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Universities increasingly adopt innovative teaching models, which focus on the development of skills instead of the reproduction of knowledge. These new teaching models emphasise the importance of knowledge application and the development of competencies. Yet, using these teaching methods usually implies a high assessment burden for lecturers. Educational institutions are on the look-out for ways of offering competency-oriented teaching materials to students and keeping the assessment burden for lecturers down at the same time. This article gives a practical illustration of a marketing course developed by the Faculty of Management Sciences of the Open University of The Netherlands. This course shows a successful way in which both aims can be achieved simultaneously.

(¹) For an historical overview of distance education see Passerini and Granger, 2000 and Spooner et al., 1998.

(²) NIMA is the Nederlands Instituut voor Marketing (Institute for Marketing of the Netherlands). The NIMA-A examination assesses whether students possess the knowledge and the skills to operate on an executive level within the marketing discipline. The NIMA-A examination is oriented towards general marketing concepts and principles, marketing instruments and marketing environments and assesses whether students are able to actively apply their knowledge and skills in practice.

Teaching competencies efficiently through the Internet - a practical example

Introduction

Can students learn competencies through an Internet course? Do guidance and assessment of a competency-oriented course not necessitate far too much supervisory time on the part of teachers? These are questions with which educational institutions in distance teaching wrestle.

Educational institutions are continuously under pressure to operate cost-effectively (Moonen, 1994). It is therefore important to keep down the time teachers spend on marking examinations. But is this still possible now that education is shifting from being knowledge-oriented to competency-oriented? Examinations using multiple-choice questions have the advantage that they can be easily checked automatically. As a result, they are cost-effective. However, multiple-choice examinations are specifically designed for assessing knowledge-oriented courses (Van der Vleuten, 1996). It is no longer possible to make do with multiple-choice questions in examining competencies (Daniëls and van der Vleuten, 2002). Open questions and project assignments are often the most appropriate way of examining competencies. Yet, using these methods usually implies a high assessment burden for teachers, since they have to assess every single assignment manually.

As a result, educational institutions are on the lookout for ways of offering competency-oriented teaching materials to students and keeping the assessment burden for teachers down at the same time. An unrealisable task as it seems. In this article we will give an example of how it is possible to accomplish both aims simultaneously. We will use a marketing course as an illustration. This course has been developed by the Faculty of Management Sciences of the Open University of the Netherlands. First, we will discuss the background of the students and we will briefly review the programme that features the marketing course. After this, we will describe the competency-oriented nature of the course and we will explain how the exact set up of the course permits little guidance and assessment time. Finally, we will overview results from a survey held among students that finished the course.

Background of the students and the course

The Open University of the Netherlands is an educational institute that is specialised in distance education. A typical student of the Faculty of Management Sciences is in his/her thirties, has a job in management and wants to deepen his/her knowledge in areas such as marketing, accounting and organisational behaviour and culture. The Management Sciences programme consists of courses in all these fields and more, including economics, human resource management and public administration. All courses are offered by distance education. (¹) This entails that study materials are designed for self-study and students receive study materials at home (by regular and/or electronic mail and/or through the Internet). The communication between teachers and students takes place through e-mail, postings in discussion groups and telephone calls. Exams are generally taken in a classroom. Bachelor degree courses often use multiple-choice examinations, whereas master degree courses often involve writing assignments and project reports.

The *Introduction into Marketing* is a course at NIMA-A-level (²) offered in the bachelor phase to students of the Open University of the Netherlands. This innovative course started in September 2002. The course covers several fields, (see Table 1 for an overview of the course topics). Students are considered to spend 200 hours of study time on

this course. The written and electronic course materials can be studied independently, at the student's own pace and without the assistance of a teacher. If there is nevertheless an occasional need for substantive guidance, the student can contact a supervisory teacher (by telephone or e-mail).

Competency-oriented learning

Universities increasingly adopt innovative teaching models, which focus on the development of skills instead of the reproduction of knowledge. These new teaching models emphasise the importance of knowledge application and the development of competencies (Enkenberg, 2001; Parikh and Verna, 2002). In traditional education, students study the textbook and apply their newly acquired knowledge to assignments. In a competency-oriented course students begin with assignments which invite them to solve practical problems. The Introduction into Marketing is a good example of a course that adopts competency-oriented teaching. The principle underlying the course is to develop in students the skill to apply theory to practical cases. In addition, students develop the ability to actively search for relevant information both from theory (textbook) and from practice (using case studies). After completing this course, students are able to work in a result-oriented manner and they can sensibly adapt and apply methods and techniques from marketing to practical situations.

The general design of the course is as follows. The student is guided by an electronic study manual that contains assignments and short case studies on sixteen different marketing topics (see Table 1). The assignments and cases are offered through the Internet. These are interactive and make use of multimedia. A separate textbook is sent to the students' homes. The book can be used to find relevant theoretical information while solving the assignments. It provides in-depth theoretical knowledge on each of the sixteen topics of the course.

For each of the sixteen marketing topics the electronic study manual offers three components through the Internet. These are:

❏ a self-test

❏ exercise assignments in an exercise case study

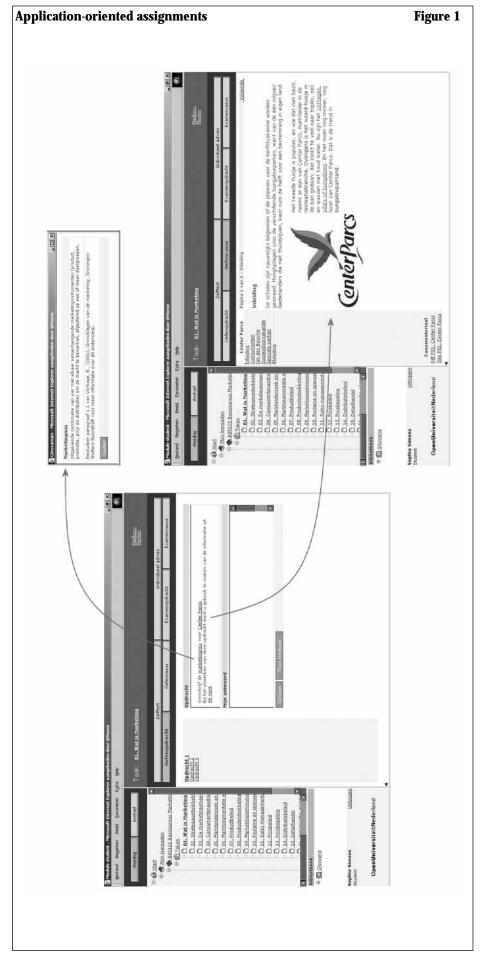| Overview of the course topics	Table 1
Part 1 - Orientation and introduction/overview	
1. Overview of marketing	
2. Strategy development	
3. The marketing environment	
Part 2 - Analysis of the market	
4. Consumer behaviour	
5. Marketing research and marketing information	
6. Markets and segmentation	
Part 3 - Product marketing	
7. Product positioning	
8. New product development	
Part 4 - Advertising & promotion	
9. Marketing communication strategies	
10. Advertising and branding	
11. Sales management, direct marketing and promotion	
Part 5 - Pricing	
12. Price policy	
13. Factors affecting price decisions	
Part 6 - Distribution	
14. Distribution policy	
15. Marketing channels	
Part 7 - Marketing planning	
16. Organisation, planning en control)	

❏ examination assignments in an examination case study.

Self-test

Students can test the level of their own knowledge with ten multiple-choice questions. After each question, students automatically receive feedback on the answer they have filled in. It is clearly indicated in the feedback what is right or wrong in the answer chosen. Empirical evidence indicates that simply showing students the correct answer has less effect on learning than providing an elaborate feedback on the correct and incorrect elements of the given answer (Dempsey, Driscoll and Swindell, 1993). Moreover, the motivation of students is positively influenced when feedback is given that is tailor made to the answer of the student (Ross and Morrison, 1993).

Application-oriented assignments   **Figure 1**

In addition, the feedback shows which parts of the textbook provide further in-depth study material on the topic of the multiple-choice question. On the basis of the errors made in ten questions, students obtain an overview of the knowledge they lack. This gap in knowledge must be filled (by studying the textbook) before a start can be made on practising competencies for this specific marketing topic.

Exercise assignments

In a competency-based approach, assignments provide the guidance for the learning process of students. In this course, students have to complete a number of exercise assignments on each topic in the electronic study manual on the Internet. These exercise assignments relate to an exercise case study. An exercise assignment is application-oriented, for example 'Describe the marketing mix for Center Parcs' or 'Assess the communication strategy of Peugeot'. The idea of using application-oriented assignments forms the core of the teaching methods in this course. The assignments (and not the case study) are the point of departure for the student. To complete an assignment, the student first needs theoretical knowledge (what does the concept of 'marketing mix' entail - or - how does one assess the communication strategy of a company?). Second, the student needs practical knowledge of the case with which the assignment is concerned (how does Center Parcs fit together? or what is there to know of Peugeot). A hyperlink from a theoretical term in the assignment to a glossary (see Figure 1) guides the students to the theoretical knowledge they need. As well as a brief explanation of the term, the glossary also contains a reference to a section in the textbook where this specific term is explained in more detail. Another hyperlink from the assignment refers to the case-study materials (see Figure 1). The case-study materials provide information resources on a specific company or practical situation.

Although the student has access to all the case-study information, he/she still has to decide for him-/herself what information is needed in order to answer the assignments. In this way, the student learns how to distinguish relevant from irrelevant information. The case-study materials include various links to relevant sites of companies and institutions. In addition, the text is enriched with pictures, advertising film clips and on-line newspaper articles. This makes the case study alive for the student. The student feels that he/she is in a motivating learning environment, which invites him/her to think up solutions to the assignments. Appraisals among students show that this is also found to be the case (see the survey results further on in this article).

The approach as described above means that the students' work is very result-oriented. All the student's work is directly geared towards answering the assignment. A student does not study the textbook until the moment when he/she needs the specific theoretical knowledge necessary to complete the assignment. The theoretical knowledge drawn from the textbook can be immediately applied to the practical assignment. Therefore, the course contains key aspects of just-in-time learning (Schoening, 1998).

After the necessary knowledge has been acquired from theory and from the case, the student can type in the answer on-line in an answer window (see Figure 1). As soon as an answer is filled in and saved, a supervisory teacher can view the answer given. The answer has to be typed in and not just vaguely thought up, which prompts the student to express him-/herself well. The possibility of a supervisory teacher being able to see the student's answer has also the effect that the student will take care in filling in the answer. Students will do their best to justify the answers properly.

After the answer has been filled in and saved, the student can ask for feedback. The student is then shown a standard answer to the assignment. This answer often focuses on common errors. In addition, references to relevant passages from the textbook are included for interpretation of the marketing terms used. The student now learns from the differences between his/her own reply and the standard reply and can fill any remaining gaps in his/her knowledge by consulting the textbook.

Examination assignments

Finally a number of examination assignments in an examination case study are presented to the student for each of the sixteen marketing topics. This is again done completely digitally. These assignments are of the same level as the exercise assignments

in the exercise case study. A similar procedure is followed to that described above for the exercise assignments and the exercise case study. The difference compared with the exercise assignments is that no feedback is given for examination assignments. This is justified by the underlying notion that learning takes place during the completion of the exercise assignments, and the examination assignments are purely geared towards testing.

Examination and assessment

The design of the examination procedure is based on four requirements:

❑ A low assessment burden must be attained, while competencies are nevertheless tested.

❑ Students must be able to be examined (and therefore assessed) at any chosen moment.

❑ The assessment must be objective, and therefore independent of the teacher who carries out the assessment.

❑ Cribbing of answers must be visible straightaway, so that action can be taken.

The solution that has been designed deals with each of the above issues.

Testing competencies with a low assessment burden

It is a general rule that what students have been taught must be examined (Brown, 1996). It is even the case that the method of testing determines what is learned (Prodromou, 1995; Gipps and James, 1996). In the *Introduction into Marketing,* students are taught to apply theoretical knowledge to practical case studies through the exercise assignments and exercise case studies. It is not possible to test whether students have acquired this skill during the course by using multiple-choice questions. Consequently, we use examination assignments in examination case studies for the assessment of students. In this way, we examine exactly the competency that has been taught.

How does this principle tally with keeping down the assessment burden for teachers? Does this way of working not lead to teachers spending a large amount of time on marking student answers? An average examination case study consists of six assignments. The course includes sixteen marketing topics, each of which contains one examination case study. This means that each student completes over 100 examination assignments. We have nevertheless succeeded in keeping down the assessment burden for teachers. The following approach has been adopted.

Of the sixteen examination case studies that the student completes, four are actually corrected. The student is allowed to choose two out of these four case studies to be assessed, while the other two case studies are drawn at random from the other fourteen examination case studies the student has made. The advantage of this method of examination is that the student will take care with all examination assignments, as he/she does not know beforehand which two case studies will be chosen at random by the electronic system to be added to the set of case studies actually assessed. As students choose two case studies themselves, they have some influence over the set of case studies looked at. This prevents the argument afterwards (in the case of a failure) that it is the worst case studies that have been included in the assessment. Broadly speaking, this method of examination does not have any drawbacks for students, while the approach offers great benefits to the teachers. Only four case studies have to be assessed, not sixteen. Teacher assessment time is therefore considerably reduced.

Other features of the electronic system that make assessment easier for teachers are discussed in the remainder of this article.
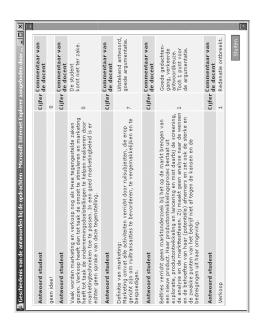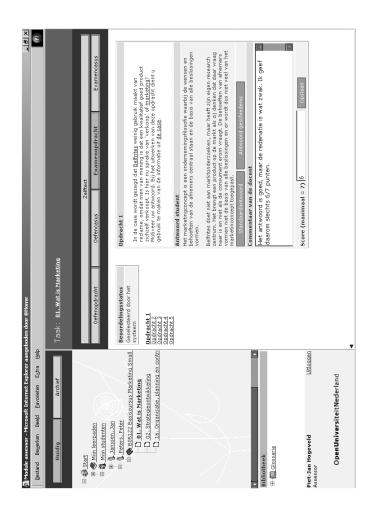
Continuous examination and continuous assessment

It has been ensured in the *Introduction into Marketing* that the teacher is able to assess on-line through the electronic system. After logging on, the teacher is presented with a list of students to be assessed by him/her. The teacher chooses a particular student and views all the assignments with the student's answers (Figure 2, left). The electronic system indicates the maximum number of marks to be allocated to this assignment. The teacher compares the student's answer with the answer model. All the elements that a good answer must contain appear in the answer model. The teacher

On-line assessment by teachers   **Figure 2**

Note: students' answers and teachers' comments are fictional.

can then indicate on-line how many marks he/she is willing to award to the answer. Until assessment of the student is finished, the assessment of each assignment can still be adjusted. When the teacher has finished assessing a student, he/she clicks on a particular button and the assessment has then been finally completed.

Electronic examination ensures that no paper routes are necessary. Students do not need to send their written examinations to a central point. Nor do the examinations submitted need to be manually distributed and sent to assessing teachers. This signifies a gain in teacher productivity and an improvement in efficiency.

This way of working makes it possible to assess examinations throughout the year with a group of three teachers. Students can submit their examinations at any time they want. Teachers know their individual review periods in which they are responsible for correcting the assignments that are submitted electronically by the students.

How to achieve objectivity in assessment

The *Introduction into Marketing* is assessed by a team of three teachers. How is it ensured that the assessment of a student is independent of the teacher who carries out the assessment? In the electronic system objectivity is guaranteed by what is known as the answer history. The teacher can easily see how other teachers have assessed students' answers on a particular question (Figure 2, right). This makes it possible to achieve unity in assessment between different teachers. In addition, the answer history makes it easier for teachers to allocate a score to an answer. A teacher benefits from the way other teachers have already weighed up this assignment. The answer history reveals statements such as: 'I deduct one mark for lack of good argumentation'.

What to do about cribbing

There is a fear in electronic examination that students will exchange answers among themselves. Cribbing quickly becomes visible to teachers as a result of using the answer history. With the answer history, the teacher obtains a list of all answers students have submitted on a particular assignment. It is immediately clear whether two answers are exactly the same.

Nor does cribbing guarantee a pass for the student. This is due to the specific design of the examination procedure in which two case studies are drawn at random by the electronic system. The student can only partly decide for him-/herself which case studies will be assessed. In addition, a total of more than 100 examination assignments are submitted (for sixteen different examination case studies) before a student can be assessed. This discourages students from enlisting someone else to take the examination.

We also wish to prevent successful students from circulating 'correct' answers. Students who have already passed therefore only receive limited feedback on errors they have made in their answers. The exercise environment provides feedback on errors made, while the examination environment is solely intended to test how well the student masters the acquired skills. Errors made in the examination are therefore only explained verbally. Note that students of the Open University take part individually in courses. They start the course at different dates and they have different study speeds. Moreover, students do not know one another, which limits the opportunity to exchange 'correct' answers.

Survey results

The course has been evaluated among students. Five students were asked to give their opinion on various aspects during the course. These students have filled in two questionnaires. One questionnaire handled issues such as study load and difficulty, design of the course, usefulness and ease of use of the electronic manual. Furthermore, questions were asked on whether the electronic manual was convenient and stimulated study. This questionnaire was completed at the end of the course. The second questionnaire was filled in during the course and had open questions on whether the students encountered problems with specific assignments. This could be a technical problem but also a content-related problem. The general opinion of these five students was that the electronic study manual was easy to use and motivated further study of the textbook and related study materials. Hardly any technical problems were encountered. Students unanimously reported to be very pleased to work on assignments related to practical situations.

In addition, we have administered an evaluative survey among 32 students that finished the course. Seventeen students completed the questionnaire (response rate of 53.1 %). Again, questions were directed at the usefulness and the ease of use of the electronic manual as well as the study load and difficulty of the course.

The questionnaire contained mostly open questions. On the question "To what degree do you think that the use of the electronic manual offers added value above the use of a paper manual" the majority of the students (10 out of 17) was very positive, stating that the electronic manual was very efficient and easy to use. One student explicitly stated that the electronic environment stimulated the digestion of the study materials and encouraged the practical engagement in the taught discipline. Two students did not have a preference for either an electronic or a paper study manual and five students did not see any additional advantages of an electronic manual compared to a paper manual.

On the question whether the specific design of the examination suited the course, five students disagreed, while twelve students were very positive. One student stated, "This method gives students the possibility to choose two cases that are closely related to their own interests". One of the disagreeing students thought that it would be better if all four cases were chosen at random by the electronic system. He/she was afraid that students would focus on the two cases of their choice and only have a half-hearted attempt on the other cases. All students reported to be pleased to work on assignments related to real-life situations. Table 2 shows several statements of students regarding this issue. Students reported an average appraisal of 7,9 on a 10-point scale (10 being the maximum score) satisfaction level for the course. Students stated that the *Introduction into Marketing* is "an entertaining course, an excellent way to test competencies".

Besides the evaluation among students, two teachers were interviewed for their experiences with the assessment of the course. The teachers stated that the on-line assessment was easy to use. The electronic assessment environment gives the teacher a view on both the student's answer and the answer model. Teachers set great value to the fact that they do not have to search their papers for the answer model and the

Students' statements	Table 2
- "Very good course that encourages you to a structured and analytic approach of practical situations"	
- "You can better understand the marketing concepts and theories by applying them to practical situations"	
- "This course forces you to think!!!"	
- "The material encourages you and makes you crave for more"	
- "The course makes marketing alive"	
- "You learn a lot by analysing the cases"	
- "It is enjoyable to alternately read and make practical assignments"	

opinion of other teachers on similar answers. They stated that the electronic system made the grading process accurate and very pleasant to do. Furthermore, the teachers stated that the system made it possible to grade a student's performance within half an hour. In comparison, at the Faculty of Management Sciences, an average competency-oriented course has an assessment burden of one hour per student. The specific design of the *Introduction into Marketing* course therefore reduces the regular assessment burden of a course by fifty percent.

Summary and concluding remarks

At first sight, competency-oriented education does not appear to go together with cost-effectiveness. It involves an assessment with open questions, which usually puts a large burden on teachers. This article has given an example of a course that achieves competency-oriented education with a relatively small assessment burden. First, the *Introduction into Marketing* course is geared towards the development of competencies among students by giving them assignments that pertain to practical cases. Moreover, the extent to which the student has acquired these competencies is examined in the course. Therefore, the examination is in close keeping with the way in which marketing has been taught. Second, effective use has been made of all the benefits that the Internet offers to keep down the assessment burden on teachers. As a result, teacher productivity is raised and teaching costs are kept down.

Evaluations of the course showed that students as well as teachers are very satisfied with the electronic system. This course could provide the basis for other courses that aim to achieve cost-effective competency-oriented learning materials. Innovative solutions like this course make it possible to meet the challenges of current education.

Bibliography

Brown, S. Assessment, 1996, www.lgu.ac.uk/deliberations/assessment/

Daniëls, J.; van der Vleuten, C. De rol van ICT in toetsen en beoordelen. In: H. Frencken, J. Nedermeijer, A. Pilot and I. ten Dam (Eds) *ICT in het hoger onderwijs. Stand van zaken*. Utrecht/Leiden: University of Utrecht, IVLOS/University of Leiden, ICLON, 2002, p. 37-51.

Dempsey, J. V.; Discoll, M. P.; Swindell, L. K. Text-based feedback. In J.V. Dempsey and G.C. Sales (Eds) *Interactive instruction and feedback*. Englewood Cliffs, New Jersey: Educational Technology Publications, 1993, p. 21-53.

Enkenberg, J. Instructional design and emerging teaching models in higher education. *Computers in Human Behavior*, 17, 2001, p. 495-506.

Gipps, C.; James, M. Assessment matched to learning, paper presented at the BERA Conference, Lancaster, September 1996.

Moonen, J. How to do more with less? In: K. Beatie, C. McNaught & S. Willis (Eds), *Interactive multimedia in university education: Designing for change in teaching and learning*, p. 155-163, Elsevier, Amsterdam, 1994.

Parikh, M;. Verma, S. Utilizing Internet technologies to support learning: An empirical analysis, *International Journal of Information Management*, Vol. 22, 2002, p. 27-46.

Paserini, K.; Granger, M. J. A developmental model for distance learning using the Internet. *Computers & Education*, 34, 2000, p. 1-15.

Prodromou, L. The backwash effect: from testing to teaching. *ELT Journal*, Vol. 49(1),1995, p. 13-25.

Ross, S. M.; Morrison, G. R. Using feedback to adapt instruction for individuals. In: J.V. Dempsey and G.C. Sales (Eds). *Interactive instruction and feedback*. Englewood Cliffs, New Jersey: Educational Technology Publications, 1993, p. 177-195.

Schoening, J. R. Education reform and its needs for technical standards. *Computer Standards & Interfaces*, Vol. 20, 1998, p. 159-164.

Spooner, F.; Spooner, M.; Algozzine B.; Jordan, L. Distance education and special education: Promises, practices, and potential pitfalls. *Teacher Education and Special Education*, Vol. 21(2), 1998, pp. 121-131.

van der Vleuten, C. P. M. The assessment of professional competence: Developments, research and practical implications. *Advances in Health Sciences Education*, Vol. 1, 1996, p. 41-67.