MOTIVATION – INCLUDED OR EXCLUDED FROM E-LEARNING

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ABSTRACT

The learners' motivation has an impact on the quality of learning, no matter how it is provided, be it via classroom, eLearning or blended learning. So far, in e-Learning, motivation has been mainly considered in terms of instructional design. Research in this direction suggests several ways to improve learners' motivation. However, we claim that even more could be done: while being well known in classical learning, a motivational approach based on self-cognitions (self-efficacy, self-regulation etc.) is starting to make its way in e-Learning, showing the benefits of a personalized treatment. This paper argues for such an approach, underlining the possibilities for increasing motivation and also for integrating it into current research directions in e-Learning.

1. INTRODUCTION

E-Learning has developed rapidly from simple ways of delivery to complex learning environments, in which motivation is an essential factor for success/failure. Like all affective issues, motivation is regarded as "problematic" in e-Learning and a tendency to separate it from the cognitive process of learning has somehow excluded it from the frame of research. A brief description of research on motivation is outlined, stating the differences between previous views and the proposed approach. Possibilities for improvement and relations to new trends in e-Learning are also addressed.

1.1 Approaches to motivation in e-Learning

Motivation has been seen in e-Learning as a matter of design: proper instructional design and provision of suitable learning activities would engage all learners. Only recent research has considered the learner as a source of information for his/her motivational state, although not really involving the learner, but trying to infer his/her motivation from the interactions with the system. Information about the motivation of the learner would allow tailoring content and interventions to the individual learner.

There are three main research directions about motivation in e-Learning: 1) based on *motivational planner (*del Soldato & du Boulay, 1995); 2) based on *ARCS model* (Keller, 1987) and 3) based on *Social Cognitive Learning Theory (SCT)* (Bandura, 1986). The *motivational planner* (del Soldato & du Boulay, 1995) includes practical strategies and tactics to be used depending on the learner's motivational state. Three parameters are used to infer motivation: effort, confidence and independence. The motivational planer was correlated with the domain-based planner. The *ARCS model* (named after its main factors Attention, Relevance, Confidence and Satisfaction) was used as design principle in order to enhance the instructional

process with motivation. More recent research used ARCS model in order to infer the learner's motivational states from the interaction with the system. For instance, de Vicente and Pain (2002) found 85 motivational rules to infer the learner's motivational state.

1.2 Social Cognitive Learning Theory (SCT)

Research based on SCT showed the importance of self-efficacy and self-regulation in e-Learning. Self-efficacy refers to a person's belief about his/her capacity to perform a certain task at a certain level, while self-regulation refers to the control of the learning activity. Self-efficacy has been proved to be a good predictor of learner's satisfaction (e.g. Lim, 2001) and performance (e.g. Wang & Newlin, 2002).

2. ADDED EDUCATIONAL VALUE BY SCT

In this section, we argue how SCT can improve aspects from the previous two approaches; we also present other benefits from using this theory and how it fits into other current research directions in e-Learning.

Although the motivational planner correlated the content selection with motivation, there is only little work along these lines – e.g. personalized cognitive and affective feedback based on the motivational state (Robollero et al., 2005). When deciding feedback three models are considered: cognitive, metacognitive and motivational. As metacognition and self-regulation are tightly related, knowing more about the learner's self-regulation would result in a more accurate metacognitive learner model. Thus, **SCT could provide a connection between cognitive and affective processes**.

ARCS model has been successfully used as basis for e-Learning courses design. However, a need for a more personalized intervention has been emphasised by several studies:1) an assessment of students' needs conducted in order to prevent drop-outs (Chyung et al., 1999) found factors like: learners having doubts about their online communication skills, lack of confidence in using the software, feelings of being overwhelmed etc. 2) a study about the influence of motivational enhancement (Astleitner and Lintner, 2004) showed controversial results related to self-regulated learners. The first study highlighted the importance of self-beliefs, while the second study underlined that motivational intervention results depend on self-regulation level, thus proving the **importance of SCT concepts and the potential benefits** from using them.

Both approaches mentioned above are trying to include motivation in e-Learning while excluding the learner's point of view. The main argument for this exclusion is that the assessment shouldn't be intrusive. However, as motivation is assessed indirectly from the learner's interactions with the system and the learner is not asked explicitly, the accuracy of the assessment is not obvious. Also, for inferring different motivational states only one indicator is practically used: time (e.g.: time spent reading a page, answering quizzes, looking for help etc.), which is known to have several potential contradictory meanings.

On the other hand, SCT, a well established motivational theory well connected with learning theories, offers a **framework for the process of learning** with many possibilities for motivation enhancement and learning improvement. Thus, self-beliefs, already proven to be important to the same degree as actual abilities, are a key component to any activity and research works showed their relevance for learning. Table 1 shows how SCT differs from previous approaches and how it can improve them:

Table 1. Previous approaches versus SCT

Previous approaches	SCT
Enhance motivation through design	Assess learner's motivational beliefs/cognitions and use them for personalised intervention
Motivational states	Self-beliefs
Infer motivation from the learner's interaction with the system	Involve the learner in the "evaluation" of his/her motivation => more *accurate learner models* => more *effective interventions*
Machine "knows better"	Learner is the main source of information about his/her motivation => *empower the learner*
Teacher-focus – a certain repertoire of teaching actions	Learner-focused; considering different reactions to same teaching actions => *personalisation*
Challenge as an important motivational state	***Challenge – beneficial or not, depending on the learner's self-beliefs*** (low self-efficacy learners are not likely to engage in a highly challenging task)

Performance – just a learning outcome	Performance – viewed not only as outcome, but also in terms of ***impact on the learner***'s motivation level, self-beliefs about the learning process, and personal abilities
Feedback – based on performance; little work in associating it with motivation	Feedback – based on performance plus ***beliefs about performance*** (the performance was due to effort/luck/difficulty/ability) ***and other self-believes*** (e.g. self-efficacy)
Reduced or absent relation between motivational state and cognitive processes	Close relation between motivational state and content/ learning activities => ***correlate knowledge models with motivational modules*** (open learner models)

Motivational approach based on SCT fits very well in relation to four trends in e-Learning: personalization, adaptivity, affective tutoring and collaborative learning.

Personalization aims to make learning more effective and satisfying by adapting to the learner's needs and preferences. Among the benefits of adapting to the learner's motivation are: enhanced motivation and involvement, empowered learners – making them more responsible and active, increased satisfaction, better quality of learning etc.

Motivation is related to affective computing, especially from SCT perspective, because self-concepts are always charged with emotions. Thus, affective agents could be used for both assessing motivation and intervention.

SCT also fits with collaborative learning, given the social framework taken in consideration by this theory and the way learning is influenced by the social context. For example, two determinants of self-efficacy are related to socializing: vicarious experience and social (including verbal) persuasion. These two aspects, present in systems that recommend collaborative activities, are possible source of self-beliefs (e.g., recommending actions that helped other learners with the same difficulties has impact on the learner's self-efficacy as he/she becomes aware that other people are having the same problems and that solutions exist).

3. CONCLUSION

SCT shows importance of self-beliefs and their influence on the learning activities. The difficulty about them is that their assessment cannot be done without asking the learner, which might be considered intrusive or disturbing for the learning activities (although questions about oneself enhance reflection, known to be beneficial for learning). Even with this draw-back the benefits of knowing the learner's self-beliefs appear to be more important and have great potential to improve the learning process.

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