

A lifecycle approach to the evaluation of learning technology

Julia Meek and Mike Sharples
The University of Birmingham

Paper presentation for CAL 2001

Contact author:

Julia Meek

Postgraduate Student Educational Technology Research Group

School of Electronic and Electrical Engineering

The University of Birmingham

Edgbaston

Birmingham B15 2TT

j.meek@bham.ac.uk

Tel: +44 121 414 2933

Fax: +44 121 414 4294

Other submitted papers:

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

L. Masterman and M. Sharples “A theory-informed framework for designing software to support reasoning about causation in history”

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

G.N. Vavoula and M. Sharples “A phenomenological study of lifelong learning: implications for the design of a personal, lifelong learning resource”

Key topic = Continuity and Progression

A lifecycle approach to the evaluation of learning technology

Julia Meek and Mike Sharples

The University of Birmingham

This paper describes research currently in progress. The aim of the research is to devise an effective framework for a lifecycle evaluation of computer aided learning material. The Evaluation Lifecycle Framework (ELF) is one of a series of theoretical and practical tools (personas, decision chart, evaluation guidelines booklet) to assist software and educational designers, teachers, and policy makers in the evaluation of new technology. The objective in developing a series of tools is to enable stakeholders to undertake a mutually informed evaluation which will lead to a process of reflection and change.

Learning technology, like all software, has a lifecycle. The lifecycle moves from design to selection and integration into a teaching situation. The evaluation of learning technology has tended to be isolated, with specific investigations confined to particular phases of design and deployment. Thus, during the design phase a developer may undertake laboratory and field studies. At a separate stage an educator may undertake a predictive evaluation, to inform the selection of a piece of software. Evaluation in isolation fails to take into account the learning technology lifecycle. It also, fails to benefit from feeding the outcomes of one stage of the evaluation process into the next stage or back to an earlier stage.

A key objective in presenting a complete picture of the phases of evaluation is to stress that rather than being an afterthought, evaluation of learning technology should be an integral aspect of the learning technology lifecycle. The primary objectives of this research are:

- To develop an integrated lifecycle approach to the evaluation of learning technologies
- To assess the benefits and costs of a lifecycle approach to evaluation
- To investigate the methodologies for conducting evaluations within the learning technology lifecycle

- To provide guidelines to enable an evaluation to be undertaken
- To present a mechanism through which the outcomes of the evaluation can be effectively communicated to other stages of the lifecycle

The ELF will enable a user wishing to undertake an evaluation, to place themselves in the evaluation lifecycle and determine the most appropriate evaluation method to adopt.

To help ELF users gain an insight into the primary concerns of the key stakeholders in the lifecycle, a series of personas have been developed. Cooper [1], proposes that to design effective software the design team should develop a series of personas, that represent the end users of the system. The personas are fictional representations that provide a mechanism for the users to be aware of the issues of interest to stakeholders in the process. We are using broadly based personas to help all involved to identify their part in the lifecycle and to recognise the needs of other possible stakeholders.

Having identified themselves with the personas, the users then move on to a decision chart. This assists them in identifying the reasons for undertaking an evaluation and the methods they could adopt.

The decision chart refers them to a section in the Evaluation Guidelines Booklet, which provides a detailed description of:

- What is involved in undertaking the evaluation method
- The phase in the lifecycle during which the evaluation is undertaken
- Details of positive and negative factors to be considered

The tools described above enable the ELF user to gain an overview of the stakeholders in the evaluation process and an insight into the methods that could be adopted at different stages of the lifecycle. Throughout this process, the user refers to the ELF, which presents the phase of the lifecycle: design, selection, integration and reflection, evaluation methods that could be utilised in a specific phase and stakeholder perspectives. A key element in the framework is the communication of evaluation information forwards and backwards in the lifecycle. For example, the outcomes of an

evaluation during the design phase may be beneficial in assisting an educator to integrate the learning technology into a teaching situation. The outcomes of an evaluation into the use of the technology in a teaching situation may be of interest to the designer in refining the learning material.

An initial pilot study of the ELF has been undertaken in the evaluation of the Personal and Mobile Communications Systems CD-ROM. This software is integrated into the teaching of a module on the MSc course in Communications Engineering at The University of Birmingham. The study provided an insight into the design and integration phases of the evaluation lifecycle: it identified the stakeholders in the process, the techniques that can be adopted to evaluate learning material during these phases and the importance of communication as a process in the lifecycle.

A key outcome of the pilot study is that the ELF tools are undergoing further development, they will then be utilised in a study that follows a piece of learning technology through the complete lifecycle. The tools will enable evaluations to be conducted throughout the lifecycle. Effective communication throughout the process will be critical to how the evaluation findings might be used to improve the learning material. Throughout this process we will be evaluating the effectiveness of the tools, and whether they provide a practical and easy to use way into evaluation for the key stakeholders in the process.

References

[1] Cooper, A., *The Inmates are Running the Asylum*, Indianapolis, Indiana: SAMS, 1999.