

Unlocking the knowledge of others: **Knowledge elicitation in practice-led design research**

Introduction

Whilst on the surface my research deals with issues regarding learning craft skills, on a deeper level it addresses communication problems that can be encountered in many areas of design and reveals methods for unlocking the knowledge of others. Whether negotiating with other members of a design team, soliciting information from different users or consulting expert opinion, tapping into the unspoken knowledge of other people has the potential to reveal a richer and more complex picture than taking their spoken word at face value.

In my doctoral research (Wood 2006) I developed methods for eliciting knowledge: adapting recognised techniques to provide both an environment and forms of questioning that were capable of uncovering and recording a rich depth of knowledge. The elicited knowledge in its raw form was the observational video of the carefully stage-managed interviews, but these were open to multiple interpretations as my understanding developed. The interpretation was assisted by a process of event logging that provided a written summary for each session and helped to set an agenda for the next.

The writings of Michael Polanyi and Donald Schön led me to understand that transmission of knowledge in this context occurred by the person being questioned seeking to find explicit concepts to articulate their tacit knowledge. Such elicited knowledge could not be seen as right or wrong, but open to many interpretations and the person receiving the knowledge needed to test that their understanding matched the intended meaning through a process of reciprocal reflection. The meaning negotiated between the two parties formed a bridge across the knowledge gap between them and enabled one to appreciate the tacit knowledge of the other.

I would speculate that the understanding of craft learning and the model of apprenticeship I have developed could have applications not purely in the immediate area of the crafts, but also in any area where a tacit understanding needs to be developed.

Practical work

The central problem for my research has been, from the perspective of a designer of interactive media, how to understand and transmit the expert knowledge of skilled craftspeople, with particular interest in craft skills that may be disappearing even though there are people interested in preserving those skills and learning them. For example, many traditional rural skills are essential for preserving our heritage of buildings and other aspects of rural life, but there are few people left to pass on the knowledge and learners do not have the time for traditional apprenticeships (Heritage Lottery Fund 2002).

My main aim has been to develop a body of knowledge to assist with the development of interactive learning materials that support learning of craft skills. In this research I have used a practice-led approach to explore the craft skills of both expert and novice

practitioners in the fields of traditional bowl turning and clog making. In my first practical project I experimentally used a systems-orientated approach to explore the tacit knowledge within the practice of an experienced traditional bowl turning practitioner. This involved a series of interviews and observations to elicit craft knowledge from him, using a low-fidelity prototype learning resource as a means of representing that knowledge, and observing learners applying the knowledge through using the resource to support their learning.

I concluded that, whilst elicitation via purposeful interviews and observations provided much useful material, it triggered a defensive attitude in the craft practitioner that limited the knowledge elicited. Involving the practitioner in the subsequent work with the learners and the developing learning resource revealed more, and this led to an adaptation of the techniques for the following elicitation session.

In the second project I undertook a series of video-recordings with a traditional clog maker during which I developed a less intrusive elicitation technique based on increasingly focussed observation and interviewing. To help with contextualisation, the interviews were nearly all based in the workshop whilst the craftsman was undertaking his regular practice. The process of gradual immersion enabled me to come to a wide-ranging understanding of the craft without the difficulties encountered in the first, tentative stage of practical work, showing that this stage was effective in refining and developing elicitation methods.

The nature of craft knowledge

Re-examination of the outcomes of this practical work through a review of the writings of Michael Polanyi and Donald Schön provides insight into the nature of craft knowledge and the ways in which it can be transmitted.

Michael Polanyi (1966:6) described the difference between the skill of the novice and that of the expert as “a gap to be bridged by an intelligent effort”. He only viewed this from the perspective of the expert explaining, “Our message had left something behind that we could not tell, and its reception must rely on it that the person addressed will discover that which we have not been able to communicate” (ibid:6). The onus in his terms was on the novice to understand through intelligent effort.

Donald Schön (1987:101) similarly referred to “an apparently unbridgeable communication gap” between novice and expert, however he suggested the solution was in “reciprocal reflection-in-action” implying that the expert needed to make as much effort as the novice in the process of bridging it. The expert needed to view the novice’s actions in response to instruction as revealing the meaning they had constructed for that instruction. They needed to observe the novice’s actions reflectively and respond back until they felt there was a convergence in meaning (ibid:104).

My understanding of this process is illustrated in Figure 11. At the top there is the personal knowledge of the expert practitioner and below is that of the novice who is seeking to bring their craft skill at least up to the level of the expert. Initially, however, there is a ‘knowledge gap’ between the two where the novice struggles to imitate the expert’s practice, being unable to interpret their own observations. To assist, the expert

attempts to articulate their tacit knowledge through use of explicit concepts. These might be adapted and refined through reciprocal reflection until the novice and expert are in accord, the novice gains experience which enables them to dwell in the actions of the expert, and the gap is bridged.

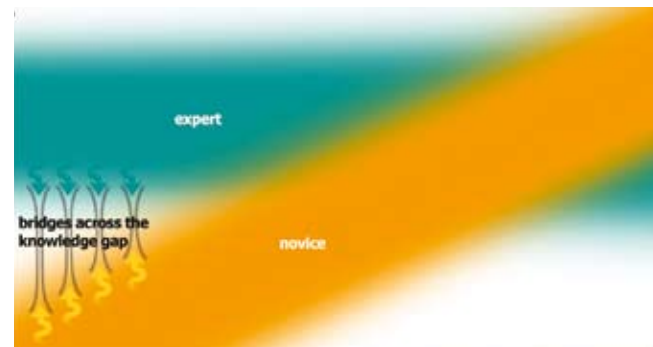


Figure 1: Bridging the knowledge gap between craft expert and novice.

My role in this version of knowledge elicitation has been both to encourage the articulation, helping negotiate reciprocal reflection between expert and novice, and to design the ‘bridges’: the explicit concepts that could help a novice access the expert’s tacit knowledge.

The concepts of ‘true’ and ‘false’ cannot be applied to such elicited knowledge and in their place ‘helpful’ and ‘unhelpful’ are more appropriate. The bridges are not necessarily the way to undertake the task, but a way that the expert feels to be helpful to get started. As their skill develops, the learner might find some of these to be the foundations upon which their skill is built, but some might be just stepping-stones on the way. Deciding which is which requires the learner to increasingly learn from experience, the feedback from their own actions, and this is achieved through developing the ability to think and act reflectively. This is where it is important that as much of the material generated during elicitation as possible should be also made available in the learning resource. It should retain its original context wherever possible so more advanced learners can form their own judgement and make their own interpretation as their skill level advances.

As the learner progresses they are increasingly likely to be influenced by other practitioners, both within their own craft and other related crafts. This was traditionally the journeyman phase where, upon completion of their apprenticeship, they would travel to work away from the area where they had learned their skill, both gaining the benefit of other craftsmen’s skills and spreading their knowledge (Epstein 2004). Here too they might experience a knowledge gap (see Figure 2) that might need bridging as they develop ways of communicating outside their direct sphere of experience:

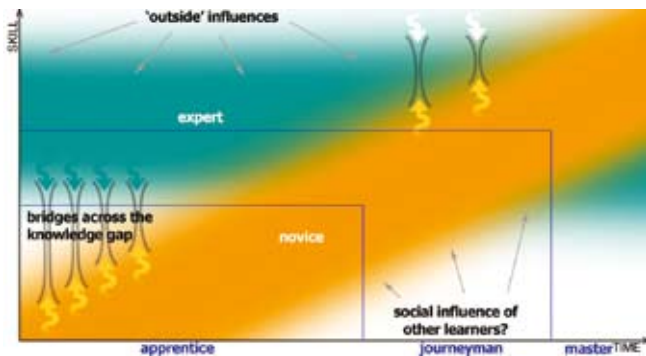


Figure 2: phases of a novice's learning and possible routes of received knowledge.

I would speculate that this understanding of craft learning and the model of apprenticeship I have developed could have applications outside the area of the crafts, in any area where tacit understanding needs to be developed. It leads people to attend to the tasks and activities of professional work, not purely as a means to a practical end, but as bridges to a richer understanding of the practice.

Nicola Wood

References

- EPSTEIN S R (2004). *The generation and transmission of technical knowledge in pre-modern Europe, c.1200-c.1800*. Proceedings of the Global Economic History Network annual conference, Leiden, The Netherlands available at <http://www.lse.ac.uk/collections/economicHistory/GEHN/GEHN%20Conference%204%20Papers.htm> accessed January 2005.
- HERITAGE LOTTERY FUND (2002). *Sustaining our living heritage - skills and training for the heritage sector*. Research report, http://www.hlf.org.uk/dimages/sustaining_heritage.pdf, accessed Feb 2002.
- POLANYI M (1966) *The Tacit Dimension*. Peter Smith, Gloucester MA [1983 edition].
- SCHÖN D A (1987). *Educating the reflective practitioner: toward a new design for teaching and learning in the professions*. Jossey-Bass, London.
- WOOD N (2006). *Transmitting craft knowledge: designing interactive media to support tacit skills learning*. PhD Thesis, Sheffield Hallam University, available from www.nicolawood.net

(Endnotes)

- 1 Whilst this may look like a graph, it is not intended in any way as a mathematical representation, but merely as an illustration of the concept.