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## ► To cite this version:

Lorène Prost, Marianne Cerf, Pascal P. Beguin. Artefact based learning laboratory: mirroring and questioning issues while designing a cognitive tool. Activity 2008, Activity analyses for developing work, University of Helsinki [Helsinki]. FIN., May 2008, Helsinki, Finland. pp.1-2. hal-02819139

**HAL Id: hal-02819139**

**<https://hal.inrae.fr/hal-02819139>**

Submitted on 6 Jun 2020

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# ARTEFACT BASED LEARNING LABORATORY: MIRRORING AND QUESTIONING ISSUES WHILE DESIGNING A COGNITIVE TOOL

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This communication aims at presenting and discussing a developmental intervention performed during the design process of an artefact. We name our method “artefact based learning laboratory”. The term “laboratory” refers to the conditions needed to perform the intervention within an organisation. The term “artefact based learning” means that we organized the design process as a dialogical mutual learning process between users and designers (Béguin, 2003). The artefact here is as a software prototype meant to enable the analysis of large data sets collected on field experiments which are set up to assess wheat cultivar performance against various environmental conditions.

We performed this intervention to allow boundary crossing among participants: those who put the prototype into shape, e.g. ourselves (ergonomists) and some agronomists, and those involved in wheat cultivar assessment (breeders, cultivar registration officers and advisers). The developmental issues were not only on the side of the potential users, but also on the side of the designers of the prototype: the aim was also to question the modelling assumptions underlying the design of the prototype. Being involved in both design and developmental intervention, we kept a reflective stance by collecting data on the process itself and sharing it in a community of practitioners handling similar interventions.

The prototype is central in our artefact-based learning laboratory as it is used by the interventionists to perform both mirroring and questioning. We will show how it supported mirroring as the participants used it against their own data sets, e.g. how its use allow the identification of problems and disturbances in the cultivar assessment activity. We will also show how it allowed questioning among participants during collective debriefings organized by the interventionists owe to the visualisation of some outputs of the analysis which a given user saw as irrelevant in respect of his(her) expertise. .

Other instruments were also important for mirroring and questioning. For instance the registered debriefings sessions were material used to enable agronomists to question their modelling activity and to imagine new techniques for collecting and analyzing data to assess cultivars. So instrumentality is central in the artefact-based learning laboratory. We will discuss how each mediation tool is used to reflect on and eventually expand engineering activity or cultivar assessment one. Meanwhile, we will point out that this central role of instruments is embedded in the ontological property of human action, e.g., what Rabardel & Béguin (2005) called the constructive part of action. We will also highlight how these tools enable dialogism in a design process.

Finally, we will discuss the “nomad” dimension of this artefact-based learning laboratory. Nomad means that also meetings took place at the designers’ workplace, others were organised at the users’ one. As well the software had been implemented in each working place, enabling the participants of the laboratory to use it during their working time.

Béguin, P. (2003). Design as a mutual learning process between users and designers. *Interacting with Computers*, pp 15/5, 709-730.

Rabardel, P., Béguin, P. (2005). Instrument Mediated Activity: from Subject Development to Anthropocentric Design. *Theoretical Issues In Ergonomics Science*. Vol.6(5), pp 429-461.