

**A phenomenological study of lifelong learning: implications for the design of a personal,  
lifelong learning resource**

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Other submitted papers:

S. Anastopolou and M. Sharples “SALL: Designing a System to support Academics’ Lifelong Learning”

L. Masterman and M. Sharples “A theoretical framework for designing software to support causal reasoning skills in history”

J. Meek and M. Sharples “A lifecycle approach to the evaluation of learning technology”

M. Sharples, D. Corlett, and O. Westmancott “A Systems Architecture for Handheld Learning Resources”

## **A phenomenological study of lifelong learning: implications for the design of a personal, lifelong learning resource**

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Research in technology for (lifelong) learning currently focuses on the areas of open, distant and resource-based learning, educational software re-usability, collaborative knowledge construction, and cognitive tools. The lifelong learner is viewed from different perspectives: as a student, an information seeker, a member of a community of practice, a problem-solver, etc. Similarly, research in theories of learning has proposed disparate views of learning: learning as the performance of learning activities; as conversation; as the regulation and adaptation of behaviour; as increasing participation in communities of practice; etc.

A lifelong learner, however, will at some point in life undertake all these roles and in the process will construct individual, personal knowledge. It is our contention that lifelong learners need assistance with creating and managing this knowledge. A learner should be viewed not as being confined to a fixed time or location, but as a mobile member of many continually changing and interleaved communities and technological support should be designed accordingly.

This has been the aim of the HandLeR (Handheld Learning Resource) project [1, 2]. This paper reports on an investigation within the HandLeR framework, which is aimed at the design of a general purpose, lifelong learning support tool for adults. Sharples [3] proposed general requirements for HandLeR-type devices based on a theoretical account of lifelong learning. In this study we take a different approach: we are seeking to ground the system's requirements on a model of lifelong learning which originates in a theory-informed phenomenological study of learning.

The study employed the "diary: diary-interview" method for data collection and applied the principles of grounded theory for data analysis. Ten diaries were distributed to adults whose occupations were "learning intensive", or who were involved in continuing education programmes for non-professional purposes. The participants kept the diaries for 4 days, noting down, for each learning experience they had, facts about the time and place, the objects and resources used, the people involved, the problems encountered, and their background objectives. This was followed by an in-depth interview focused on the diary entries.

We report the findings from the pilot study, which was conducted separately to investigate the appropriateness of the study methods. Analysis of data from the pilot study found that learning could be organised in 3 levels. Level 1 contains the distinct learning activities performed by the learner, such as informal discussions, reading the news, and attending to seminars. In level 2, learning activities are grouped to form a learning experience. Criteria like the subject, time and location are used for the grouping. In level 3, experiences are grouped into a learning project.

The study also found that learning experiences have a number of characteristic attributes:

1. *Duration and timetable locales*: when and for how long does the experience take place.
2. *Topic and relevant information*: what is the topic of learning and what is the relevant information that is presented to the learner.
3. *Context*: the successive organisational, physical and social contexts in which the experience takes place.
  - 3.1. Organisational context: the organisational setting (e.g. home, work, entertainment) and the activity context (e.g. problem solving, attending to a seminar, watching a film, pursuing general interests).

- 3.2. Social context: the social setting, including *people* other than the learner who are involved in the activity, and the rules that guide the social interaction.
- 3.3. Physical context: the physical setting (e.g. house, office, cinema) which is equipped with furniture (desk, sofa, cinema seating) and with *objects* that the learner uses (blackboards, books, computers, phones).
- 4. *Conclusions, understandings, and feelings*: the result of the learner's interpretations of meanings, and reflections upon the experience.
- 5. *Purpose and outcomes*: what the learner expects to achieve (aims, objectives and goals) and what (s)he actually achieves.
- 6. *Difficulty and problems*: what are the expected and unexpected difficulties and problems that the learner is faced with during, or as a result of, the experience.

Attributes 1-3 describe the circumstances of the learning practice, allowing for the situational nature of learning to unfold. Attribute 4 is a result of the learner's interpretations and is related to what the learner makes out of the experience, of his/her learning. Attribute 5 constitutes the factor that informs the management of learning. Attribute 6 describes the breakdowns that may occur during a learning experience.

This classification exposes 3 operational levels in a learning experience: the situations level in which the learner acts, the conceptions level in which the learner interprets, and the management level in which the learner plans and manages his/her learning. The connecting link between the 3 levels is the learner. The sequence in which the learner visits the 3 levels is not fixed: (s)he oscillates between the 3 levels until (s)he reaches an agreement between purposes and outcomes, through a continuous regulation of actions and plans. In this process, the learner is transformed through the changes that occur in the conceptions level. Breakdowns may occur in any of these levels or in the transition from one level to another.

Based on the above, we can conclude that the system must aid the learner with the following:

- 1. Synthesise serendipitous learning, plan deliberate learning, and manage semi-structured learning
  - 1.1. Organise learning activities into experiences and/or plan activities for experience
  - 1.2. Associate experiences with learning projects and/or plan experiences to complete projects
- 2. Act in changing learning situations:
  - 2.1. Regulate behaviour according to the organisational context
  - 2.2. Interact with objects in the physical context
    - 2.2.1. Discover, access, employ and (physically and mentally) organise objects
  - 2.3. Interact with other people in the social context
- 3. Interpret meanings communicated by other people and mediated by objects; organise and employ knowledge and skills which will enable the performance of additional learning tasks
- 4. Regulate situated actions to satisfy learning objectives and inform the calibration of objectives with the outcomes of actions.
- 5. Resolve any breakdowns that arise during, or because of, learning.

The analysis of the main study is close to completion. The presentation will describe the complete set of requirements and the current state of the system design.

- [1] Sharples, M. (1999). The Design of Personal Technologies to Support Lifelong Learning. *Proceedings of CAL '99 Conference on Computer-Assisted Learning*, London, p. 35.
- [2] Sharples, M. (1999). Educational Technology: from Teaching Machines to HandLeRs. *Ingenia: The Informative Quarterly of the Royal Academy of Engineering*, 1(2), pp. 29-32.
- [3] Sharples, M. (2000). The Design of Personal Mobile Technologies for Lifelong Learning. *Computers and Education*, 34(177-193).