SAMI-Perseverance: First Steps in the Experiment of a Multimedia Help System for Perseverance in Post-Secondary Studies.

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Abstract: SAMI-Perseverance (http://perseverance.savie.ca) is an online Multimedia Help System for perseverance in post-secondary studies relying on the use of technologies in order to favour perseverance in students in their university studies. It is an area for self-learning and reflection. Based on an analysis of the needs and the learning profile of each student, the help system provides tools to facilitate the learning of reading, writing, communication, learning strategies and management skills. The system also provides tools to help with family, interpersonal or academic difficulties while also providing communications tools (videoconferencing, discussion forums, e-mail) which promote communication between students and teachers. This report presents a brief overview of the context and objectives of the research and also includes a description of the online environment of SAMI-Perseverance and of the fall 2006 trial use.

INTRODUCTION

In educational establishments across Canada, the abandonment of post-secondary studies is increasingly widespread. Whether for campus learning or learning at a distance, the results are the same. Current research into the field of post-secondary abandonment of studies comes mainly from the Untied States, the United Kingdom and Australia. Few studies have been undertaken in Canada concerning abandonment and perseverance in post-secondary studies (Grayson, 2003). The Canadian literature relating to abandonment and perseverance in post-secondary studies is only emerging.

In the United States and in Canada, the rate of abandonment during the first year of studies varies from 20 to 25% (Grayson, 2003). In Quebec, 20,2% of full time students abandon their university studies (MELS, 2005). Most studies show that students may abandon at any moment during their studies but that it is during the first three semesters that most abandons happen, whether on campus or in distance education (Sauvé et al, 2006).

For society, for the universities and for students, the high rate of abandonment has dire consequences: reduction of student manpower, loss of student potential, loss of revenues and an important loss of productivity for society (Grayson, 2003). The knowledge society demands more qualified and competent workers to meet the challenges of the labour market. Universities have a crucial role to play since it is these institutions that prepare students in an advanced form of learning. The challenge to universities is not only to render higher learning more accessible but to provide an initial quality education or continuous training for those who decide to specialize and pursue professional development course. This education is provided either on campus or at a distance. The S@MI-Perseverance (Système d'Aide Multimédia Interactif à la Persévérance aux études postsecondaires en ligne) research program deals with these problems. This project relies on the use of technologies to support perseverance in university studies and helps to reduce the drop-out rate. This research program is financed by the FQRSC (2005-2006) and the Ministry of Education, Sports and Leisure (MELS) within the framework of concerted actions for perseverance in school.

In this report, we will present the context of the research by briefly outlining the problems and questions to be analyzed. We will then describe the Web environment of S@MI-Perseverance (http://perseverance. savie.ca) by explaining its underlying principals of personalization, its components and its online structure. Finally we will discuss the methodology to be used in the field experiment to be carried out in the fall of 2006.

THE CONTEXT OF THE RESEARCH

For decades, a lot of research projects have been undertaken to better understand the process that leads students to abandon their studies or to persevere in their studies until having earned a university degree. Tremblay (2005) reports that the factors influencing the student's decision the most are of a personal nature. Coffman and Gilligan (2003) underline the social difficulties rather than the academic ones. Tinto (2005) identifies the following difficulties: academic difficulties, adaptation difficulties, uncertainty, incongruity, engagement, isolation and also the financial aspect. Following the example of Barr-Telford *et al.* (2003) and Chenard (2005), our hypothesis that the decision of the student to interrupt his or her studies is not attributed to only one factor but rather an ensemble of factors that can have an impact.

What are the factors that push a student to abandon his or her studies? They are numerous (Tinto, 2005) and different depending on the moment the studies are abandoned (Arulampalam *et al*, 2005). Inspired by a model developed by Bissonnette (2003), we have grouped (Sauvé *et al*., 2006) the factors that lead to the abandonment of studies into six categories : (1) personal factors : sex, age, psychological state, motives for pursuing higher learning; (2) learning factors: motivation in the learning context , styles of learning, strategies for learning, strategies for self-regulation; (3) interpersonal factors : relations with other students and the personnel of the institution, degree of academic integration; (4) familial factors : parental responsibilities, support from friends and family, the balancing of work, family and school; (5)institutional factors: difficulty to adapt to the institution, support in learning, diffusion mode (distance, online) and (6) the environmental factors: being part of an ethnic minority, socio-economic status, financial resources, type of studies being pursued, type of job being held while studying, etc. According to Coulon (2005), knowledge of the student characteristics and their difficulties is essential to elaborate and come up with supporting measures and strategies that promote perseverance for the pursuit of studies.

Taking into account the scope and the complexity of the phenomenon of the high rate of abandonment of post-secondary studies, this research will try to come up with precise actions to create a support plan to encourage learning in order to prevent abandonment. We want to know how to emphasize perseverance during the first semester of university studies. We will try to answer the principal question of this research project: What support tools associated with what learning characteristics have an impact on the student either abandoning or persevering in the first semester of post-secondary studies?

In order to better understand this principal question, we have formulated a series of specific questions: Which factors are to be considered to better counter the abandonment phenomenon in universities? Which factors have more weight on the intention of a student from Quebec to abandon or persevere in university studies? Is there a typical learning profile which characterizes the student who abandons and the student who perseveres? Are there tools that respond to these profiles to help in perseverance? Up to what point does an online environment rich with these tools assure the necessary conditions for perseverance in studies? By responding to these questions it will permit teachers and tutors to identify the learning variables linked to abandonment and on which ones they have a certain control in order to take them into account when helping students with learning difficulties (on campus and at a distance).

SAMI-PERSEVERANCE

To answer the research questions, we have conceived and placed online an interactive multimedia help system for perseverance in post-secondary studies called SAMI-PERSEVERANCE. This System relies on principals of learning personalization.

The Concept of the Personalization of Learning

The concept of the personalization of learning takes as its source the theories issued by the humanist current of thought and situates itself at the convergence of the personalist theory of Rogers and the theory of self-directed

learning of Carré et al. (1996). First of all, the concept retains certain principals put forth by the philosophy of Rogers (1969) from the point of view of the student:

- A significant amount of learning happens when the student perceives the pertinence of the knowledge to be learned.
- Actions facilitate learning significantly. It is often by doing things that we comprehend them and retain knowledge of them.
- Learning is made easier when the student has a part of the responsibility in the learning process. In fact, learning is maximized when students formulate their own problems, choose their own resources, determine the procedures to be followed and live with the consequences of these choices.

The concept then enriches itself with the theoretical conceptions of self-directed learning within a techno-pedagogical perspective which places emphasis on the resources of the student to personalize his learning process. This conception aims to facilitate and sustain autonomous learning in an instituted educational environment (Jezegou, 2004). The concept materializes by the engineering of devices which call on the autonomy of the student in an institutional setting. It refers to the following principals:

- Rethink the formation in order to put in place pedagogical methods based on the experience and the potential of the students in formation;
- Make available for the students a variety of resources into a device centered on self-learning;
- Recognize that students exert a real power over their self-directed learning;
- Put in place the conditions that help a student direct their formation on their own in order to increase his autonomy and his ability to self-manage.

The Intervention Components for Students in their First Semester

Taking into account the factors for abandonment, the online system S@MI-PERSEVERANCE will offer to students who have just entered their studies some tools which will help them pinpoint their personal, academic and work characteristics in the form of an e-portfolio. It will also permit students, with the help of questionnaires, to identify their learning characteristics: styles of learning, learning strategies, self-regulation and motivation. S@MI-PERSEVERANCE will also propose tools which have been adapted to help and support the student's situation:

- Methodological tools propose to students to acquire, practice and improve their communication skills, their reading and writing skills, their skills with informational and communicational technologies and also learning and self regulation strategies.
- Informational tools which permit to know and understand the organizational rules of the frequented establishment (being able to navigate easily the administrative maze and acquire the university vocabulary);
- Tools to help and support personal, familial and learning difficulties;
- A virtual system which offers tools for Web communication as well as in real time Web communication (ENJEUX) and promotes interventions between the professors/tutors and their students in order to help and support their learning process.

To learn more, we refer you to the modeling report of S@MI-Perseverance (Sauvé et al., 2006b). http://www.savie.qc.ca/CampusVirtuel/Upload/Images/Rapport_conception_Perseverance-17-08-06.pdf

The structure of the Web environment

Once a student has registered with SAMI-Perseverance, the system invites the student to create a personal approach in function with his advancement in an educational study program (fig. 1):

- before his admission into an establishment, the student is asked to create a portfolio and choose a particular program of study;
- after the student registers in a school but before his first semester, the student will establish his learning profile and prepare for his first semester of study;

Figure 1. Structure of the activities

- in the beginning and during his first semester, the student will analyze what he needs help with and analyze the difficulties he encounters. The student will then choose the tools he needs for help and support which will aid in persevering with the studies at hand. The student can communicate when needed with the other students with the help of communication tools in synchronous mode (ENJEUX videoconferencing) and in asynchronous mode (discussion forums and e-mail). The student will also create a space for reflection and self-evaluation on what was learned during the first semester and also a space for the planning of future semesters;
- during the second and third semester of studies: these parts of the system will be developed during phase II of the research and according to the results obtained during the first experiment of S@MI-Perseverance.

The Tools for Help and Support during the First Semester of Studies

At the beginning of the first semester study, the student analyzes what he or she needs in order to persevere in his or her studies from a list of statements which illustrate the difficulties that students face during their first semester of study (fig. 2). The proposed path relies on a series of filters in which the results generated by the choice of statements constitutes the first level of sorting. Since each statement can correspond to many different tools for
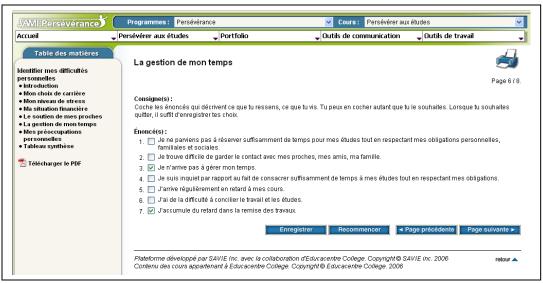

Figure 2. Example of difficulties

help and support for perseverance, it is therefore necessary to activate other sorting filters. These filters are generated by the student's style of learning and permit to identify: (1) the treatment of information (sorting is done in function of the type of learning resource), (2) the different modes of learning (sorting is done in function of the type of media: textual, auditory, audiovisual or a mix) and (3) the conditions of learning (sorting is done in function of the type of learning: individual, collaborative or mix). The sorting filters activate the search in the virtual repertoire for help tools and identify the tools that correspond to the profile of the needs and learning characteristics of the student. Once this operation is done, a personalized worksheet is generated by the system which a student will be able to follow throughout their first semester.

METHODOLOGY

The testing of SAMI-Perseverance will be undertaken in the fall of 2006 with university students coming from 3 establishments; two of which are campuses (Université de Sherbrooke et Université du Québec à Rimouski, Campus de Lévis) and one is learning at a distance (TÉLUQ, l'université à distance de l'UQAM). The choice of the subjects will happen according to a non probabilistic method and the number of students to be chosen is established at around more or less 200 students if we keep in mind the budgetary resources that are available and the type of clientele that we are trying to reach (students who are just starting there university studies who are distributed unevenly among the courses) and the number of variables to be analyzed (Mayer, 2000).

Different variables will be analyzed to attain the objectives of this research. The component of *Learning Characteristics* will gather the variables linked to motivation and its determinants, to the styles of learning, to the learning strategies and to the self-regulation strategies. The component of *Difficulties* will unite the variables linked to institutional difficulties (adaptation to the institutional life, relations with other students and the personnel of the institution and also academic integration), familial difficulties (matrimonial status, familial responsibilities, support from family and friends, attitude of the parents towards schooling), learning difficulties (reading problems, writing problems, technological problems, methodological problems, etc.) and also linked to the balancing of work and study (working while going to school, sector of activity, responsibilities and demands). The *Support* component will comprise of the following activities : the activities for entering into the studies offered to students (like the establishment of their learning profile), the tools for help and support placed at their disposition during their first semester of studies and the interventions of the teaching personnel and tutors during the first semester of studies. Also to be examined is the socio-demographic data: age, gender, spoken and written language and second language spoken if it is the case, being part of a minority group, the place of residence during the studies, the place of origin of the student and the distance in relation to the institution, the mode of the studies, the course program of the studies, the last diploma obtained, working during studies and the financial situation.

This study, being of the descriptive-correlation type, relies on a mixed approach to collect data (Tashakkori et Teddlie, 1998). Different measuring instruments will be administered before, during and after the experiment:
- Before the experiment: a registration sheet comprising the socio-demographic data including personal information, information linked to familial and financial aspects of the student and also a series of questionnaires which pinpoints the learning profile of the student (the styles of learning of Kolb, the modes and conditions of Canfield, attitudes and behaviours towards studies of Grasha, the way of taking on studies of Entwistle and Hilary; learning strategies and management of Viau, Cartier and Debeurme and motivation in the context of learning of Viau, Cartier and Debeurme).
- During the experiment: a trace system integrated in the environment will collect data (difficulties encountered, help tools that were used, types of exchanges used between the students and the teachers, types of intervention on the part of teachers and tutors, etc.) all along the semester of studies;
- At the end of the experiment : a questionnaire and an interview will be conducted on the students who persevered or abandoned after their first semester of studies as well as an interview conducted with the teachers and tutors.

Different types of results will be measured with the students at the end of their first semester of studies:
- The learning profile of the students who have abandoned their studies before the second semester and those who have persevered;
- The adequacy of the help and support tools offered by the online environment;
- The degree of influence that the variables have on the abandonment of studies during the first semester of studies;
- The degree of academic integration the student has acquired. This integration happens when a student knows and adopts the rules and conventions which regulate learning in the establishment in which the student is registered. Integration will show students resolving learning difficulties linked to learning strategies, management of the study program, deficiencies in the basic formation and the mastery of these deficiencies especially for technological, communicational and scriptural competences;
- The degree of social and familial integration happens when a student is capable to give a privileged place to his studies in his personal and professional life while at the same time resolving the difficulties caused by the balancing of family, school and work during studies. Students integrate themselves easier if they get support and encouragement from friends, coworkers and family. Integration also happens if conditions at work are favourable to integrate both work and study at the same time (time management, schedule management, valorization of studies, etc.).

CONCLUSION

The repercussions of the high rate of abandonment of post-secondary studies are as numerous for the student as for the university and society in general. The student who abandons the school system in a definitive way sees his chances diminish for finding a good job. For others, this abandonment of studies will be looked upon as a failure which will have consequences on the development of their potential. For the university, the consequences situate themselves mainly on the pedagogical, administrative and financial aspects. The universities see a reduction in their

budget when a student abandons and also feel they have failed in their task of forming new minds. For the society, the abandonment of post-secondary studies reduces the number of highly skilled workers that are needed to answer to the demands of an economy in constant evolution. This phenomenon translates directly in a loss of productivity for the society (Grayson, 2003). Since there are numerous consequences to the abandoning or the persevering of students in post-secondary studies, it is very important that we stop and analyze this phenomenon.

For the last four decades, many research projects have addressed this problem. Studies have permitted us to group the factors for abandonment into six distinct categories. In our study, we will analyze the principal factors of students who have just been accepted and registered for their first semester of university studies (on campus and at a distance) in Quebec with the help of an interactive multimedia system for perseverance in studies: SAMI-Perseverance. This field experiment will permit us to answer the following question: What support tools associated with what learning characteristics have an impact on the student either abandoning or persevering in the first semester of post-secondary studies?

We hope to gain the following from the research and experimentation: (1) To better understand measures designed to support student perseverance among new students going to university; (2) To gauge the extent to which learning characteristics, current personal and family difficulties as well as socio-democratic factors (sex, age, prior learning) impact in abandoning or in persisting in one's first year of university studies; (3) To sensitize professors and tutors to diversify their approaches in supporting learning (on campus and at distance) by taking into account the learning difficulties of the clientele at risk; (4) To make available support tools in the college and university environment; (5) To pursue research designed to predict factors leading to the abandonment of university studies and to develop strategies to intervene and ensure support that favours persistence and student success.

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