

A MODEL OF THE E LEARNER'S SELF-MANAGEMENT PROCESSES

Um modelo dos processos de autogerenciamento do aprendiz eletrônico

Diane Ruelland¹

Abstract

Web-based Learning Environments (WBLE) carry conditions that affect the learning process. Network collaboration among peers, multimedia information processing and distance are some of the eLearning features that create flexible environments, which in turn demand the eLearner to take control over the learning process. Since 1995 we have conducted a longitudinal research aimed at identifying the eLearner's needs for support. The study has led to the operationalization of a set of self-management processes necessary to a WBLE. The framework guiding the research borrows from theory and practice of adult and distance learning as well as findings from metacognitive studies. This paper presents the conceptual model of tasks, objects and resources resulting from this research. The usefulness of such a model is exemplified by interactive tools designed to support time management.

Keywords: Self-directed learning; Web-based learning environment; ELearning skills; Metacognition; Self-management.

Resumo

Ambientes de aprendizagem baseados na Web (*Web-based Learning Environments WBLE*) carregam em si condições que afetam a aprendizagem. A colaboração em rede pelos parceiros, o processamento da informação multimídia e a distância são algumas das características de um ambiente de aprendizagem para se criar ambientes flexíveis, os quais permitem ao aprendiz a distância ter o controle do seu processo de aprendizagem. Desde 1993, temos conduzido uma pesquisa longitudinal cujo objetivo é identificar

¹ Ph.D. em Educação, LICEF Research Centre, Télé-université, Montréal, Canada. Pesquisadora associada a Télé-université, Membro do grupo de pesquisa CIRTA - Télé-université em Centros de difusão e teleaprendizagem. Endereço: 300 Anyon, Montréal, Quebec, Canada - J4V 2E9. ruediane@licefteluq.quebec.ca

as necessidades de suporte do aprendiz. O estudo tem nos dirigido a determinar um conjunto de processos de autogestão necessários ao WBLE. O referencial teórico desta pesquisa se origina da teoria e prática da educação de adultos e da aprendizagem a distância, bem como de resultados de estudos metacognitivos. Este artigo apresenta o modelo conceitual de tarefas, objetos e recursos resultantes desta pesquisa. A aplicação do modelo é exemplificada por ferramentas interativas para dar suporte à gestão do tempo.

Palavras-chave: Aprendizagem autodirigida; Ambiente de aprendizagem baseado na web; Habilidades de aprendizagem eletrônica; Metacognição; Autogerenciamento.

A new role for the eLearner

Web-based Learning Environments offer students to acquire new knowledge and skills at distance by accessing multimedia documents on Internet and by discussing with peers and trainers/tutors via e-mail, forum, chat and videoconference (HARASIM, 1995). These environments carry new conditions that affect the role of the learner (BURGE, 1994; BELISLE; LINARD, 1996).

Due to the distance between the teacher and the learner Deschenes (1991), Baynton (1992), the adult learner needs to:

- identify his learning needs;
- set priorities and plan of actions;
- set and follow a time schedule;
- organize the environment;
- assess his learning progress;
- accurately diagnose the problems;
- find help to solve the problems.

In processing multimedia information, the learner must be able to:

- decide which information is needed;
- express appropriate search strategies;
- take on the producer's role to create the accurate knowledge links. (MARCHIONINI, 1989)

When collaborating with peers Henri and Lundgren (2001), the learner needs to be able to:

- manage teamwork and/or group work;
- negotiate acquired knowledge with others;
- validate the others' knowledge;
- communicate results to the team/group.

The distance in space and time among peers and between the learner and the trainer/tutor, the flexibility in processing web information and the team networking are among the eLearning features that create flexible and open-ended learning environments. These conditions provide the adult learner with a greater amount of flexibility and control over the learning process than in a traditional classroom setting. They also require the learner to take over some of the teacher/tutor tasks, such as defining his/her own learning needs and choosing relevant information to learn. This new position may be confusing and unfamiliar.

According to Mayes (1996), eLearning conditions have the effect of transferring parts of the instructional design tasks to the learner. WBLE is more than a learner-centered approach. It puts the learner in a proactive position in order to progress and succeed. This situation addresses self-directed learning tasks with high level skills related to metacognitive strategies such as planning, self-monitoring and self-evaluation (JONES al., 1995).

What is really new?

The managerial tasks sorted out from literature and listed above are related to three generic metacognitive processes of planning, self-monitoring and self-evaluation. These processes are not new but the objects that are to be taken into account while applying these processes in eLearning have new components (BELISLE; LINARD, 1996). For example, to manage one's rhythm of learning in an asynchronous and collaborative setting is different than in a classroom setting. It is also different to control one's comprehension while reading a print book than while searching and consulting web pages on a specific topic. These components are more complex and more numerous due to the combination of distance, multimedia and network collaboration features.

To adopt a proactive role represents a new attitude in learning with most people since in the past, they only used to raise their hand to ask questions. Now, the adult has to accept the additional cognitive effort required by eLearning. This means he/she has to "mature in learning".

To learn about this new role

To understand better this new proactive role of the eLearner, we applied a research method including three main steps illustrated in Figure 1, modeling the process, creating support tools and using tools.

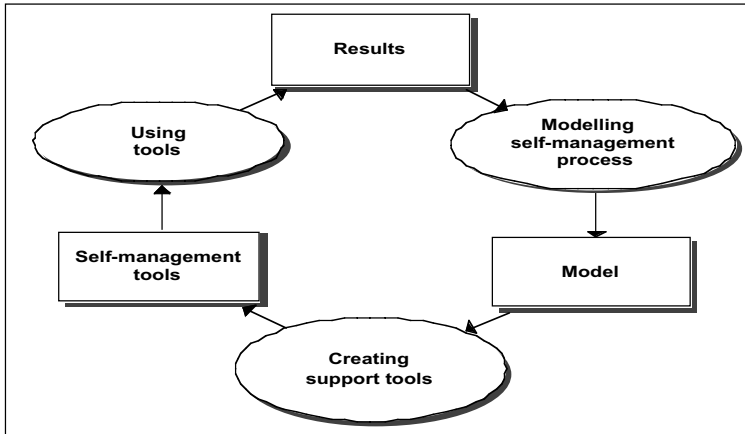


Figure 1-Research method

The first step was to build a conceptual model of the objects, the tasks and the resources involved in the control of an eLearning process. The fields of research taken into account are listed in Table1.

Dimensions of the problem	Fields revisited
Telelearning	Distance education Network collaboration Multimedia information processing
Self-management processes	Andragogy Metacognition Autonomy in learning Motivation in learning

Table 1- Theoretical and practical background of the research

The second step was to design and develop interactive prototypes of tools with functionalities that support the managerial tasks defined in the model.

The third step was to use the prototypes of tools in eLearning settings. This pilot testing would validate the model and improve our understanding of the processes. The results obtained from observations and interviews were used to select relevant new knowledge about eLearning, to organize the model in coherent clusters of tasks and to establish priorities for the subsequent cycle of research.

These three steps were conducted over three cycles, each one addressing a specific aspect of the eLearning problem: self-management at distance, in multimedia environment and in network collaboration.

The added value of our work is two-fold. It yields an integrated vision of the distance, multimedia and collaborative features of eLearning as well as an operational definition of the metacognitive skills involved in self-management. It is limited to the knowledge of researchers and users on the eLearning and to the technologies that are in a continuous state of development.

The model

We illustrated in Figure 2 the model of self-management that was developed to get an integrated and global understanding of this process in eLearning conditions. The graphic form of the model gives a global vision of its components (Paquette, 1996).

It contains three types of knowledge. The procedural knowledge (how) is represented by oval shapes in the graphic and it describes the three main metacognitive processes of control to be performed by the eLearner (BROWN, 1987):

- planning is the control applied before learning;
- self-monitoring is the control applied while learning;
- self-evaluation is the control applied after a lesson.

Each one of these processes is broken down into three procedures to loop the complete metacognitive process (NOEL, 1990):

- awareness;
- judgment;
- decision making on the learning situation.

At the last procedural level, the tasks give the lists of operations to complete a procedure.

The conceptual knowledge (what) is represented by rectangular shapes in the graphic and it describes the information to process and the products to deliver with each metacognitive procedure. It is organized around six major conditions influencing learning (FLAVELL, 1979).

- knowledge to acquire;
- learning activities to complete;
- learning time schedule;
- motivation;
- network interaction among peers;
- technological and pedagogical resources.

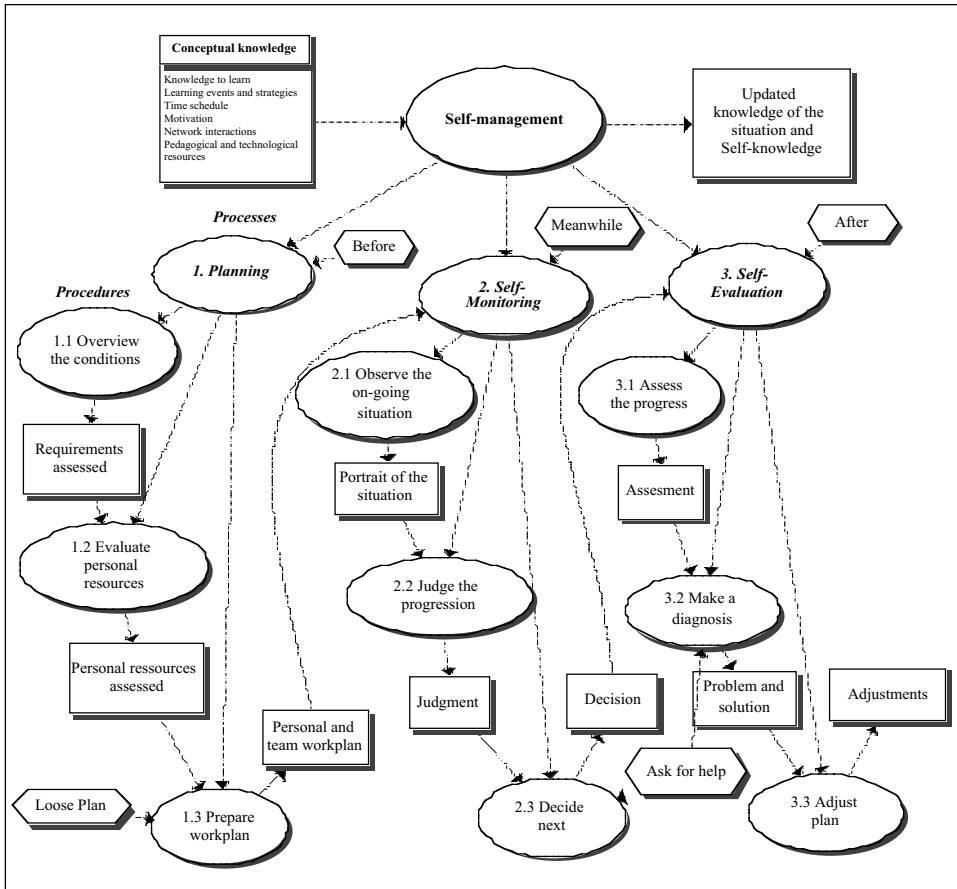


Figure 2 - Overview of the self-management model

The strategic knowledge (why) is represented by hexagonal shapes in the graphic and it states a suggestion to guide efficient applications of a task. Examples of strategic knowledge are:

- a suggestion “to set up a loose plan of actions in order to be able to adapt the time schedule more easily to unexpected events”. These events are frequent in adult life and they often are a source of delay and demotivation when it is not possible to catch up with a tight workplan (CARON, 1994).
- A suggestion to “ask for help when one’s limitations prevent the progress in learning” (DESCHENES, 1991).

All the difficulties identified from the literature are included in the model in order to alleviate them with proper support.

In Figure 3 we locate the three tools designed to support the planning process in a WBLE. Each tool is linked to a procedure and its attributes

come from the conceptual knowledge related to this procedure. Its interactive functionalities are related to the tasks included in this procedure.

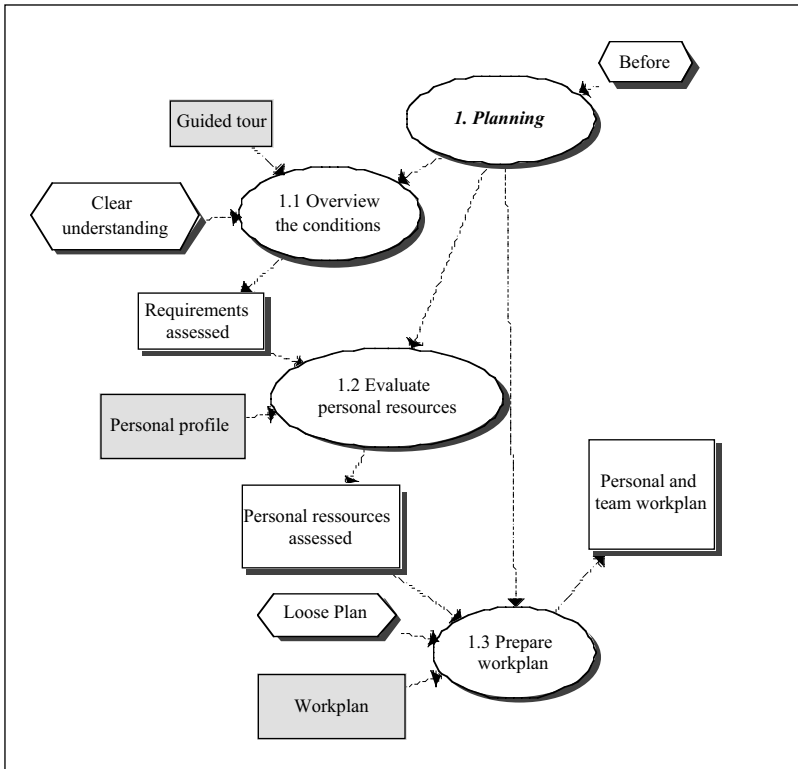


Figure 3 - Overview of the planning process

The guided tour tool allows the learner to get a clear understanding of the learning conditions prior to preparing a workplan. The demonstration informs the learner not only about the interactive resources available in a WBLE but also about the following items:

- learning objectives and knowledge to acquire;
- learning events;
- time schedule of the course;
- peers to contact on the network;
- choices offered to the learner.

The personal profile tool brings the learner to self-assess his/her personal resources in relation with the course:

- strengths and weaknesses related to the content;
- strengths and weaknesses related to the eLearning strategies;
- time available for study;
- personal interests and goals;
- technological and pedagogical resources available;
- share of personal profile among peers.

The workplan tool allows the learner to set priorities among the learning events, adjust time to complete homework and organize a team workplan. These tasks are performed within the limits fixed by the course designer and the personal resources available. This tool contains the following items:

- list of learning events;
- calendar (start-up and deadline dates, holidays, tests, trainer feedback);
- recall of the learning features (duration time of events, of collaboration; score obtained)
- status of an event (delayed; on time; ahead of time).

This model is generic. Self-management is a highly transferable skill and the model is adaptable to various personal and training needs (BROWN, COLLINS; DUGUID, 1989; KINTSCH, 1993). There is no linear sequencing among procedures. The learner chooses what to do by applying the strategies. The model can be adapted in any learning conditions but it is in a self-directed learning approach that it is fully applied. As it contains the three main types of knowledge (what, how, why), it can cover all levels of support from beginner to expert e-learners. Finally, the conceptual tools defined in the model do not refer to any specific software so they can be adapted to any WBLE requirements.

Conclusion

Through our research, we have identified a new proactive role and four new skills for the eLearner: navigating in a web-based interface, multimedia information processing, network collaboration and self-management of the learning process. We have focused our study on the latest element and the results produced a conceptual model of tasks with tools to support them in a WBLE.

The study also pointed out a list of difficulties that this new role

brings about for the adult learner. These difficulties are mainly related to a low awareness and a poor mastery of knowledge and time management skills (GARLAND, 1993; CARON, 1994; RUELLAND, 2002). They are also related to the absence of relevant support in the environment that can lead the eLearner to dropping out. To improve the cognitive accessibility of eLearning, it is crucial to address this problem with efficient strategies.

Three support strategies were identified in the literature: the assistance of a teletrainer and peers collaboration, a training plan to develop the renewed self-management strategies and the presence of interactive management tools in the WBLE. The conceptual model described in this paper can be used to guide the design of any of these support strategies.

References

- BAYNTON, M. Dimensions of control in distance Education: a factor analysis. **American Journal of Distance Education**, v.6, n. 2, p.17-31, 1992.
- BELISLE, C.; LINARD, M. Quelles nouvelles compétences des acteurs de la formation dans le contexte des TIC?. **Éducation permanente**, v.127, n. 2, p.19-47, 1996
- BROWN, A. **Metacognition, executive control, self-regulation and more mysterious mechanisms**. In: WEINERT, F.E.; KLUWE, R.H. (Eds). **Metacognition, motivation and understanding**. Hillsdale: Lawrence Erlbaum, 1987. p.65-116.
- BROWN, J.S., COLLINS, A.; DUGUID, P. Situated Cognition and the Culture of Learning. **Educational Researcher**, p. 32-42, jan./fev.1989.
- BURGE, E.J. Learning in computer conference contexts: the learners' perspective. **Journal of Distance Education**, v. 9, n.1, p.19-43, 1994.
- CARON, M. **La gestion du temps en apprentissage à distance**. Mémoire de maîtrise, faculté des études supérieures, Université Laval, 1994.
- DESCHENES, A.J. Autonomie et enseignement à distance. **La Revue canadienne pour l'étude de l'éducation des adultes**, v.1, p.32-54, 1991.
- FLAVELL, J.H. Metacognition and Cognitive Monitoring, A new Area of Cognitive-Developmental Inquiry. **American Psychologist**, v. 34, n.10, p. 906-911, 1979.

GARLAND, M. Ethnography Penetrates the «I didn't Have Time» Rationale to Elucidate Higher Order Reasons for Distance Education Withdrawal. **Research in Distance Education**, v.5, n.1-2, p. 6-10, 1993.

HARASIM, L. M. **TeleLearning Network Centers of Excellence, Building a Knowledge Society**. Strategic Plan, C1-C22, 1995.

HENRI, F.; LUNDGREN-CAYROL, K. **Les environnements de collaboration a distance**. Québec: Presses de l'université du Québec, 2001.

JONES, M.G., FARQUHAR, J.D.; SURRY, D.W. Using metacognitive theories to design user interfaces for computer-based learning. **Educational Technology**, p.12-22, july./aug. 1995.

KINTSCH, E. Principles of Instruction from Research on Human Cognition. In: SPECTOR, M.; POLSON, M.; MURIADA, D. J. (Eds). **Automating Instructional Design, Concepts and Issues**. Englewood Cliffs: Educational Technology Publications, 1993. p.23-43.

MARCHAND, L. **L'apprentissage a vie: la pratique de l'education des adultes et de l'andragogie**. Montréal: Les éditions de la Chenelière, 1997.

MARCHIONINI, G. Information-Seeking Strategies of Novices Using a Full-Text Electronic Encyclopedias. **Journal of the American Society for Information Science**, v.40, n.1, p.54-66, 1989

MAYES, T. **Distance learning and the new technology: a learner-centered view**. Institute for Computer-Based Learning. Edinburg: Heriot-Watt University, 1996. Available in: <http://www.icbl.hw.ac.uk/ctl/mayes/paper10.html>.

NOEL, B. **La metacognition**. Bruxelles: De Boeck-Wesmael, 1990.

PAQUETTE, G. La modelisation par objets types, une methode de representation pour les systemes d'apprentissage et d'aide a la tache. **Sciences et techniques educatives**, v.3, n.1, 1996.

RUELLAND, D. Self-Directed Learning , a model of supports for the workplace. In: Symposium on Self-Directed Learning, 16e. **Annals...** Motorola University, Feb. 5-9, Boynton Beach, Fl, 2002.

Recebido em: 22 de abril
Aprovado em: 13 de junho