RESPONSIVE OPEN LEARNING ENVIRONEMENTS

ROLE

Structuring Skills and Competences in the Context of Knowledge Domains, Learning Tools, and Self-regulated Learning Environments

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SEVENTH FRAMEWORK PROGRAMME

TUG

Contents

1. Introduction
2. Psycho-Pedagogical Integration Model
3. Learning Activity Model
4. Skill Model
5. Learner Model
6. Recommendation
7. Outlook

1. Introduction

Project Information

Acronym: Title:	**ROLE** **Responsive Open Learning Environments**
Funded under: Theme / Call: Objective: Funding Scheme:	Seventh Framework Programme (FP7) ICT-2007, Challenge 4, Call 3 (ICT2007.4.3) Digital libraries and technology-enhanced learning Collaborative Project (CP) / Integrated Project (IP)
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The British Institute for Learning and Development (BILD)	UK
Shanghai Jiao Tong University (SJTU)	China
Centre for Social Innovation (ZSI)	Austria
U&I Learning NV (UIL)	Belgium

ROLE Vision and Objectives

ROLE Vision:

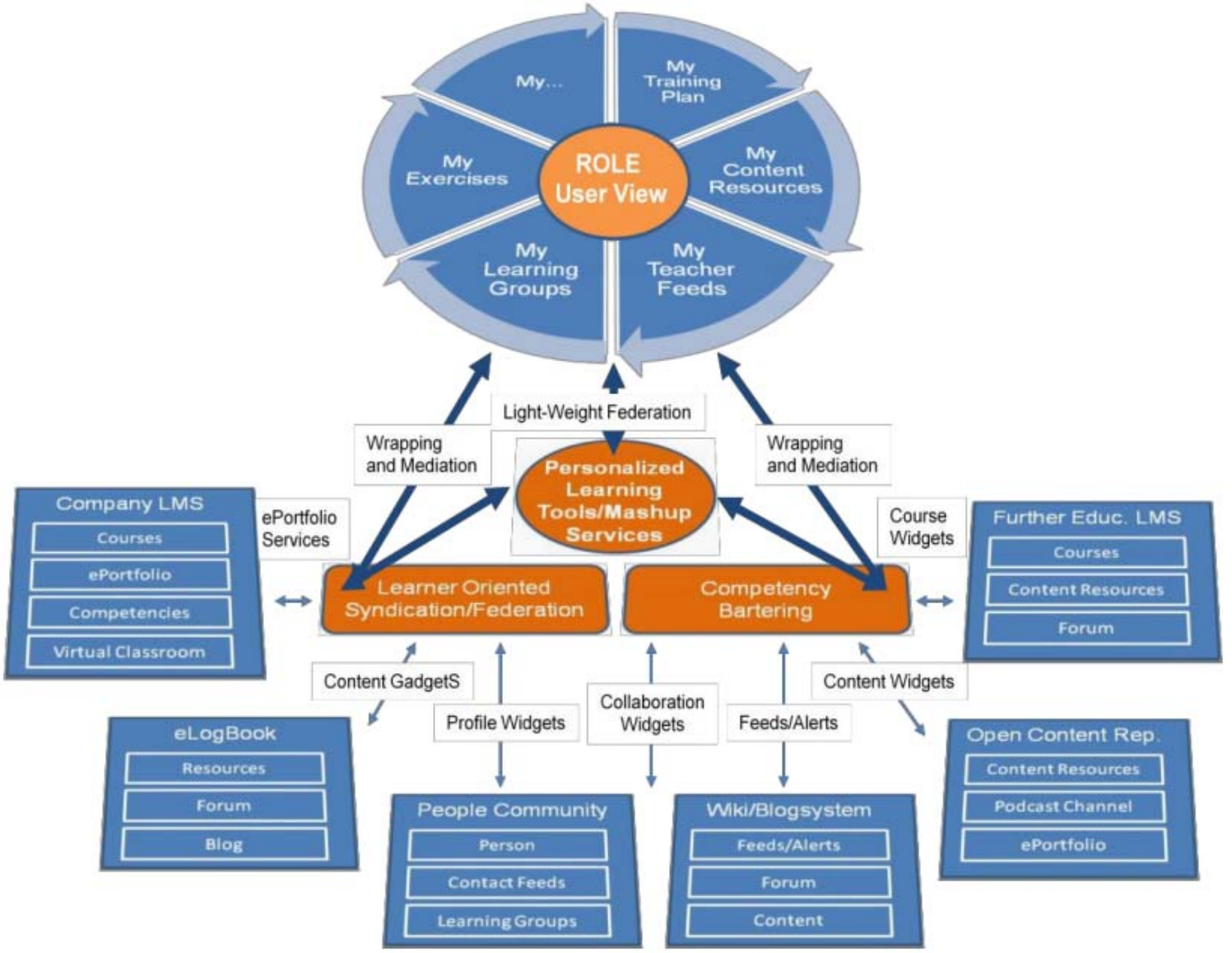
- Empowers the learners to build their own responsive learning environment
- Responsiveness: Awareness and reflection of the own learning process
- User-centred: Individually adapted composition of their own learning environment

5 Objectives:

- RO1: supports the individual assembly of accessible learning services, tools and resources in responsive open learning environments (ROLE)
- *RO2: researches and develops a psycho-pedagogically sound framework for supporting the individual composition of learning services in ROLE*
- RO3: creates new engineering methodologies to enable significant contributions to ROLE from learner and developer communities from outside the project consortium
- RO4: develops and sustains an evaluation methodology to systematically demonstrate the effectiveness of different ROLE in test-beds focused on the transition of learners
- RO5: exploits and disseminates the ROLE results to wider communities and markets

Responsive Open Learning Environments. (October, 2008). Annex I – "Description of Work", p. 6

User View on ROLE



Responsive Open Learning Environments. (October, 2008). Annex I – “Description of Work”, p. 7

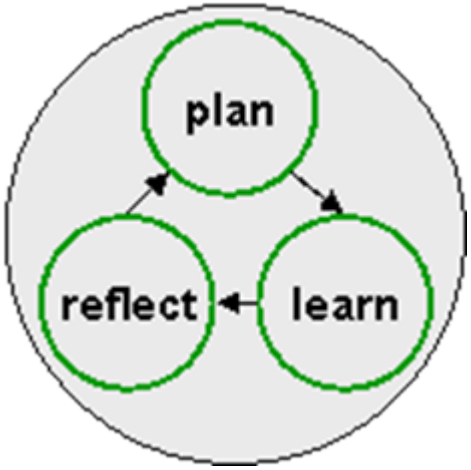
2. Psycho-Pedagogical Integration Model

Psycho-Pedagogical Integration Model

Self-regulated learning (SRL), (Zimmerman, 2002; European Schoolnet, 2008):

- Forethought phase: → „plan“
  meta-cognitive & self-motivation processes
- Performance phase: → „learn“
  self-control & self-observation processes
- Self-reflection phase: → „reflect“
  self-judgement & self-reaction processes

→ Key processes of self-regulated learning:
goal setting, self-monitoring, self-evaluation, task strategies, help-seeking, time management (Kitsantas, 2002; Dabbagh & Kitsantas, 2004)

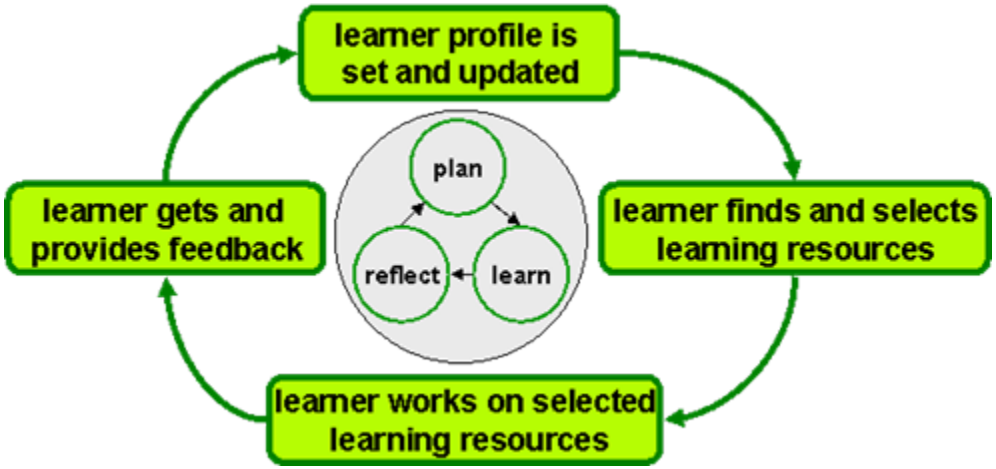


Learning Process Model

- Learner model (profile) is set and updated
- Learner finds and selects learning resources
- Learner works on selected learning resources
- Learner gets and provides feedback

Properties

- cyclic property
- implicit recursive

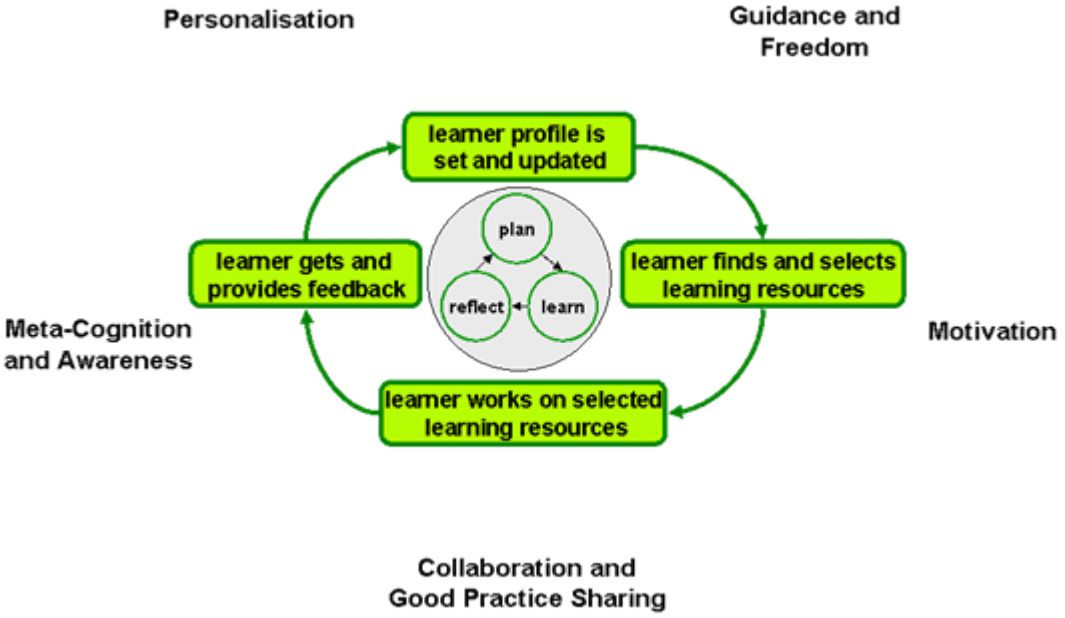


Psycho-Pedagogical Integration Model

Principles of ROLE

- Guidance and Freedom
- Motivation
- Meta-cognition
- Collaboration and Good-practice sharing
- Personalisation and Adaptability

→ Strongly related to components of self-regulated learning:
Cognition, Meta-cognition,
Motivation, Affects, Volition
(Efklides, 2009)



3. Learning Activity Model

Learning Activity Model

Activities in ROLE are the foundation for the four learning process phases of the learning process model:

- profile set and update activities
- searching and selecting activities
- learning and assessment/self-assessment activities
- feedback processing and providing activities

The ROLE activity model consists of three different types of activities:

- <u>Domain learning activities:</u>
  - Domain learning activities are activities which are carried out if a learner learns a domain topic e.g. such as reading a text about a domain.
  - Domain learning activities can be classified by the 8 learning events (8LEM, Leclercq & Poumay, 2005), activities, like the learner is imitating, learner is exercising, learner is receiving, learner is exploring, learner is experimenting, learner is creating, learner is self-reflecting, learner is debating.

Learning Activity Model

The ROLE activity model consists of three different types of activities:

- Tool learning activities:
  - Activities which are carried out by the learner
    - to learn the usage of a special tool for learning
    - for learning with a tool per see
  - e.g. learning a tool through operating 8LEM (Leclercq & Poumay, 2005) activities or learning with a tool in a learning event.
- Self-regulated learning activities:
  - Activities which are operated
    - for self-regulated learning
    - for learning self-regulated learning
  - e.g. performance of key processes of self-regulated learning (Kitsantas, 2002; Dabbagh & Kitsantas, 2004): goal setting-, self-monitoring-, self-evaluation-, task strategies-, help-seeking-, time management activities.

Learning Activity Model

Activity types are hardly operated in the pure form → mixed forms of activities.

Every activity consists with a different percentage of a SRL-, domain and tool learning activity part.

Learner performs in every of the four learning process phases special activities → self-regulated learning activities are operated in every phase but in each phase some of them can be dominating.

The performance of activities will be supported in ROLE through recommendations of activities, or tools which entail special activities.

Especially SRL activities and activities for forming the learning process will be promoted and enhanced in ROLE through recommendation.

Activities are basis for recommendation of e.g. tools, other activities …

4. Skill Model

Skill Model

For performing activities in ROLE the learner needs skills and through performing of activities he or she also can increase and improve his or her skills.

The skill model in ROLE consists of three different kinds of skills

- Domain skills:
  - Skills which a learner possesses if he or she has a certain level of expertise in a knowledge domain, e.g. the learner can explain what percentages is
  - Domain skills in ROLE will be built on projects like iCLASS, with the Competence-based Knowledge Space Theory (European Schoolnet, 2008) and TENCompetence (TEN Competence)

Skill Model

The skill model in ROLE consists of three different kinds of skills: ROLE focus:

- Tool skills:
  - Skills which a learner possesses if he or she is able to perform a learning activity with a learning tool in a domain context, e.g. the learner can use a tool for goal setting or can use a tool in order to get domain knowledge of a certain topic.
  - Different learning activities with the same tool require different skills e.g. for telephoning with your handy you need other skills than for writing messages
- Self regulated learning skills:
  - Skills which a learner possesses if he or she is able to perform a SRL activity, e.g. the learner can realistically set his or her goals.
  - In ROLE we will define a set of SRL skills, which are needed for conducting the key processes of SRL.

Skill Model

Skills in ROLE are basis for recommendation of

- Learning activities
- Tools and services
- Peers
- Content
- ...

Skills of a learner influence

- Learning activities (Domain-, tool-, SRL-learning activities)
- Guidance and Freedom
- Personalisation
- Motivation
- Collaboration
- Meta-cognition

5. Learner Model

Learner Model

The learner model of ROLE contains important information about the learner (learner profile), which will support efficient life-long learning in ROLE.

- information is visible for the learner
- serves as basis for recommendations.

Learner profile information:

- Skill profile of the learner:
  The learner can set up his or her personal learning skill profile with his or her domain-, tool- and SRL skills. This set of learner specific skills can be compared with the skills the learner chooses or sets up regarding goal achievement.

- Background of the learner:
  Further information of the education history, cultural background, interests, learning culture etc should be collected.

Learner Model

Learner profile information:

- Goals and sub-goals of a learner:
  learners set goals referring to Zimmerman's (2008) list of eight beneficial properties of goals: specific, daily, in a hierarchical order, with lack of conflict, ambitious, by themselves, conscious and that they can focus on learning process or performance outcome.
  To each learning goal learners should add additional information regarding goal achievement
  - Description of goals
  - Dependencies between and within goals and their sub goals
  - Description of obstacles: cause, activities for eliminating etc. (Naeve, Sicilia & Lytras, 2008)
  - Activities, Context, Content, Tools and Services
  - Skills

- Learning progress of the learner:
  In the learner model the achieved SRL-, domain- and tool-skills of a learner should be visualized. Therefore the learner's set skills for goal achievement and the skill state should be compared, for example through the learner e.g. self-evaluation or through the system.

Learner Model

Learner profile information:

- Learning history of the learner:
  The learning history in ROLE of a learner contains all tracked and monitored data about a learner in ROLE (e.g. actions, activities connected with tools, content, peers etc.). This information will be worked up and visualized to the learner by the ROLE system

  - Learning process phases:
    The carried out activities (e.g. conducted SRL-, domain- and tool activities) regarding the learning process model.

- Preferences:
  Referring to Sadler-Smith (1997) learning preferences are defined “as an individual’s propensity to choose or express a liking for a particular instructional technique or combination of techniques” (p. 52). The ROLE system should allow the learner to choose his or her preferred instructional technique or the preferred combination of techniques, through providing of multi-option in form of recommendations. For example he or she can choose between the different 8 learning events (8LEM, Leclercq & Poumay, 2005).

6. Recommendation

Recommendation

Recommendation is an important basis for personalisation, adaptation, and responsiveness.

Recommendation is a kind of guidance, but learners are free to choose.

Recommendation sources

- Theory (psycho-pedagogical framework)
- Peers (what other learners have done)
- …

What can be recommended

- Learning process phase
- Learning activity
- Learning tool
- Learning content
- Peers
- …

Recommendation

How to recommend

- Learning process phase
  - based on learning process model
  - based on learning activity history
- Learning activity
  - based on current learning process phase
- Learning tool
  - based on chosen learning activity
  - based on available skills (tool skills)
- Learning content
  - based on personal goal
- Peers
  - based on (common or complementary) goals and skills

7. Outlook

Outlook

- Deliverable January 2010
- Empirical Study:
  - Analysis of the current state regarding learning tools
  - Skill structure of used tools, connection between tool skill structures
  - Evaluation of the PPIM
- Further development and detailed elaboration of PPIM
- Improvement of PPIM regarding test-bed requirements
  - Learner understanding regarding value of PPIM
  - Learner understanding regarding self-regulated learning
  - Time effectiveness for the learner
  - Greater integration of community aspects
  - Informal, non-formal, and formal learning
- Design (and programming) of a ROLE navigation tool and tools for key processes of self-regulated learning
- Self-regulated learning assessment and guidance
- Principles of ROLE
- Context

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