SOCIO-AFFECTIVE MODULE FOR RECOMMENDER OF COMPETENCY LEARNING OBJECTS MSA-RECOACOMP:
a study in development

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ABSTRACT

This article describes the required parameters for the development of the socio-Affective Module (MSA) of Recommender of learning objects by competencies (RECoaComp)-MSA-RECoaComp. This is intended to recognize the socio -affective aspects in recommending Learning Objects (OAs) skills. The module is being implemented by a multidisciplinary team and is on the prototyping phase. In the first stage were scaled the elements that will support the socio-affective recognition process. Such data will be extracted by MSA-RECoaComp an exisiting environment of distance education and is used at the institution, ROODA more specifically one of its resources, the Affective Map [14], and the Recommender of competency Learning objects (RECoaComp). Thus, this work allows you to understand the functionality of the MSA-RECOACOMP noting the feasibility of the recommendation regarding the OAs filtering skills considering the socio-affective aspects.

Categories and Subject Descriptors

K.3.1 [**Computers and Education**]: Computer Users in Education - Collaborative Learning.

General Terms

Performance, Human Factors, Verification.

Keywords

Socio-affective recognition; Recommendation skills; Meaningful learning.

1. INTRODUCTION

This article describes the structure of the socio-affective recognition on recommendation of learning objects based on skills.

Such a feature is being developed by a multidisciplinary team in stages, which is a

preliminary result of work identifying the socio-affective aspects to be considered for the MSA in RECoaComp filtering process.

With the technological advance, new conceptions of teaching and learning emerged as the embodiment of the OAs in face-to-face education or distance learning.

Such features provide easy access to the themes under consideration, enabling the subject engaging independently and autonomously.

Given this, one of the challenges of the educator is the selection and organization of these materials in order to contemplate the profile of its students and their needs.

The availability of content which is not suited to the needs and socio-affective characteristics of students cause an overload of information to the user.

As suggested solution of this problem is the recommendation systems, according to [5] are intended to assist the user in the search and selection of content focused on profile, working literally as information filters.

Thus, the user receives as a result of searches only the closest and relevant materials, as long as using and feeding system with new information, either to the profile or research it carries out.

The recommendation system that this article is about objectively filters the OAs according to skills considering the socio-affective recognition of users.

Note that this article covers aspects of characterization of the module developed and does not discuss issues relating to the system itself, considering that it is still being modeled.

The recommendation system has the potential to collaborate on indication of OAs more suitable socio-affective aspects of the user, being an important tool both for classroom education as the distance in different educational contexts. Such a structure is based on moods and motivational factors of [21] and on the sociogram [17]. This article is organized into six sections and section one introduction. Section two introduces the concept of OAs, the section three the OAs recommendation. Section four - socio-affective recognition. Five - features related systems that will support the MSA. Section six presents the socio-affective aspects to be implemented in the structure of the MSA and their perspectives for recommendation.

2. LEARNING OBJECTS

The teacher uses the Learning Objects (OAs) to mediate information in knowledge construction, with Wayne Hodgins the first to use the term in 1994 [8]

[23] conceptualizes OA as possible digital resources to be reused to support teaching. [22] broadens the understanding by acknowledging the OA as any additional feature to the learning process, by unlinking it from the need to be a digital element. It has five characteristics: 1) the information that must be next to the object (metadata); 2) reusability; 3) accessibility; 4) interoperability; and 5) durability, presented as rules to standardize the development of objectives so that they serve the characteristic of reuse.

Considering the need of reuse, granularity of OA and their availability in stores it is necessary to recognize its features and functionalities. This way, the recommendation systems allow you to find something inside the large set of OA (s) that (s) he can be re-used effectively.

3. RECOMMENDATION OF LEARNING OBJECTS

The recommendation process considering multiple alternatives for a solution. In the search for the most suitable choice generally performs a direct choice, or through previous recommendations [16].

He thus considers the need to recommend content, elements or information matching the expectations of the individual [21].

[6] emphasizes the challenge of recommendation systems to perform the appropriate combination between expectations of users and the elements to be recommended.

3.1 Recommendation skills

The skills-based recommendation takes into account the need to assist the user in the search and selection of focused content to the profile [6]. This process is not characterized as a filtering system, but a guideline for interaction of the recommendation system.

In this context it is relevant to understand the great challenge of the recommendation is to recognize the combination of elements that make possible an appropriate result to the expectations of the users.

The choice of filtering process gains importance as it identifies the characteristics of the recommendation and the needs of individuals involved in the process. The modeling of the system becomes critical to contemplate the most reliable results possible to offer or need incorporated.

3.2 Filtering systems

Within the context of recommendation seven types of filtration systems are described: 1) collaborative filtering; 2) content-based filtering; 3 demographic filtration); 4) knowledge-based filtering; 5) utility-based filtering; 6) based filtering in other contexts; 7) hybrid filtering.

The first two systems are observed in the texts of [11] and [21]; the third has highlighted in the text of [17]; the fourth and fifth are found in [5]; the sixth is approached [12] and [19]; the seventh is a result of the above found in [1] and [5].

This approach will give emphasis on collaborative filtering, content filtering and the hybrid, by supporting the process of recommendation skills present in the RECoaComp.

Collaborative filtering is based on systems that perform the process of recommendation through the human assistance, resulting from the collaboration of groups interested in that element. It has limitation on the recognition of the interest and understanding of the individual contributor on the object, as well as on the recommendation process itself.

Content-based filtering is constituted as systems that apply the recognition of elements that can have common interest implicit or explicit. The process may happens by distinct approaches, but with main purpose of recommendation.

Hybrid filtering recognizes the possibility of interacting more than one filtering technique allowing the simultaneous use of two or more, in order to be provided the limitations of each mode [1] and [5].

4. SOCIO-AFFECTIVE CAPTURE ON RECOMMENDATION OF COMPETENCY LEARNING OBJECTS

On the perspective of recommendation of OAs by skills, considering the socio-affective recognition, three elements are considered for the student's interaction with the OA: 1) socio-affective space; 2) motivational factors and 3) State of mind.

4.1 Socio-Affective Space

The socio-affective space is being considered from the concepts of [18], when he establishes the sociogram structure based on social interactions. The Sociogram, is a graphical representation of sociometry, and allows the identification of group interactions, or formation of social networks, the establishment of groups and the highlights or reference elements as well as the marginalized elements within the social structure.

4.2 Motivational Factors

The motivational factors are developed from Bercht model [4] with influence from [9] who considers the independence, the effort and the student's confidence in execution of tasks and activities in a virtual system. The three elements to be combined subsidize the inference of motivation, being a hint for the recognition of the State of mind.

This work was used entirely in [15] when considering evaluation of motivational factors a persistent set of actions adopted by the student in the Virtual learning environment (VLE).

4.3 State of mind

The mood is based on definitions of [22]: 1) be excited, implies a joyful behavior demonstrate good mood, motivation, interest, satisfaction to meet the challenges of learning, and collaborates and cooperates with partners; 2) be discouraged, implies demonstrate a discontent, sad behaviour, unwilling, disinterest, without motivation, dissatisfaction, frustration (or feel penalized) to continue learning, or even feel coerced, by believing that the will of others prevails; 3) be indifferent, implies demonstrate apathy, carelessness, negligence, neglect and lack of motivation for learning content.

5. SYSTEMS TO BE USED IN THE MSA-RECOACOMP

Aspects of categorization for the socio-affective recommendation of competency learning objects will be recognized and made available by systems validated by the core of Digital Technology applied to education (NUTED): 1) Map, affective ROODA functionality, and the 2) RECoaComp [3]; and [7].

5.1 ROODA

The ROODA, institutionally recognized by UFRGS in 2003 as E-LEARNING environment. It is the AVA in this work as a platform chosen for the implementation of framework of recognition and validation of socio-affective States of the students during the OAs recommendation processes.

The ROODA aims the main educational paradigm shift from the interaction and cooperation of users in AVA. User-centered and value-driven process of cooperation. For [2], the goal of this platform is to offer possibilities through resources on the web. Users (teachers, counselors and students) can build a cooperative work through virtual and social interactions, turning your way of thinking from the coexistence and exchange between students and teachers.

5.1.1 Affective Map

The Affective Map [15] is a feature of ROODA which considers the moods of students and was developed in four phases as shown in Figure 1, inspired by [13]: a) acquisition and identification; b) interpretation; c) selection and d) inference of the moods of the student. The acquisition and identification determine the means and methods by which the system will recognize characteristics relating to affective States under review.
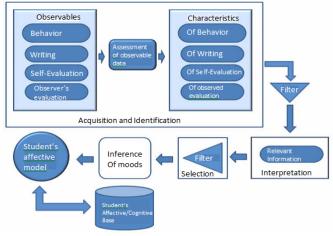
General scheme of recognition of moods

Figure 1. Longhi et ali (2007)

5.2 RECoaComp and its perspectives

The RECoaComp [3] allows the filtering of OAs considering the competences to be established by the user. Using a collaborative filtering and content-based filtering, characterizing it as a hybrid Filtering that assists in indication of relevant materials to the student's profile. The RECoaComp was developed according to the model of Figure 2.
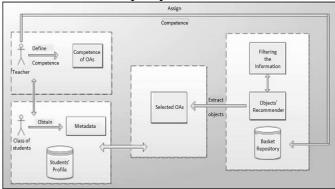
RECoaComp template Macro vision

Figure 2. Cazella et ali, 2012.

In general the basic operation of RECoaComp happens in three steps: 1) the teacher selects OAs from a repository, aiming at the construction of specific skills, recognizing that it can supply more than one jurisdiction; 2) the student responds to a questionnaire which traces a profile about the competencies relevant to the subject (these previously defined by professor); 3) is triggered the search through the information filtering by selecting the default repository, using the registered metadata, the OA with the student profile, regarding competences [8].

The idea of RECoaComp is to provide the student the content that best meet the needs of building skills based filtering at the intersection of information relating to the student's profile and skills that make it possible to develop OA.

6. MSA-RECoaComp And Prospects

The MSA will be developed in the form of a RECoaComp module. Its implementation happens with the identification of the State of mind and motivational factors obtained through the affective and social relations maps presented on the sociogram. It is of growing interest the development of technological tools directed to educational systems that deal with the recognition of social and affective phenomena.

It discusses, in this work, the introduction of affective aspects and sociometry, based on mood, motivational factors and sociogram, in virtual learning environments, to facilitate the provision of OAs by competencies.

It is intended to apply the experiments during the semester of 2015/I in students of the Business Course and later, in students in the Post- graduation Program in Informatics in education. The application will check the student's perception about the appropriateness of the OAs when recommended within the socio-affective aspects.

The study is relevant to determine whether the variables chosen for the delineation of the categories of State of mind and social environment should be considered (or reassessed) when developing tool MSA-RECOACOMP..

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