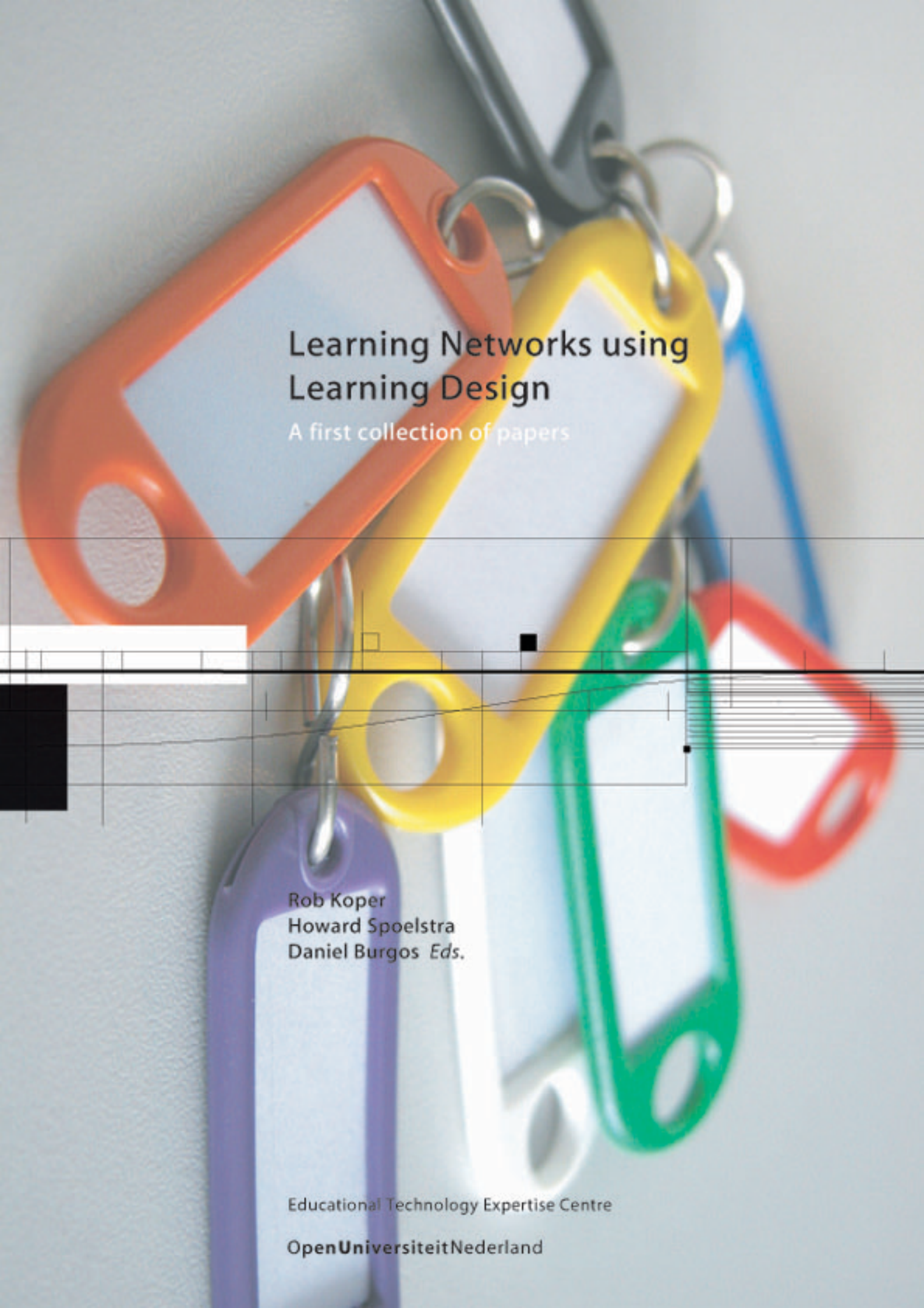

Learning Networks using Learning Design

A first collection of papers

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Introduction

Rob Koper

In this volume you will find a selection of recent papers that will inform you about the state of the art in the Learning Networks Programme of the Educational Technology Expertise Centre of the Open University of the Netherlands. This R&D programme is titled “Learning Networks: connecting people, organizations, autonomous agents and learning resources to establish the emergence of effective lifelong learning” and runs for a period of 5 years (2003-2008).

It is the ultimate, long term *aim* of this programme to develop a new approach towards *lifelong learning*, by searching for a coherent set of learning technologies with the help of which one may establish *learning networks*. A learning network is defined as a community of persons who create, share, support and study learning resources ('units of learning') in a specific knowledge domain.
Learning Networks use ICT networks to connect people, institutions, learning resources and autonomous agents in such a way that the human network becomes self-organized and will give rise to effective lifelong learning. These networks are considered to be the future direction for improving the quality of, and access to learning facilities for students, workers, and citizens at regional, national and international levels.

Learning Networks will integrate a variety of current approaches to learning and learning technologies, and will try to establish learning related interactions between distributed actors and resources that are not possible today in an efficient manner (e.g. decrease the workload of teachers). Another important aspect of learning networks is the elaboration of the paradigm long since advocated but seldom followed through, to put the learner centre stage in the learning process. In a Learning Network learners have the same possibilities to act, that teachers and other staff members have in regular, less learner centred educational approaches. Learners can create their own learning activities, can build their own learning plans, can share their learning activities and their learning plans with peers and institutions. However, not in all circumstances this is considered to be a sensible approach. Also teachers, institutions and content providers can provide learning resources, learning activities and learning plans for learners to use in a learning network. Furthermore, it is possible to automate some processes by letting autonomous agents take over some traditionally human tasks and support learners and support staff. In a learning network these approaches will be mixed, they can be balanced differently according to the actual preferences of users, the complexity of the domain, and the preferred pedagogical model.

In the programme four themes for projects are defined, and in each theme different projects are (or will be) defined (Table I). Theme 2 is directly related to our previous programme (1998-2002) that concentrated on 'Competency-based Learning in an Electronic Learning Environment'. One of the outcomes of this programme was the Educational Modelling Language (EML). EML has been the input for the IMS Learning Design specification. Both languages model units of learning (courses, workshops and any other learning event) in an interoperable and re-usable way. The other themes are relatively new.

In this bundle you will find articles from all the themes in the programme. However, it must be said that most of them concentrate on IMS Learning Design or EML and on the requirements analysis for Learning Networks. We plan to update this collection every year. At the end of 2008 we will write a published book about Learning Networks to conclude the Programme.

Table I. Themes, Core Technologies & Theories, and Current Projects in the Programme.

No	***Theme***	***Core Technologies & Theories***	***Current Projects (2004)***
1	Learning Networks Integrated	- Complexity theory - ICT networks/ infrastructures	- Learning Networks Integrated
2	Make, Use and Reuse Units of Learning (including learning resources and assessment)	- IMS Learning Design - Agent Technologies - Authoring Tools - Players - Repositories - Learning Objects	- ASA:2 Agents for Support Activities - Alfanet (EU) - Unfold (EU) - E-LEN (EU) - Telcert (EU) - Surf Six (Surf) - CopperCore - JISC SBLD
3	Learner Positioning in Learning Networks	- Latent Semantic Analysis - Assessment/Testing theories and applications	- Development and Validation of a formal semantic framework for testing. - Positioning in Learning Networks
4	Navigation in Learning Networks	- Indirect Social Interaction (Stigmercy) - Learner Support	- ROMA: ROad MApping

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The Learning Design Specification. Introduction

Daniel Burgos

Learning technologies offer new opportunities to meet the rapidly growing demand for new, constructivist ways of learning. They have the potential to act as catalysts for more effective exchange and reuse of learning objects to enable personalised learning

In this way, IMS LD Specification has been suggested as a flexible way to represent and encode learning materials, especially suited to online and web-based learning while neutral to the pedagogy that is being applied

IMS Learning Design specification is based on the analogy of a play, with roles and acts. The IMS Learning Design Best Practice and Implementation Guide states that the core concept of the Learning Design Specification "is that regardless of pedagogical approach, a *person* gets a *role* in the teaching-learning process, typically a *learner* or a *staff* role. In this role he or she works toward certain *outcomes* by performing more or less structured *learning* and/or *support activities* within an *environment*. The environment consists of the appropriate *learning objects and services* to be used during the performance of the activities. Which role gets which activities at what moment in the process, is determined by the *method* or by a *notification*."
It thus aims to be descriptive, or expressive, not prescriptive.
There are three levels of LD:
-Level A, this is the simplest form and covers the activities, roles, acts and environment used in a learning design
-Level B, this introduces the notion of properties and conditions. It is at this level that LD becomes useful, as it allows what-if conditions and storing properties (such as student performance) to allow for multiple paths through learning material
-Level C, this supports notification or messaging between system components, which allows for a more dynamic workflow and personalisation.

The major requirement for the development of a LD Specification is to provide a containment framework that uses and integrates existing specifications, and can represent the teaching-learning process (the LD) in a UOL, based on different pedagogical models – including the more advanced ones - in a formal way
The LD specification, following common IMS practice, consists of:

(a) a conceptual model that defines the basic concepts and relations in a LD
(b) an information model that describes the elements and attributes through which a LD can be specified in a precise way, and
(c) a series of XML Schemas (XSD) in which the information model is implemented (the so-called 'binding')
(d) a Best Practices and Implementation Guide (BPIG)
(e) a binding document and example XML document instances that express a set of learning requirement scenarios

LD has clearly reinvigorated interest in standardised approaches to online learning and discussion has reflected dissatisfaction with the more monolithic approaches inherent in using most VLEs

With these following articles we show some aspects of Learning Design used from the scope of a Learning Network. We talk about Educational Modelling Language, as base of the specification, and its migration to Learning Design. Also about representing and implementing LD

Content for this section:

- Modeling units of study from a pedagogical perspective. The pedagogical meta-model behind EML
- Representing the Learning Design of Units of Learning
- Educational Modelling Language: Modelling reusable, interoperable, rich and personalised units of learning