neither confirms to the usability rules decided by the information office nor could be integrated in the existing IT-environment. When the client experienced problems we (=consultancy firm A) got an assignment in order to implement necessary adaptations.”*



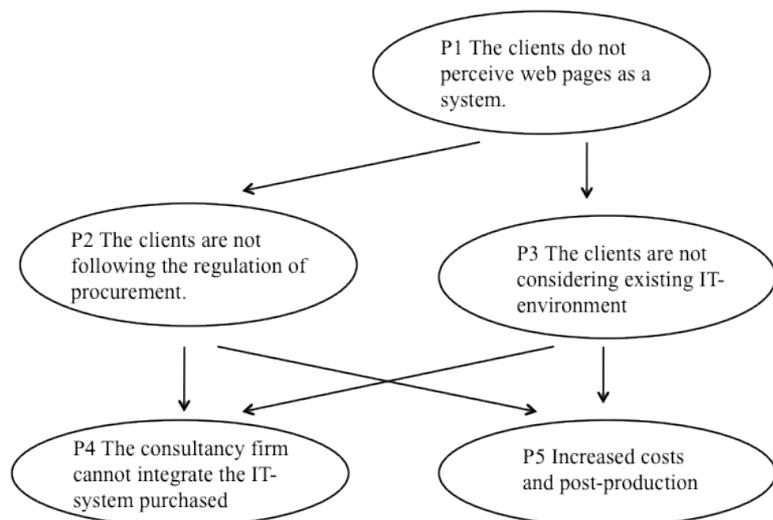
**Figure 7:** Example of a process model (action diagram).

The next step is to describe the course of action in more detail. Describing the course of action includes identifying the logical order of actions taken, to identify actors that have performed the actions and to identify extant or missing conditions for and results of an action (see figure 7). Many times a problem experienced could depend on a missing condition. Therefore, missing conditions should also be identified. We suggest that the analysis of the course of action is documented as a process diagram (e.g. Goldkuhl & Röstlinger, 2003). Then, the next activity is to identify actors. The aim of this exercise is to reveal which actors are involved and who are communicating to whom (see figure 8).



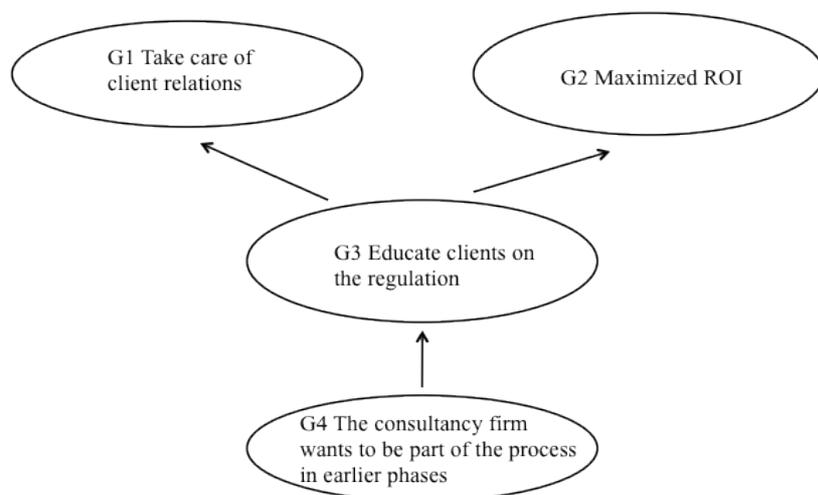
**Figure 8:** Example of actor diagram

Based on the descriptions of the problematic situation and the course of action problems are identified and more thoroughly described. Problems are related to each other in terms of cause and effect. That is, which problems (causes) are considered to create new problems (effects). The result of this exercise can be viewed as a problem hierarchy where the major problems occur at the bottom of the description (see figure 9). We suggest that the problem analysis is document in a problem diagram (e.g. Goldkuhl & Röstlinger, 2003).



**Figure 9:** Example of a problem diagram.

The aim of analysing the goals and values is to identify what the consultancy firm wants to achieve. We suggest that goal and values are identified by 1) interviewing the consultants and the managers and 2) from reading strategy documents. We suggest that goals and values are documented in a similar way as the problems. That is, the goals are structured into a goal hierarchy consisting of goals and means (e.g. Goldkuhl & Röstlinger, 2003). An example of a goal hierarchy is illustrated in figure 10. Goals residing on a lower level should be interpreted as means for reaching a goal on a higher level.



**Figure 10:** Example of a goal diagram

The last activity in this phase is articulating tactics. A tactic can be viewed as a type of action (or a group of actions) and the manner of conducting it in order to manage a problem. This activity includes both to identify existing and new tactics. Each existing tactic used should be assessed according to the problems and the goals described. A short summary of the effects of the tactics used should be described.

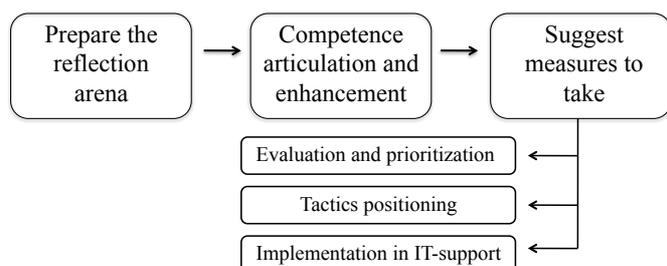
To suggest new tactics is a creative exercise. Inspiration for suggesting new tactics can be found in the problems, goals and effects from the use of existing tactics. Each new tactic should explain how it is expected to reduce problems and fulfil goals. The new proposed tactics are probably of different characters. Some of them may be less complicated while others may be more dramatic. A less complicated tactic might be immediately realized since the consultancy group themselves can decide about when and how to realize the tactic. Other tactics may need an approval from a higher organisational level. A comment is made about which level should decide about the realization of the tactic. A short summary of the expected effects for each tactic is described (see table 1).

**Table 1.** Articulation of tactics

<b>New tactic</b>	<b>Inform the client about the additional costs that arose due to the client did not act according to the regulation.</b>
Problems expected to be reduced	P1 – P5
Problems not expected to be reduced	-
Goals/values expected to be fulfilled	M1, M3, M4
Goals/values not expected to be fulfilled	M2
Decision level for realization	Management level
Summary of expected effects:	This tactic provides an incentive for clients to act according to the regulation.

### 5.3 Suggest measures to take

The phase of suggest measures to take consists of the activities evaluation and prioritisation, decision making and implementation in IT-support (see figure 11).



**Figure 11:** Activities in the phase of suggest measures to take

The first activity, evaluation and prioritization, includes scrutinizing the tactics suggested in the phase of competence articulation and enhancement. The tactics should be scrutinized according to: their realism (is it possible to realize?), when to implement (immediately or long-term) and degree of importance (make a prioritization). The output of this activity is an ordered list of the tactics.

The next activity is tactics positioning. A formal decision needs to be made if the consultancy firm should use the tactic or not. Since the tactics can be of different character and dignity, this activity includes assessing which decisions can be made by the IT-consultants themselves and which decisions need to be made at a higher organisational level. After a decision is made about which tactics should be used in the consultancy firm the descriptions of the tactics are implemented in a database. The implemented tactics descriptions should thereby be easy accessible for the IT-consultants.

## 6. Conclusion

This paper suggests a method for how to organise and conduct collective competence development among IT-consultants. The main message is to replace ad-hoc based and limited individual learning with a structured and reflected collective learning. The method consists of three phases: prepare the reflection arena, competence articulation and enhancement, and suggest measures to take. Each phase consist of a number of activities. These activities constitute a recommended process of how to do and suggest important concepts that should be discussed.

In order to convince presumptive method users that the method developed is reliable and usable we want bring forward some arguments. According to Goldkuhl (2004) practical knowledge (as a usable method) should be theoretically, empirically and internally grounded. Theoretical grounding relates the

new knowledge generated to other existing knowledge of theoretical character. Part of the theoretical grounding is the grounding of action knowledge in general explanatory theories. Empirical grounding has to do with the effectiveness of the application of knowledge. Internal grounding means an investigation of internal warrants such as values, categories and internal cohesion.

The suggested method is theoretically grounded since the development of several parts are inspired by and derived from existing theory (see section 2). As mentioned in section 2, our research approach has been inspired by Kolb's learning cycle. According to Marsick and Watkins (1993) learning by reflection is today widely accepted since that learning takes place as a result of critical reflection on one's own experiences rather than as a result of formal training in remembering of dull theories. Establishing a reflection arena is also line with theories of Dewey (1938). According to Dewey learning must address the notion of reflective thought. A reflective thought begins with an ambiguous situation that in some way represents a dilemma to an individual (Drejer, 2000). Reflecting upon own working procedures in the seminars was among the IT-consultants perceived as highly motivating and has stimulated individual reflection and learning.

Furthermore, the method has been successively developed based on empirical data. We have collected data from eleven different reflections themes and from two different consultancy firms. That is, the method development has been guided by real data gathered from discussions with consultants. The method can therefore considered being fairly empirical grounded. Finally the method is internally grounded in terms of that the concepts used are coherent and that different parts of the method relate to each other in a meaningful and logical way. There is a tight coupling between the three phases since each phase is delivering an input to the following phase. To conclude, based on these grounding processes and an evolvment through a number of iterations we perceive the method as useful.

We can conclude that the tool "shift between abstraction and concretion" has been very powerful. The tool has supported the IT-consultants in making abstractions of their own concrete experiences based on individual assignments. These abstractions have been used for transferring the competence to other assignments managed by colleagues. The movement from the concrete to the abstract is one important direction, but equally important is the movement from the abstract to the concrete. Concretions such as examples have been very useful in order to make an abstract formulation understandable. A shift in the levels of abstraction during problem solving has proved to be supportive and has been demonstrated by Wason & Johnson-Laird (1972). The two other tools "ask progressive questions" and "relate to what is known" have also been useful. Both tools have supported us in gaining more information and to increase the conditions for having active participants.

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## References

- Abma, T.A. (2003) Learning by Telling. Storytelling Workshops as an Organizational Learning Intervention, *Management Learning*, Vol 34 (2), pp 221–240.
- Argyris, C. and Schön, D. (1996) *Organizational learning II - theory, method and practice*, Addison-Wesley, Reading.
- Avison, D., Baskerville, R. and Myers, M. (2001) Controlling action research projects, *Information Technology and People*, Vol 14, No 1, MCB University Press.
- Baskerville, R. (2001) Conducting Action Research: High Risk and High Reward in Theory and Practice", *Qualitative Research in IS: Issues and Trends* (Trauth E M ed), Idea Group Publishing, London.
- Checkland, P. (1991) From Framework through Experience to Learning: the essential nature of Action Research, *Information Systems Research: Contemporary Approaches and Emergent Traditions* (Nissen H-E ed.), Elsevier, Amsterdam.
- Cronholm, S. and Goldkuhl, G. (2004) Conceptualising Participatory Action Research – Three Different Practices. *Electronic Journal of Business Research Methods*, Vol 2, Issue 2.

- Cronholm, S. and Goldkuhl, G. (2005) Communication Analysis as Perspective and Method for Requirements Engineering. *Requirements Engineering for Sociotechnical Systems*, (José Luis Maté & Andrés Silva eds.), Idea Group Inc.
- Cronholm, S. and Goldkuhl, G. (2006) Involving Novice Users in Document-Driven System Requirements Analysis. *Journal of Information, Information Technology, and Organizations*, Vol 1, pp. 131-149.
- Davison, R.M. Martinsons, M.G. and Kock, N. (2004) Principles of canonical action research, *Information Systems Journal*, Vol 14, pp 65–86.
- Dewey, J. (1938) *Logic: The theory of inquiry*, Henry Holt, New York.
- Ford, R. (2008) From situated practice to informed theory. Learning cycles and enabling structures, *The learning organisation*, Vol 14 (2), pp 126-148
- Høyrup, S. (2004) Reflection as a core process in organisational learning, *The Journal of Workplace Learning*, Vol. 16 (8), pp 442-454
- Kolb, D.A. (1984) *Experiential learning. Experience as the source of learning and development*, Prentice Hall, Englewood Cliffs, NJ.
- Kupers, W. (2008) Embodied “inter-learning” – an integral phenomenology of learning in and by organizations, *The Learning Organization*, Vol. 15 (5), pp 388-408
- Gadamer, H.G. (1976) *Philosophical Hermeneutics*. University of California Press. London.
- Goldkuhl G (2004) Design theories in information systems – a need for multi-grounding, *Journal of Information Technology Theory and Application (JITTA)*, Vol 6 (2) p 59-72
- Goldkuhl, G. and Röstlinger, A. (2003) The significance of workpractice diagnosis: Socio-pragmatic ontology and epistemology of change analysis, in proceedings of the International workshop on *Action in Language, Organisations and Information Systems (ALOIS-2003)*, Linköping University.
- Kolb, D.A. (1984) *Experiential learning. Experience as the source of learning and development*, Prentice Hall, Englewood Cliffs, NJ
- Lewin, K. (1946). Action Research and Minority Problems, *Journal of Social Issues*, 2, pp 34-46.
- Marsick, V.J. and Watkins, K.E. (1990) *Informal and Incidental Learning in the Workplace*, Routledge & Kegan Paul, London.
- Pauleen, D.J., Corbitt, B. and Young, P. (2007). Discovering and articulating what is not yet known, *The Learning Organization*, Vol 14, No 3, pp 220-240.
- Revans, R. (1982) *The Origins and Growth of Action Learning*, Chartwell-Bratt, Bromley.
- Senge, P.M. (1990) *The Fifth Discipline*, Doubleday, New York, NY.
- Strauss A. and Corbin, J. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, Sage Publications, Thousand Oaks, CA.
- Susman, G.I. and Everett, R.D. (1978) An assessment of the scientific merits of action research, *Administrative Science Quarterly*, Vol 23 (4), pp 582-603.
- Sveiby, K. (2001) What is knowledge management?, [online], <http://www.sveiby.com/articles/>.
- Wason, P.C. and Johnson-Laird, P.N. (1972) *Psychology of Reasoning: Structure and Content*, Cambridge, MA: Harvard University Press.