21st Annual Proceedings

Of

Selected Research and Development Papers
Presented at
The National Convention of the Association for Educational Communications and Technology
Sponsored by the Research and Theory Division
Houston, TX
1999

Editors
Kristin E. Sparks
RTS & Associates, Inc
Columbus, OH
And
Michael Simonson
Professor
Instructional Technology and Distance Education
Nova Southeastern University
Fischler Graduate School of Education and Human Services
North Miami Beach, FL

DEVELOPMENT RESEARCH APPLIED TO IMPROVE MOTIVATION IN DISTANCE EDUCATION

Lya Visser
Visser Associates, France
Tjeerd Plomp
Wilmad Kuiper
University of Twente – Faculty of Educational Science and Technology, Enschede, The Netherlands

Abstract

Learners in distance education courses often drop out because they lack the motivation to go on. A study which aimed at enhancing existing student support with motivational guidance in the form of motivational communications, the Motivational Messages Support System (MMSS), resulted in completion rates that more than doubled. In the MMSS study developmental research has been used for the evolutionary development of the motivational communications and for addressing questions on the validity, practicality and effectiveness of the motivational messages.

Introduction

More and more learners are studying via distance education. Although a number of students are successful and complete their courses, there are still many students who drop out or do not complete their courses. Research has shown that lack of motivation is an important cause for dropout (Wolcott & Burnham. 1991; Zvacek, 1991). Contrary to conventional teaching/learning situations in which motivational problems can be, and often are, detected by a teacher or trainer, the motivational problems of distance education students mostly go undetected and there is thus no outside help for the students to increase their motivation. A way to help distance education students to become or stay motivated is to include motivational strategies in the learning materials. This was not feasible in the courses studied, as course updating, revision and/or rewriting is normally only done once every five to ten years and is very costly. Another possibility to help learners to become or stay motivated is extending existing student support with motivational strategies. It is recognized that being motivated is an autonomous disposition, something that is done by the interested person him-or herself (J. Visser, 1990). Thus an 'outsider' can only intervene in motivational processes as far as the other person will let it happen. It is therefore a challenge to develop a student support component that aims at improving the motivation of distance education students so that they finish distance education courses successfully. This challenge is even greater when one tries to support the many distance education learners, mainly living and working in developing countries, who still study without having access to fax and or e-mail.

The study aimed at introducing motivational strategies in the student support system of a distance education program that prepares international students for a Diploma or MA in Distance Education. It is offered by the University of London and implemented by the International Extension College (IEC) in Cambridge (England). The students are accepted on a yearly basis; about 50-70% of them comes from developing countries. The limited access these students have to e-mail and fax makes that the courses, which are still print based and enriched by audio cassettes, are attractive for them. To enroll in the MA program students first have to finish the four Diploma (Foundation) Courses of 200 hours each. The actual MA part consists of two courses and a research study. Course completion rates are around 35% in the Foundation Program. Only a handful of students continue with the MA part. Student support, in the form of tutoring, consists of feedback on a minimum of two and a maximum of four assignments. No other institutionalized motivational student support is provided. The duration of each course is eight months.

Research question

The study, which was carried out in 1996 and 1997 (L. Visser, 1998), aims at extending existing student support with motivational strategies in the form of motivational communications which should serve to help distance education students to become or stay motivated, so that they will complete their courses successfully. The study seeks to answer the following question:

> Is it possible to design and develop a motivational component, in the form of motivational communications, which will result in a significant increase in the percentage of students who finish the course successfully?

Review of the literature

Briggs (1980) is one of the authors who emphasize the important role motivation plays in the successful completion of courses. He is of the opinion that our theories or models of design do not sufficiently take motivation

into account. According to Keller (1998) motivation is one of the main influences on performance. Zvacek (1991), referring to distance education, observes that the role of motivation cannot be overstated, while Moore and Kearsley (1996) mention that tutors in distance education have to pay a lot of attention to the motivation of their students.

Graham and Weiner (1996) define the study of motivation as the study of why people think and behave as they do. Motivation does not refer to what a person can do, but what a person will do; it refers to choices people make as to what goals they will set and the degree of effort they will exert in that respect (Keller (1983).

There exists a number of ways to change the motivational disposition of a learner. Motivation can be looked upon as a general state necessary for learning to be effective. This approach assumes that learners can create their own motivational state. Another approach is that motivation is a set of continually changing factors that influence the behavior of the learner. This approach aims at setting the motivational factors at appropriate levels so that optimal learning can take place (Keller, 1983; Wlodkowsky, 1985). There is evidence that both approaches have positive effects and the two should probably be seen as complementary rather than as opposing (J. Visser, 1990). Wlodkowsky's Time Continuum Model (1985) and Keller's ARCS Model of Motivational Analysis (1983) analyze the motivational needs of the learners in a number of different components. Wlodkowsky uses an approach that requires that motivational strategies must be planned for each of the six components of the model in order to come to a continuous and motivational dynamic. Wlodkowsky's model is primarily prescriptive, as it defines conditions and associated learning situations. Keller's ARCS model analyzes the motivational needs of learners in four components: **A**ttention, **R**elevance, **C**onfidence, **S**atisfaction. To use the model successfully an audience analysis has to be done to define motivational objectives. The motivational objectives will lead to motivational strategies. The ARCS model is geared towards a systematic approach to motivational interventions, which follows a general problem solving and design process (Keller, 1987). Böhlin (1987) stresses that the ARCS model is adaptable to a wide variety of teaching methods and processes. He claims that the model is especially vital in situations where an extreme variance in classroom processes is encouraged as it makes it possible to accommodate a wide range of learning styles and to develop individuality. The students of the Diploma and MA Courses of the University of London come from a variety of social and cultural backgrounds. They also have varying educational backgrounds and use different learning strategies in a distance education context. The systematic approach, which is an asset of the ARCS model, gives the distance education tutor[8] a way to monitor the motivational state of the learners. As far as known neither Wlodkowsky's model nor Keller's model has been used in a distance education support system. Keller's ARCS model has, however, formed the basis for the development of motivational communications in traditional education, which were successfully used to help learners to maintain or increase their motivation (J. Visser, 1990). The flexibility, the systematic approach and the fact that the model has earlier been successfully used in a comparable context, has led to the decision to opt for the ARCS model of motivational analysis in the MMSS.

The ARCS model of motivational analysis

The four components of the ARCS model (Keller, 1983) represent the most important dimensions of human motivation. They are briefly described and placed in the context of a distance education setting.

Attention:	Getting the attention of the student and getting the learner to focus on a learning task establishes the necessary conditions to learn. This is likely to be more difficult in distance education than in conventional education. A challenging, unexpected or even provocative message will stimulate the attention of the learner. Other motivational strategies include frequent communication, rapid feedback and real interest in the learner.
Relevance:	Students should be informed on what they can expect from a course and why the topic in question is relevant and relates to the larger scheme of a course. Just like in conventional education, distance education students should know why they study certain course sections and they should be given examples related to their daily work. Relevance is not expected to be a problem for the students of the courses taking part in the MMSS study, as learners are mostly working in distance education.
Confidence:	Rotter (1954) states that people have a tendency to attribute success and failures to external or internal causes. Following success, expectancy generally rises (confidence increases), while failure causes confidence to drop. In distance education fear of failure is generally high. Messages emphasizing that students can finish the course successfully if they work hard, are important. Providing frequent opportunities for students to be successful increases the chance that they really will be successful. Emphasizing that students, themselves, are responsible for success through their personal ability and effort builds confidence.
Satisfaction:	To allow a student to be satisfied, it is important to describe the task to be done carefully and to state the reward upon completion. Keller (1987) claims that effort rather than performance is most directly related to motivation. In distance education student support motivational tactics should aim at making students feel satisfied frequently. Frequent, timely, adequate and encouraging feedback is an important satisfaction strategy. Other strategies are personal praising remarks and informing the student on how far they have come already.

8 In the context of this paper a tutor is the person who academically accompanies the distance education student during the course period.

Keller's (1987) “Steps in Motivational Design”, which is based on the ARCS model, has been used for the design and development of the so-called motivational communications developed in this study and used in the Motivational Messages Support System (MMSS).

The Motivational Messages Support System

The MMSS had to be designed recognizing that it had to function as a subsystem within the course delivery system the International Extension College has set up to provide distance education. Before the MMSS was introduced there was limited interaction between the various components (tutors and students) of the support system and there was not institutionalized direct communication between student and tutor and *vice versa*: all communication was routed via the Director of Courses. It was concluded that, if the ARCS model was going to be used, establishing the possibility for direct communication between student and tutor was a necessary condition for enhancing students' motivation. A motivational component was added to the existing student support system in the form of a structured set of written motivational communications. These communications, or motivational messages as they are called in the study, specifically target the motivational disposition of the learners so that they finish the course successfully.

Research approach

Against the above sketched background a developmental research approach was chosen. Developmental research is carried out to optimize and gain a sound basis for development activities, particularly the development of prototypical products and the generation of methodological directions for the development of such products (Van den Akker & Plomp, 1993; Richey & Nelson, 1996). The aim of the study is thus, through a sequence of prototypes, to come to a final quality product.

Van den Akker and Plomp (1993) and Nieveen (1997) discussing product quality, distinguish the following three criteria:

Validity:	the degree to which the product is in agreement with state-of-the art knowledge and is internally consistent.
Practicality:	the degree to which the product is functional for the target group.
Effectiveness:	the degree to which the product has an added value compared to already existing products.

The first two criteria, validity and practicality have to be dealt with before the effectiveness of a product can be assessed. In this study validity was realized by using a methodical design approach while building on a sound theoretical framework (Keller, 1987). Practicality is shown when students state that they appreciate the motivational messages and when tutors communicate that they can easily work with the messages. Effectiveness is shown when a significant higher percentage of students than the year before complete the courses successfully. The study consisted of two phases, a pilot study which aimed at developing the MMSS system and the main study which aimed at assessing the effectiveness and cost-efficiency of the MMSS.

Pilot Study

The pilot study addressed the following question:

> Is it possible to design motivational messages, based on the ARCS model of motivational analysis, in such a way that they are effective in distance education courses?

In this phase, first motivational communications were to be developed as prototypical products along the lines of the ARCS model to be used in one course. A set of eight motivational messages was designed, based on a design process developed by Keller (1987). Each message had, as an individual prototype, a special function within the framework of the ARCS model and the framework of prototyping, as to characteristics of format, graphics, content and students’ feedback. Each message could, however, considered to be a prototype for the next one in a sequence of prototypical messages to be developed, which equally dealt with characteristics of format, graphics, content and reactions of the students. The development of the motivational messages was also influenced by expert comments. All messages focussed on the motivational needs of the learners at that moment in time.

A second objective of the pilot phase was to investigate, through formative evaluation, the validity and practicality of the motivational messages and to explore their effectiveness. For this phase one of the Foundation Courses was selected, consisting of 19 students from 13 countries (five continents) of which the greater majority could only be contacted via the normal postal services. As a consequence the delay in the responses from the students to a certain message was too long to take their comments immediately into consideration when designing the next prototype of a message in the sequence. The feedback of the students was therefore only used in subsequent prototypes. In addition, in the evaluation of the motivational messages expert appraisal was applied by involving

staff of the college and other experts in the field of instructional design and distance education. The validity and practicality of the prototypical messages was measured by using the following instruments:

- *Enrolment forms* providing information on students' social and academic backgrounds.
- *Final questionnaires* which asked questions about appeal, relevance, layout and format of the messages.
- *Course completion records* of 1995 and 1996
- *Records* with information about tutoring time, frequency and duration of contact and number of communications sent out and received.
- *Telephone interviews* with the Director of Courses and the Executive Director of the IEC, as to implementation possibilities, reactions from colleague tutors and students and discussion of topics like course evaluation questionnaires.
- *Interviews* with two students of the course to discuss format, lay-out, frequency and content of the messages.

The effectiveness of the messages was explored by comparing the percentage of students that passed the exam at the end of the course year (1996) to that of the year before (1995). Qualitative remarks of the students were also taken into account.

The result of the pilot study has been the Motivational Message Support System (MMSS) ready to be assessed for its effectiveness and cost-efficiency. It was noticed that designing, producing and personalizing the messages had taken quite some time. As student support is already considered an expensive commodity in distance education (Bates, 1991; Threlkeld & Brzoska, 1994), it was decided, on the basis of the pilot study, to use two different versions of the motivational messages in the main study. One version used the same set of messages for all students (collective messages), while in the other version the tutor could personalize the messages by adding personal remarks to the 'standard' messages or design messages that were attending to the perceived motivational needs of the students (personalized messages).

The assessment phase

The main study addressed two questions.

> To what extent are motivational messages, based on Keller's ARCS model of motivational analysis, effective in distance education courses?
>
> What is the difference, if any, in effectiveness and cost-efficiency between the personalized and the collective process of enhancing motivation through motivational messages?

The first research question, which had already been explored in the pilot study, focuses mainly on the validity, practicality and effectiveness of the motivational messages. The second research question looks at the optimal use of the motivational messages and has an exploratory character.

Effectiveness in the MMSS study is shown when a significant higher percentage of students than the years before complete the courses successfully. Cost-efficiency is shown when a significant higher percentage of students than the years before finish the courses and when the time spent on tutoring (tutor costs) and overhead costs does not significantly increase. Cost-efficiency relates to the outputs realized as compared to the corresponding inputs.

It is likely that implementing the MMSS will increase the tutor costs in terms of hours spent on a student. Eight hours of tutoring time are budgeted for per student per course. Students who repeat a course can be expensive for the International Extension College as they may not only require extra tutoring time, but also extra time related to registering procedures.

For the main study a multiple case design was chosen (Yin, 1994). As shown in Table 1, all four courses of the Foundation Program were involved. Course B was split into two groups and Course A served as a control group: the tutor of that course was only to write down the time spent on tutoring according to the tutor contract.

Table 1: Overview of the courses involved in the MMSS study and the number of messages to be sent out.

Course code	# students	Type Message	# messages	Designer messages	Tutor
A	18	No messages	N/A.	N/A.	External
B1	13	Collective	8	Course tutor	External (researcher)
B2	14	Personalized	To be decided by tutor	Course tutor	External (researcher)
C	18	Collective	8	Researcher and tutor	Staff-member College
D	18	Personalized	To be decided by tutor	Course tutor	External

In those courses where personalized messages were used, it was the tutor who decided on how many messages would be sent out, as the messages were based on the perceived motivational needs of the students during the course. The tutors in Courses B2 and D decided beforehand that a minimum of four messages would be sent out. In order to establish habits and conditions for independent learning, the interval in time between the motivational messages became longer. When the main study was finished and collaborating tutors had to send their data to the researcher it turned out that the tutor of Course D, who was to use personalized messages, had only sent out one message. The MMSS had thus not functioned in Course D.

A variety of instruments were used in the MMSS main study.

Student related instruments

- *Initial questionnaires* aimed at getting information on:
  - Students' personal and professional circumstances.
  - Students' reasons for taking the course
  - Expectations of students as to support from IEC and tutors
  - Problems students expected while doing the courses.
- *Final questionnaires* aimed at getting information on:
  - Which messages students liked best and why.
  - Which messages were most relevant to students and why.
  - What the students thought the reason was for receiving the messages.
- *Telephone interviews* with two students (a reluctant enrollee and a repeater) to see how the messages were appreciated and if so, why.

The term 'motivational message' was never used in correspondence with the students, as this could have revealed the intended nature of the messages.

Tutor related instruments:

- Course completion records of 1995, 1996 and 1997
- Records to register marking and tutoring time, number and content of communications between tutor and student and vice versa.
- Telephone interviews with tutors and expert staff.
- Structured interviews with tutors.

While developing the instruments, an important concern had been to make sure that triangulation would be possible. Various methods of data collection were used which aimed at enhancing the reliability and the validity of the findings. In addition the researcher had designed a tutor guide to make sure that tutors could work independently of the researcher during the main study.

The MMSS pilot study

The principal aim of the pilot study was to come to a valid, practical and effective version of the motivational messages as well as to answer questions on design and distribution. During the prototyping phase the development of the product was carefully monitored. Feedback and comments (solicited and unsolicited) were used to improve the product and its distribution process. The research lasted eight months and aimed at answering the following question:

Is it possible to design motivational messages, based on the ARCS model of motivational analysis, in such a way that they are effective in distance education courses?

During the first month of the course a motivational needs profile was made which was based on a limited audience analysis (the names and addresses of the students only became available when the course had already started), on information provided by the student counselor and on research in the field of student support. During the courses, when more information became available about the motivational needs of the students, this profile was adjusted. A total of eight messages was sent out, which were often personalized by a remark or an observation that targeted the perceived motivational needs of the student. It was observed that qua format students liked motivational messages in the form of a greeting card best, qua content they preferred motivational messages that had a catching drawing on the outside and a reinforcing text on the inside. The last message they received was, according to the final evaluation questionnaire, the favorite. It had the format of a greeting card and showed a variety of students of different ages, gender and race on the outside. The inside consisted of a short text which stressed that they all belonged to a group of people working hard to finish the courses successfully. It also contained exam advice and stressed that students had a good chance to do well if they spend their last few weeks studying hard.

In summary it can be said that:

The students testified that the communications had motivated them.
The students reported that the motivational messages helped them to stay in the course.
The students liked the last prototypical message best.

It is thus concluded that the motivational messages helped students to stay in the course. This conclusion was confirmed by the course completion rates of 1996 which went up from 32% in 1995 to 53% in 1996.

It was, however, also seen that the use of motivational messages was labor intensive as it involved doing an audience analysis, defining motivational objectives, designing, producing and dispatching motivational messages. In addition the students' motivational needs had to be monitored. It was also noticed that tutors needed some home office equipment such as a computer, a printer and a photocopier to produce and send out messages. This led to the decision to expand the study by using a more standardized type of message which was to be prepared at the beginning of the course and based on a motivational needs analysis (collective motivational messages).

Further insights were necessary to determine whether the motivational messages that were personalized or custom-made were more effective than the collective motivational messages. In addition questions on cost-efficiency had to be answered.

Three different cases were to be assessed in the main study

- A first group of students would receive personalized motivational messages, based on an audience analysis, on the results of the pilot study and on monitoring the motivational needs of the students.
- A second group of learners would receive collective motivational messages, based on an initial audience analysis and on the results of the pilot study. These messages would be prepared during the first month of the course, so that the messages only had to be sent out.
- A third group of students would serve as a control group and would not receive the MMSS support. Tutoring in this group was done according to the tutor contract and time spent on tutoring was going to be recorded.

In the above sketched set-up it would be possible to decide which type of motivational messages is more effective and which more cost-efficient.

The MMSS assessment phase

The first phase of the MMSS, the pilot study, took place in 1996 and was followed by the main study in 1997. Two questions were addressed:

1. To what extent are motivational messages, based on Keller's ARCS model of motivational analysis, effective in distance education courses?
2. What is the difference, if any, in effectiveness and cost-efficiency between the personalized and the collective process of enhancing motivation through motivational messages?

In Table 1 the participating courses and the types of messages used in the MMSS study were given. Two months before the study took off the participating tutors received a number of articles on motivation and a copy of the pilot study, wile a month before the courses started the tutors were personally briefed during a half-day session and received a tutor guide containing information on how to use the motivational messages and how to do the record keeping.

The first research question

The first activity the tutor carried out was sending all students an audience analysis questionnaire. On the basis of the outcomes of this questionnaire motivational messages were designed, produced and, during the course, sent out. The tutor of Course C requested the researcher's assistance in designing the messages, but the tutor of Course D worked on his own, while the researcher in her role as tutor also designed and produced messages for Courses B1 and B2. Care was taken not to interfere in the tutorial processes. Tutors had been asked to record exchanges they had with their students, the time spent on tutoring and remarks and details they wanted to communicate. Just after the exams, but before the results were known, a final questionnaire was sent to the students. The last involvement of the tutors in the research consisted of returning the records to the researcher. It was then that the researcher discovered that the tutor of course D had only sent out one message. It can thus be concluded that Course D did not participate in the research.

Due to the scope of this paper only a summary of the completion rates of the students of Courses B and C is given in Table 2 (L. Visser, 1998).

Table 2: Completion rates Courses B and C in 1995, 1996 and 1997. Bold figures indicate that motivational strategies were used.

		1995	1996	1997
Course B	# students	12	30	**27**
	# completors	4 33%	11 37%	**18 67%**
Course C	# students	20	**19**	**18**
	# completers	6 30%	**10 53%**	**11 61%**

The groups, which received the motivation stimulus have higher completion rates than the groups that did not receive the stimulus. Overall, this difference is statistical significant (Fisher's Exact Test, p=.003). For Course B and C, the p-values from the Fisher Exact Test are respectively .015 and .094, which means that when a critical alpha of .05 is applied, the difference is only significant for Course B. However, one might argue that we still can be quite confident that the difference for Course C is not due to chance fluctuations.

It was seen that students had appreciated the motivational messages. Of the 45 students who had received the final questionnaire 25 returned it. Of these 25 students, 22 said that the motivational messages had encouraged them to continue with the course, while 23 wrote that the notes had contributed to their pleasure

The second research question

Students generally did not perceive the personalized and collective motivational messages as being different. It is seen in Table 3 that those students who received collective messages had less contact with their tutor than those whom received the personalized messages.

Table 3: Number of exchanges between tutor and student and student and tutor

		Tutor student	Student tutor
Personalized messages	Average # exchanges	3.9	3.3
Collective messages	Average # exchanges	2.6	2.9

There was a difference in the tutor time between the two different types of messages. For the *personalized* motivational messages the tutor time (which did not include feedback time on Tutor Marked Assignments) was 184 minutes (Course B2). In Course B 1 and Course C, which used *collective* motivational messages, the time was 148 minutes. Collective messages were thus more cost-efficient as to tutor time. In two of the three courses the total time spent on each student stayed within the allocated 8 hours. In Course C it was almost 9 hours, but it should be noted that the tutor of Course C was new to the program.

The student completion rate over 1997 is given in Table 4.

Table 4: Course completion rates of students in 1997

1997	Total # students	Completed
Personalized messages	14	11 (79%)
Collective messages	31	18 (58%)

It is noted that the completion rates in 1997 were significantly higher for those students who had been enrolled for the first time that year than for those who were repeaters. For personalized messages the completion rate

was 100% and for collective messages it was 73%. It should be borne in mind that the numbers are small, so that more research should be done to confirm these data.

In conclusion

It is seen that the outcomes of the main study confirmed the major findings of the pilot study and that the messages have been appreciated by the students and have been effective. No significant difference between the use of collective and personalized messages as regards effectiveness was shown. The use of prepared messages, the collective system, made it easier for the tutors to use the MMSS and thus increased the chance of successful implementation. The latter were also more cost-efficient.

Although designing and using the motivational messages is something that is interesting and rewarding, it should be seen as a motivational process and cannot be looked upon in isolation. Implementing the MMSS means that new roles will have to be taken on by the tutors. They will no longer just be 'markers' who give feedback on assignments and write hints for improvement in the margin. The tutor must become much more personally involved in the tutoring and then should also be held accountable for what happens in the course in terms of tutor-student interaction and student performance. The role of the tutor will more match that of a good teacher in conventional education than that of a traditional tutor in distance education. This will increase the tutor costs and has implications for the providing institute.

The providing institute will have to make changes in two areas. The position of the tutor should be redefined as argued above. More responsibility should be assigned to tutors. The use of modern communication means should be made possible and should be encouraged. This may make it necessary to make the selection of tutors more rigid. Such change processes are not easy and often somewhat painful. Their effectiveness depends greatly on the extent to which the institution is able to learn.

The MMSS study has answered a number of questions related to student support in distance education. It has been seen that using motivational strategies in learner support has considerably increased the completion rates of the students. The MMSS has operated in a limited environment of only one specific college and with relatively small numbers of students involved. This calls for more research. In the study a case has been made that it is possible to increase the number of students who finish their distance education courses successfully and more in general to make the learning experience of the students in a distance education setting more enjoyable and rewarding. As the learning landscape is gradually changing and more and more learning opportunities are being offered through the distance education mode, it is important that increased attention be given to the motivational dimension of the interaction with distance education students.

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