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1995

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How to cite

PERAYA, Daniel, HAESSIG, Claus. Course Development Process : Design and Production of Teaching Material at the FernUniversitaet and the Open Universiteit : A Comparison between Two European Universities. In: Journal of Distance Education / Revue de l'Éducation à Distance, 1995, vol. 10, n° 1, p. 25–52.

This publication URL: <https://archive-ouverte.unige.ch/unige:17350>

**The Journal of Distance Education / Revue de l'Éducation
à Distance, Vol 10, No 1 (1995)**

Course Development Process: Design and Production of Teaching Material at the FernUniversitaet and the Open Universiteit: A Comparison between Two European Universities

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VOL. 10, No. 1, 25-52

Abstract

This paper presents a comparative study of the ways teaching material is designed in two European distance universities, the German FernUniversitaet and the Dutch Open Universiteit. It analyzes how the material is designed and produced, and it outlines the pedagogical and methodological issues that are the foundations for these practices. Moreover, this paper shows how the institutional constraints at work in these universities have affected pedagogical conception and practices. Each setting represents a particular model: a classical university operating at a distance (the FernUniversitaet) and an open and flexible institution (the Open Universiteit).

Résumé

Cet article présente une étude comparée des modes de conception et de production du matériel d'enseignement à distance dans deux universités à distance européennes, la FernUniversitaet allemande et l'Open Universiteit hollandaise. Il analyse en détail les modalités et les fonctionnements spécifiques à chacune de ces deux institutions et montre comment les concepts pédagogiques et méthodologiques déterminent les pratiques de conception et de production de matériel d'enseignement. Enfin, l'article souligne le poids des contraintes institutionnelles sur les conceptions pédagogiques elles-mêmes. Chacune de ces universités semble en effet incarner un modèle particulier: une université classique mais à distance pour le cas de la FernUniversitaet, une université ouverte et à distance pour l'Open Universiteit.

Introduction

Background

From 1990 to 1993, in the context of the European programme TEMPUS (TransEuropean Mobility Scheme for University Studies), Switzerland participated in the Fernstudienzentrum Budapest Project (abbreviated as FSZ Budapest), whose objective was to create a distance teaching centre for higher education in Budapest. The Fernstudienzentrum Budapest was inaugurated in 1991, and it now has more than 150 students. They can follow courses in the following subjects: economics, electronics, mathematics, computer science, environmental protection, social sciences, pedagogy, agronomy, and modern languages. Courses are taught in German by the FernUniversität of Hagen, Germany (henceforth FU), and in English by the Open Universiteit of Heerlen, Netherlands (henceforth OU).

In the long term, the FSZ Budapest can play a pilot role and through multilateral collaboration participate in the renewal and development of distance university studies in Hungary and other Eastern and Central European countries (Kommission des Europäischen Gemeinshaften [KEG], 1990). Indeed, in the context of current political and socioeconomic upheaval, Hungary attributes an important role to teaching and, in particular, to distance training. The project relies on a partnership structure involving Hungarian and other European higher education institutions (EU and EFTA).¹

Two Swiss university centres were given different mandates. The first, initially attached to Zurich University, then to Basel, is mainly concerned with the intercultural problems that necessarily arise in a trans-European collaboration. It has also become involved in the training program for tutors (Allemann-Ghionda, 1992). The second work group, composed of members of TECFA (Unit for Learning and Training Technologies) of the Faculty of Psychology and Education Sciences of Geneva University, has been making a comparative study of the methodologies of development of training material furnished to FSZ Budapest by FU and OU since 1991 (Peraya & Gardiol, 1992).²

The study by Peraya and Haessig (1992) that is the basis of this article describes the pedagogical concepts and the development of training material at FU and OU, emphasizing the didactic and methodological aspects. It also describes the teaching, educational, and institutional traditions of the two universities. These last aspects determine the frame of reference and the perception of learning and the learner, and they also influence the design of teaching material. The quality and efficiency of distance training material should thus always be analyzed in two ways: first, in the educational and institutional contexts broadly speaking and, second, for their intrinsic pedagogical characteristics.

The scope of this study is far broader than the context of the FSZ Budapest Project and the TEMPUS Program. Our work presents numerous aspects that are closely related to the general question of distance training and to the development of learning material; that is, design, production, and evaluation. First, the comparison brings to light two distinct types of distance universities that clearly illustrate the difference between “distance university teaching” and “open and flexible teaching” (Commission des Communautés Européennes [CCE], 1991a, 1991b; Van den Brande, 1993). At a time when distance university teaching is being presented as the alternative to existing forms of education, we feel it is useful to clarify these two models using case analysis. Also, the French-speaking tradition often seems to consider the English Open University and Quebec’s Télé-Université as their reference institutions (this situation is partly the result of the work of France Henri and Anthony Kaye, 1985). In reality, the German and Dutch experiments are just as interesting, but, for linguistic

reasons, they are hardly known: our study offers the first French-language monograph dedicated to them. Finally, there is practically no literature in French on the current Hungarian distance teaching system. (The interested reader should consult the original report [Peraya & Haessig, 1992].)

The study was based on several surveys conducted in Hagen and Heerlen in 1992. A rich literature exists in the domain of instructional design, which is generally defined as the systematic process of analyzing learning goals, developing, and evaluating instruction (see Dick & Carey, 1985; Gagné, Briggs, & Wager, 1988). Many models of instructional design were presented and studied in detail (Stolovitch & Larocque, 1983). Nevertheless, people involved in designing and producing course material at FU and OU do not refer explicitly to these models. This study makes it clear that they present themselves more as practitioners than as theoreticians. They consider their approach to be a pragmatic and original answer to their daily work more than a critical and theoretical reflection on it. For these reasons, the study was based on interviews with leaders of the managing teams (Dr. J. Wurster in Hagen and Dr. F. Gastkemper in Heerlen) and on the analysis of a considerable mass of written documentation referred to in the bibliography of this study.

Institutional Structures of the Fernuniversitaet and the Open Universiteit

The two partner universities of FSZ Budapest are typical examples of distance teaching in Western Europe. Let us first emphasize their similarities. They were both born of the will to reform the face-to-face university system by democratizing studies, increasing access to higher education for people already active in professional life, and reducing the number of university programs with resident requirements. Their recruitment base is very similar: the typical student, aged 25 to 38, combines a professional life and studies. Available study time is therefore less than that in a traditional university framework. Both institutions offer, in addition to instructional materials, a structure for face-to-face work: study centres for counselling, tutoring, and examinations. The study centres thus have the function of supervision and individualization that are so important for supporting and motivating students.

As to the differences, they lead us to consider each of these two universities as typical of one model of distance university training. On the one hand, the FU is a distance university, providing classic university training but at a distance, and, on the other hand, the OU is an open university, offering an alternative model to traditional university training. Let us review the differences:

- “Open” university vs. “closed” university:

The FU tends to resemble classic German and European university training, with the consequence of limiting access to studies to only those students with a secondary school diploma (FU, 1991a, 1992).³ Contrary to that model, the OU is, as its name indicates, a university open to any interested person over 18, independent of his or her qualifications. If both universities are “second way” universities, only the Dutch one is really a “second chance” university;

- “Teaching and research” university vs. “teaching” university:

The identification of the FU with the classic university model has as a consequence the involvement of titular professors in fundamental research as much as-if not more than-in teaching. The FU is both a research and a teaching institution; the OU is primarily dedicated to teaching and broad-casting knowledge. Research is thus an accessory activity for its teachers. The specificities of these general viewpoints have repercussions not only on the organizational forms of these institutions but especially on the methodology and approaches to designing teaching materials.

Designing and Producing Teaching Material

A First Overview We have analyzed the specific characteristics of the teaching material produced and used by both universities in a threefold procedure: a comparative inventory related to the principles of structuring the teaching materials; a presentation of design, theory, and methods; and, finally, a description of the existing design and production practices.

Since their creation, both universities have followed the path of innovation. Integrated media-written, audiovisual, electronic, and interactive-appears in all their programs under the name of Medienverbund or Mediamix (FU and OU respectively). Both universities conform to what appears to be a general rule in this domain: written material constitutes the basic medium, and it represents about 80 to 90% of the teaching material, whereas audiovisual, electronic, and interactive media amount to between 5 and 10% (Sauve, 1994). However, both universities are considering increasing the proportion of interactive teaching in the years to come.

The written material of the FU is structured into teaching units that are sent to students twice a month. The units are in form of small booklets, which makes them easier to update. The OU, on the other hand, makes the entire course material available to students at registration. This material is in the form of bound books. The result is greater flexibility for the students but less flexibility for modification or updating: a course is considered a finished product and is not revised for five years.

The design of courses at the FU relies on the homogeneity of a curriculum. The Dutch distance university opted for a modular system. The OU courses must be able to be integrated into different study programs. The flexibility and the savings created by using the larger scale are that much greater.

Although a different logic governs their course design, both universities have opted for a comparable system of segmentation of teaching adapted to the students' work and lifestyles: bimonthly mailing for the FU and four-hour course units at the OU.⁴

This brief description of the teaching materials produced by the FU and the OU allows us to anticipate the important differences that an in-depth comparative analysis of didactic methods will bring to light. The following pages are dedicated to this analysis. Because concepts such as “course design,” “design of material,” and “production of material” do not have universal definitions and because there are many translation problems from Dutch and German into French, and from French into English, when necessary we provide the definitions adopted in this study.

Designing the Teaching Material: Pedagogical and Methodological Approaches

The Design Process at the FU: Main Issues

From the foundation of the FU, its fundamental research institute, the Zentrales Institut für Fernstudienforschung (ZIFF), made it a point to formulate a didactic concept capable of guiding the development of distance teaching material (Melton, 1977; Peters, 1975). For Peters it is not the content-the subject matter-but rather the learning process and the objectives that must be placed at the centre of reflection and of the process of design and production. From this perspective, he recommended that learning objectives be attained as much as possible through technical media (pp. 3- 9). He defines designing teaching material as a global process, as described, for instance, by Wagner (1991, quoted by Oliver, 1994). It includes:

- the analysis of jobs, tasks, objectives, content, and audience
- the design of curricula, units and lessons, media and materials.⁵

The FU's production centre, the Zentrum für Fernstudienentwicklung (ZFE), still conceptualizes the distance teaching situation on the basis of these general principles.

The design of teaching material at the FU is based on an analysis of the system in its three interacting components: the learner, the subject matter, and the media. In traditional face-to-face teaching, it is ideally up to the teachers to handle these three aspects: in principle they master the content, the learners, and the human and technical media (themselves, their voices, and their presence and the blackboard, print materials, slides, overhead transparencies, videograms) all at once.⁶ Of course, this ideal model does not always correspond to the reality of the classroom: too often, teachers emphasize the content to the detriment of the other two components, with well-known results.

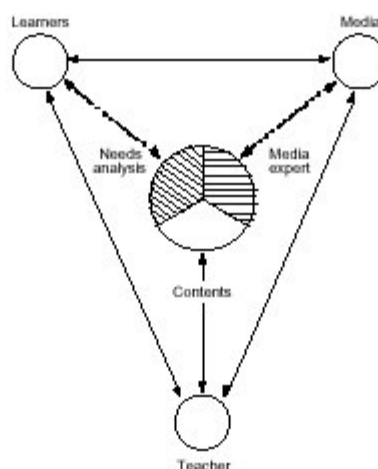
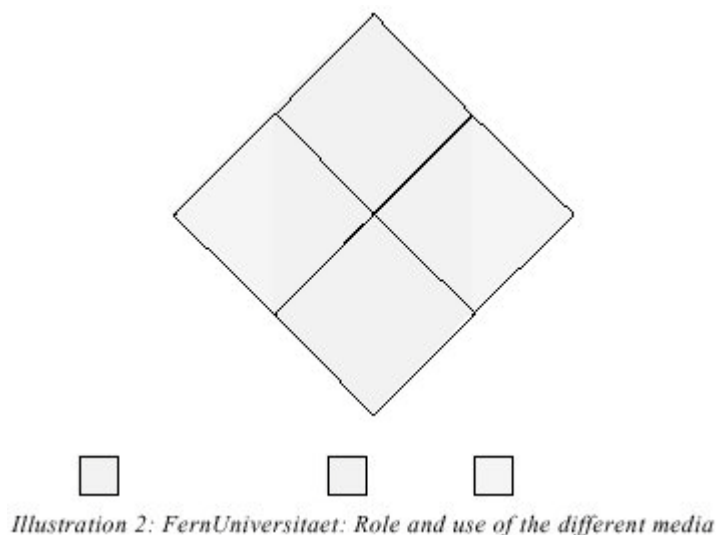


Illustration 1: FernUniversitaet: The interacting components of a distance education system (after Dr. Wurster)

The reality of distance teaching transforms this situation in a decisive way. The teacher and the learner are separated by physical and temporal distances so that the need to transform the contents for distance transmission gives the media-written, audiovisual, or electronic-a degree of autonomy unthinkable for a teacher in the face-to-face situation. To say that this teaching material enjoys important autonomy emphasizes the fact that it constitutes a whole, an entity, and that its value resides in its self-sufficiency and degree of completeness. This situation dismantles the interactions schematized above: learners and media become components that are external to the teacher, whose role is reduced to the elaboration of the subject matter. Paradoxically, whereas the constraints of distance teaching maintain the teacher's role of external subject expert, the teacher must take into greater account than in the face-to-face situation the two "externalized" components (the learners and the media).

So the FU brings in new actors-the expert in teaching media, the expert in pedagogy, and the needs analyst-who have the task of helping the teacher to manage the dissociation between the three components mentioned earlier. The teacher remains in the centre of the system but becomes the pivot at the intersection of the requirements of the learners, the media, and the subject matter (cf. illustration 2). The existence within the ZFE of a section called "Didactics of subjects" seems to be a necessary consequence of this model: the experts in pedagogy are at the disposal of the teachers and cover all the different subjects.



The interactionist model of the components of the system developed by the FU cannot satisfy all the requirements of distance teaching without relying on a methodology of media. If the written page constitutes the principal medium of teaching activities, the university nevertheless aims to develop what it calls learning through integration of the media (Lernen im Medienverbund). Illustration 2 shows how the FU defines the role and use of the media in the process of teaching/learning in a taxonomic perspective. To this end, it defines two reference axes, graphically represented by the two diagonals of the lozenge. The first refers to the process of distribution/reception of knowledge; the second, to the forms of instructional intervention determining any learning process, activity/communication. The advantage of this model lies in its ability to relate the use of the medium to learner motivation in a self-instruction situation.

From the perspective of distribution/reception, the teaching material used-printed matter, audio, or video cassettes-is unidirectional. Although it has certainly proven its efficiency for the transmitting of knowledge, this type of material is deficient as a medium for

communication and activities. Indeed, the activities offered to the learner-readings, exercises, or homework-are, from this point of view, rare and strictly limited to asynchronous forms of communication, with low rates of interactivity. Motivation comes only weakly from the learning medium: it is essentially incumbent on the learner to be self-motivating.

By contrast, media such as interactive software or telecommunications offer communication links and sparks for activities that could remedy the unidirectionality of the distribution/reception process, which is so often harmful to the learner. In these situations, teaching recovers an element of learning based on active, communicative behaviour. This model is the goal for FU; it represents an ideal objective for the evolution of its current pedagogy and practices, although the actual proportion of interactive and communicative teaching material currently remains minimal in comparison to material that simply presents content.

The Design Process at the Ou: Main Issues An Overview

Like the FU, the OU claims to follow an “original didactic concept.” It follows the principle that “without its own didactic concept, a distance university cannot succeed in attracting and keeping students” (Open Universiteit, 1990, p. 26). So it has from the outset undertaken the formulation of a method of design for its teaching materials that is in keeping with the requirements proceeding from its mission. The OU has attempted to apply its general concept of training at every level of its institutional structure and to its organization chart, including the level of the units that produce teaching material. The OU has also developed its didactic concept from a pragmatic perspective: it is not presented as a finished or definitive pedagogical model, nor has it an ambition to become one. Rather, it is a frame of reference, a set of “eclectic” ideas (ibid.) that integrates objectives, didactic principles, theoretical knowledge, know-how, expertise, and a way of handling interactions between the partners. That is to say, it is more a guide to action based on experiential knowledge than a constituted theory.

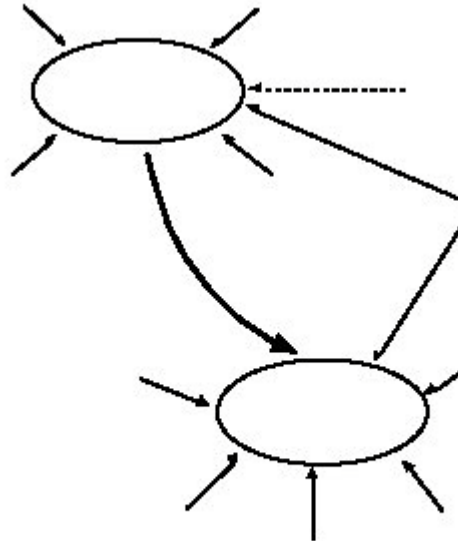


Illustration 3: Open Universiteit: The model of the design process (after G. van den Boom, OU)

The OU has chosen to emphasize training and knowledge dissemination rather than fundamental research and production of knowledge. This deliberate choice expresses itself as true attention to the target audience. The objectives that arise from this focus relate to scientific subject matter, technical know-how, and the capacity for self-training. Let us quote for reference:

- knowing and understanding the elements of a subject field: the concepts, terminology, definitions, methods, theories, and models
- learning to use the methods and techniques that are specific to the subject
- mastering the process of acquisition and presentation of scientific knowledge
- acquiring a critical mind
- learning to research and use specialized literature as well as all other documentary sources. (van Enckevort & de Wolf, 1988)

These general objectives, which proceed from the priority given to teaching, determine the basic structure of a course (or basic course model). They constitute a general model, a sort of metamodel, because they are linked neither to a subject nor to specific content. They are, in reality, a set of specifications to which written courses must conform and which make it possible to give them a common didactic design. This design is the basis for formulating, at a second stage, the didactic plan of the course, which will, in turn, take into account the subject matter and course content (cf. illustration 3). Gradually, however, the requirements of pedagogical practice and of the subjects have led to variations of the basic course model, one of the most frequently used of which is the study unit model.⁷

The latter model is designed especially to adapt to the learner's situation: indeed, it must be possible to study the course in the context of family and professional life. To achieve this purpose, the course is subdivided into a series of short study units-about four hours-each including study guidelines, intermediary summaries, and revision exercises. The general structure of a course, therefore, is as follows. Each course begins with a general introduction. Each unit begins with a brief preamble linking it to the preceding unit, proceeds to an exposition of the content, and ends with revision and self-evaluation tests. The body of the

unit, the content, is supplemented by study guidelines, which are printed in the margin of the text (cf. illustration 6).

On the whole, a course based on the study unit model combines the following characteristics:

- the material is specially designed for each course⁸
- the text contains learning aids, such as the intentions and goals of the programs, explanations about the objectives, homework, exercises, and self-evaluation tests with answers
- the text and the study aids are integrated
- the course is highly structured into a number of study units
- the basic (i.e., printed) material is made available to the students in full
- electronic media are entirely integrated into the course design.

In comparison to this study unit model, the textbook/workbook model, which is the second most common model, separates the presentation of the content and the didactic tools. The textbook contains the whole body of knowledge-notions, concepts, and so on-required: it is structured so that it is understandable and useable by the student in self-study. However, it is the workbook that contains the study guidelines: it presents the objectives of the course, the introduction and conclusions, self-testing exercises, case studies, comments about certain passages in the textbook, deeper analyses, an index, and, finally, a general recapitulation. The workbook regroups the work directives and the study aids: it attempts to motivate as much as to structure the student's work. More than the study unit model, this second model makes it possible to introduce the student to separately written texts presented in an academic style of writing, which are not as highly structured as the textbook.

Hence, the construction of the courses at the OU is determined by two forms of logical reasoning: on the one hand, there is modular logic, which implies that courses may as a rule be freely combined in a curriculum, and, on the other hand, a learning logic, which proceeds by segmentation of the subject matter into four-hour units. This approach presumes that the student will be self-motivated and follow the preprogrammed rhythm of learning rigorously inscribed in the course structure. At the FU, on the other hand, the regulation of the students' rhythm of learning is organized by the institution, which fragments the course and makes bimonthly mailings.

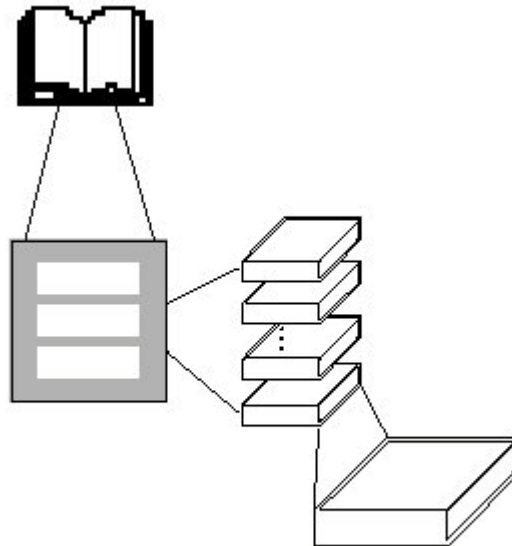


Illustration 4: Open Universiteit: The printed course's model (each study unit entails four hours of work)

The strong integration of the different components of the institution (faculties, departments, institutes, services) expresses the overall concept of the Dutch Open University, but it may also result from the demands of designing and producing instructional material. As well, this integration constitutes the condition of success of such a development. One would thus observe, at all levels in the institution, the will to translate the basic pedagogical concept structurally in order to create the concrete conditions for its accomplishment. From this perspective, the interaction and integration of the components are essential. We will analyze, in turn, the integration of the different agents participating in the development of teaching material, the integration of the subject matter, and, finally, the integrative design of the media.

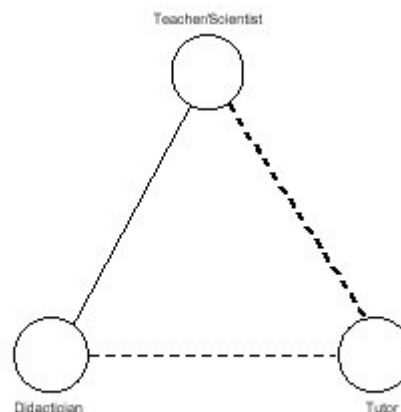


Illustration 5: Open Universiteit: Agents in the design process

The Integration of the Actors

The need to integrate all the professional skills required for the development of teaching material was underlined from the very beginning of the OU. The methodology setup therefore integrates these three agents: the teacher or the scientist, who is the subject expert; the instructional design specialist, designated at the OU by the term “educational technologist”; the tutor in charge of supervising the students, who works in the study centres. Of them, only

the first two participate actively in the process of designing material. The tutor is considered one agent in the learning environment and plays a decisive role at this stage: the demands of this role are considered in the instructional design. The direct collaboration between the teachers and the instructional specialists, the interaction between the constraints, and the requirements of the three roles combine to guarantee the quality of the product: the scientific quality and the academic level first of all, which depend on the subject expert; and the instructional quality next, which depends on the educational technologist.

This arrangement created a defining institutional framework that organizes and structures the collaboration between author-teachers and educational technologists. This collaboration could not have been left to the haphazard effects of individual goodwill or privileged interpersonal relationships. All instructional material is produced by a team, including teachers and experts in pedagogy under the leadership of a project head, who is also an expert in the subject. The OU is working on a project designed to complete this plan for horizontal integration of specific skills. This project aims at building an expert system, based on the teachers' and subject experts' knowledge that will allow the instructional specialists to create teaching material using strict criteria for design and production control. The teacher would no longer have the function of author; instead, as an expert, he or she would provide knowledge and expertise to develop the system that the education technologists would use. The production of teaching material would rely on the interaction of various closely overlapping kinds of expertise.⁹

The Integration of Contents: The Modular System

The courses normally constitute the basis of any study program. Ideally, each of them may be integrated into several programs belonging to different disciplinary fields or levels of study. A course may constitute either an autonomous unit in the context of further education or an element in a study curriculum leading to a higher education degree. This sort of modular approach meets the requirements of flexibility, and because it has this approach to courses, the OU attains a high degree of integration in its programs and teaching fields. It offers the student many options for combining courses, thus increasing the flexibility in the level of training that is available and the degree of freedom in the program. The demands of modularization, however, imply such a level of generality that it is difficult to design courses for specific audiences. Conscious of this difficulty, the OU is relying on the evolution of electronic media to make it possible, in the near future, increasingly to customize the content of its courses for specific user groups (Open Universiteit, 1990, p. 27).

The Integration of the Media: Mediamix

The idea of Mediamix proposed by the OU corresponds to the idea of Medienverbund espoused by the FU. The similarity of these two expressions accurately mirrors the similarity of approaches and ways of working. For a better presentation of instructional material, both universities use printed, audiovisual, and interactive media. They allocate considerable resources to the development of non-print media. However, if one looks at the composition of the courses offered in both universities, written material constitutes the basic teaching material for presenting 80% of the content: audiovisual and interactive media simply have a

complementary role. The significant difference between the two universities lies at the level of procedure that leads to the integration of the media into a course. At the FU, the inclusion of audiovisual or computer media always happens at a second stage; it is developed on the basis of a pre-existing print course. At the OU, on the other hand, it takes place at the beginning of the design process and is an integral part of it. Four criteria then determine the design of a course. In order of importance, they are:

- the availability and flexibility of a medium in relation to the freedom of place and time for study
- the instructional function in relation to the learning objectives and contents
- the pragmatic function, notably in relation to the student's motivation
- the costs of development and use (Gastkemper, 1988, p. 51).

These criteria define a pragmatic attitude about the use of the media: the simplest in a given context, the most efficient, and the least costly. It appears obvious that, in the context of university teaching, written material will constitute the basic medium: it is an established fact that does not, however, reflect any preestablished hierarchy of the media. No medium appears to be considered secondary today, and each one is constantly evaluated according to its strong and weak points (Van Enckevort, 1991, pp. 10-12).¹⁰ The difference between complementarity and second place takes on great importance here. The evolution of teaching technologies could easily redistribute the relative roles and importance currently attributed to each of the media in the concept of mediamix. This possibility of change seems particularly true for interactive media and the forms of telepresence or communication mediated by computer networks.

The Production and Evaluation of Teaching Material

Production practices necessarily correspond to the design methodology. By the term production practices we mean the processes that lead from the initial project of course design to the distribution of the product once it has been created. These processes bring in the scientific, pedagogical, technical, and administrative components of any distance university: the subject fields organized within the faculties, the specialized departments in charge of design and production, and finally the technical services that create the material and those in charge of its distribution. The main questions therefore concern the forms of collaboration between different agents, on the one hand, and the degree that the fundamental methodological principles are achieved, on the other.

The Production Process at the Fernuniversitaet: Main Features

Printed Material

At the FU, the production of material is determined above all by two fundamental elements of which we have already spoken: on the one hand, the heritage of the German university model, characterized by the great autonomy of its teaching faculty in matters of teaching and

research, and on the other hand, the prevalence of printed material, notably the study guide, in relation to which audiovisual and interactive media hold a secondary role.

The printed material conforms to a standard model that strictly defines both its structure and its appearance. Course authors are given rigorous guidelines in a publication specifically prepared for them (FU, 1991b). The standardization of page layout of printed material facilitates the authors' work, but it also structures the work of the learners by developing in them certain reading habits. Technically, the ZFE has developed style sheets the authors or the faculty secretariats use to input and shape the texts. The model corresponds to the specific requirements of distance teaching and also to the FU's specific mode of distribution. Each course is divided into units, the Kurseinheiten, and these are sent to the learners on a regular basis, usually bimonthly.¹¹ Illustration 6 shows the typical course structure. An introduction explains the objectives of the course, gives an overview of the subject matter, indicates the various stages of learning, and provides study guidelines to the student. The bibliography and the glossary constitute the classical tools for research and personal work in any university training. As for the course units, they usually take the shape of study guides (Studienbrief), which may refer to a textbook or basic work available in bookshops, not produced or published by the FU. Very rarely, the course units take the form of a simple study program (Leitprogramm), which tells the student the steps to follow for studying the reference textbook. The printed courses are not only intended to inform and transmit knowledge. Within the limits we have indicated, they are also intended to motivate the student: they include exercises, recommended readings, and directions for additional work as well as available resources and the audiovisual and interactive media.

The setup of a course is the exclusive responsibility of the professor. In principle, he or she takes on the design, the production, and the successive revisions of the printed teaching material. The professor is free to delegate these tasks to external authors, whom he or she selects according to their academic competence. In fact, about half of the 1,500 courses of the FU were produced this way, by a subcontractor. But these outside authors, like the teachers, are obliged to respect the guidelines of the Kurze Anleitung. This is the practice if not the philosophy of the institution. It shows a certain inconsistency with the theoretical model. At the same time, it constitutes a practical middle path because it takes into account the institutional constraints specific to the university environment in which the FU operates. The responsibility and the autonomy of the faculties-Fachbereiche-remain unchanged, but they are nonetheless tempered by the rules for structuring and shaping the courses. To a certain extent these guidelines represent a consideration of the specific learning situations of distance studies.

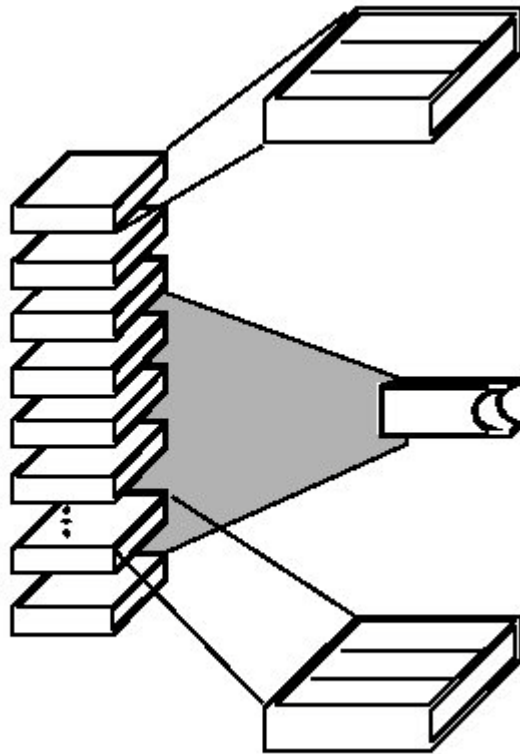


Illustration 6: FernUniversitaet: The printed course model

For production of printed material, the ZFE defined a general framework and monitors development: this is indeed the purpose of the template for page layout and of the writing-aid tools. Furthermore, the ZFE has the potential for imposing a common instructional approach: the instructional designers could theoretically implement one. However, except for formal editorial guidelines, the ZFE chooses not to do this, preferring to persuade rather than to require. In terms of instructional techniques, it offers its services and its skills, leaving the authors the freedom to use them or not. Its intervention is thus at the level of technical assistance-for the production of graphs and illustrations, for example-not at the level of design.

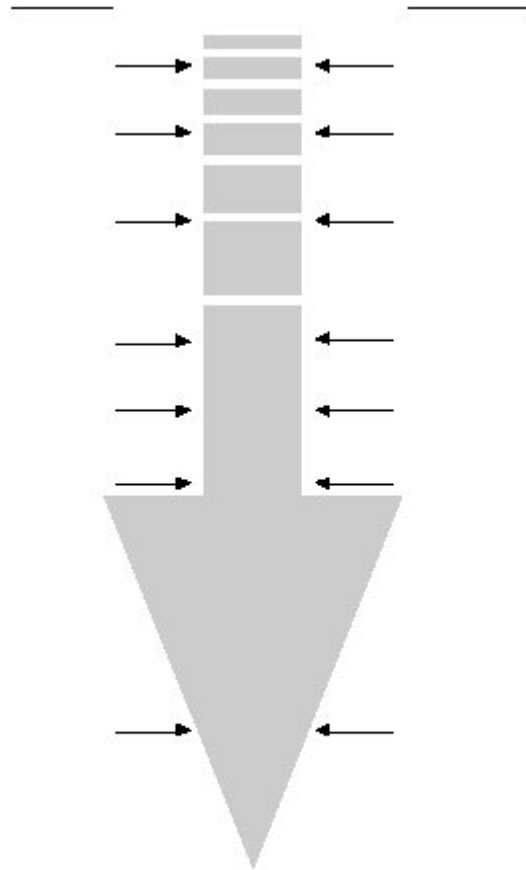


Illustration 7: FernUniversitaet: Agents and phases of the course development

The operating principles for producing written material can be explained mainly by the prevalence in the FU of the prerogatives of the traditional German university world. It is also explained by the nature of the printed material itself. At the FU, instructional material is designed to meet the need for speedy publication and distribution and ease of updating. Published in paperback, the printed material does not acquire a definitive status. In theory, it can be revised each year, either for academic reasons, such as the evolution of knowledge, or for instructional reasons. The division of courses into separately published units seems particularly well adapted to this guideline because a partial update does not require a complete reprint of the course.

The Case of Complementary Media

Audiovisual or interactive teaching material makes use of skills and production tools that are beyond those of the individual authors. For this reason, they are produced in a framework different from the one just described. As a result,

- the role of the ZFE, complementary in the process of production of printed material, becomes dominant
- for this very reason, the methodological model for the production of teaching material is more rigorously applied as far as the role of instructional designers is concerned.

Because of the complementary, or even ancillary, role assigned to audiovisual and interactive material, the decision to create such accompanying material for a printed course occurs in a second phase, at the end of the process of the first evaluation and the updating of the material. The initiative lies with the author or with the ZFE.

The decision to include additional media is the responsibility both of the professor involved and of the ZFE. It is made on the basis of a feasibility study that takes into account the following criteria:

- the methodological aspect: the complementary material has the function of activating and motivating. The new technologies are considered more able to sustain the isolated student's self-motivation than the traditional written medium
- the inherent requirements of the subject taught: written or graphic presentation may be poorly suited or inadequate for presenting certain content, such as processes
- the evaluation of costs and the availability of production facilities.

The university budget does not require consideration of criteria of profitability process, such as economies of scale, number of students, and cost-effectiveness.¹² The design and production are then entrusted to the ZFE. The expert in the pedagogy of the subject is responsible for the design, in consultation with the professor in charge. Once the production is finished, there is a last administrative step. So that the course may be distributed, the professor will examine the course in its finished form and authorize it. It is an official way of "taking delivery" of an order after checking the quality. This process is summed up in the illustration.

The Evaluation of the Teaching Material

The evaluation of the teaching material is part of the task of the ZFE. It takes place at the end of the first year a new course is used. After having used a quantitative and statistical method of evaluation for several years, the ZFE has finally opted for a more qualitative approach, implemented by an opinion questionnaire called "Criticism of the training material" (Lehrtextkritik), distributed to a group limited to five to eight students. The responses are then synthesized by a specialized service of the ZFE and commented on by the instructional experts of the same service. Finally, the evaluation report, which has no sanctions or constraints, is transmitted to the author who may, in preparing a revised version, take into account the remarks and suggestions. After each revision, the course undergoes the same procedure.

The Production Process at the Open Universiteit: Main Features We have seen the extent to which the requirements and methodological criteria for the design of material constituted an informal conceptual framework, characterized by a pragmatic approach. It is a different matter with the production process, which is defined by a very strict procedure governing all the partners (faculties, experts in didactics, logistics, administration): it defines, among other things, their respective roles and modes of collaboration.

The development of a course generally follows three successive stages, each of which leads to decision making and to rigorous evaluations before proceeding to the following stage. These three stages are:

- the proposal of a synopsis
- the elaboration of a detailed plan
- the publication of the course.

The Synopsis

The proposal to create a new course may originate from the faculties, the administration, or the teachers. Most often, however, the initiative comes from program committees within each faculty who recruit several members of the teaching staff. The proposal takes the shape of a synopsis of four to five pages. It is a comprehensive course description, which contains, as well as the title and the definition of the target group, the didactic model adopted, the media chosen, and a production schedule. This first document also proposes authors assigned to write the course.

This plan must comply with the various ad hoc criteria previously mentioned. But since 1991, the OU has introduced other requirements:

- market criteria, such as cost-effectiveness and economies of scale
- implementation factors concerning distribution, practical classes, tutoring, and exams
- expected life-span and availability of media technologies (van Enckevort, 1991).

After being submitted to the Centre of Educational Production (COP), this plan must be approved by the Rectorate of the OU, and it is only after this procedure that a more detailed course plan may be developed.

The Course Plan

The course plan elaborates the course project and provides details, for example, of the general structure (the table of contents) and the teaching objectives. It leads to the creation of the team responsible for the production, the “course team.” This is where the collaboration between the different partners involved (authors, experts in didactics, media specialists, collaborators from the production logistics service) is organized. The course team also brings in one or more experts on the subject in question. They are in charge of the academic quality of the project; they are not, strictly speaking, part of the team of authors. The group thus constituted is responsible to a project leader, who is a member of the OU and who is also outside of the group of authors.

The course team takes on the following duties:

- the design and elaboration of the subject matter is the role of the authors recruited from among the teachers of the OU or externally (the OU frequently has recourse, like the FU, to authors outside the institution)
- selection of media appropriate to the content, in the framework of mediamix, is the role of the team from the Centre of Educational Production (COP) and also indirectly, through consultation, of other departments of the OU, the Centre for Innovation in Educational Technologies (OTIC), the Department of Research and Evaluation (OuE), and the Department of Administration of Applications and Examinations (EuI)

- the evaluation of the quality of the developing course is the role of the outside expert and of the COP team¹³
- the definition of the learning environment, which also in part addresses the role of tutoring, is a role in which the COP participates
- management of the project in terms of overseeing the collaboration between the different partners and monitoring deadlines and costs is the role of the project leader.

The course team may be subdivided into several subgroups, each of which is in charge of one of the media used. These subgroups will then work in parallel.

Once the detailed plan is set up, it must be approved by three people in charge:

- a member of the faculty concerned
- an expert in didactics from the Centre for Educational Production (COP)
- a member of the production logistic section, which assembles the technical services for the production of the different mediated components of the course.

The Production of the Courses

After these two preparatory stages, the phase of concrete production begins, and authors and instructional experts meet at collective work sessions. All through this third phase, the project leader and the outside expert make evaluations. When the course-in its written and non-written media components-reaches a level judged satisfactory, a first version is submitted for testing to a group of students hired and paid for this task. The results of this evaluation may give rise to corrections and revisions, which constitute the last stage of the process before the faculty concerned officially accepts the course and forwards it to the reproduction services.

The procedure, which leads from the proposal of a course to its final production, thus brings in many agents in a framework of collaboration, whose single objective is to guarantee a high level of quality. This requirement, inherent in the obligations of any academic institution, applies equally to the written material-200-page works on average-and to the complementary material. Let us take as an example a course in the History of Art accompanied by a videodisc containing 30,000 reproductions of art works or any other production or teaching material on interactive optic disk available at the OU. This requirement for quality explains the relatively long production times-on average close to two and a half years-in comparison with a maximum life span of a course, limited to five years. The OU is aware that this situation causes significant extra costs. This fact was mentioned by the committee of experts who made an evaluation of the institution as a whole in 1990 (OU, 1990, p. 43). The OU, however, expects a decrease in costs as a result of the constant progress in the field of electronic media (cf. illustration 8, which sums up the process of design and production of teaching material).

The Evaluation of Courses

The importance given by the OU to quality control of its teaching material appears clearly through the preceding analysis. During the course preparation phase, the quality of subject matter is evaluated by professors belonging to the OU and by external experts. The didactic quality is controlled by specialists in didactics and media of its Department of Educational Techniques. Before its final publication, an experimental version of the material is submitted

to a group of students. Quality control of courses at the OU does not, however, stop at procedures that precede distribution to students. At its founding, the OU wanted to set up a comprehensive evaluation program implemented at three points: during the design phase, during the launching of the course on the market, and, finally, after a five-year period of use (de Wolf, 1988, pp. 21-31).

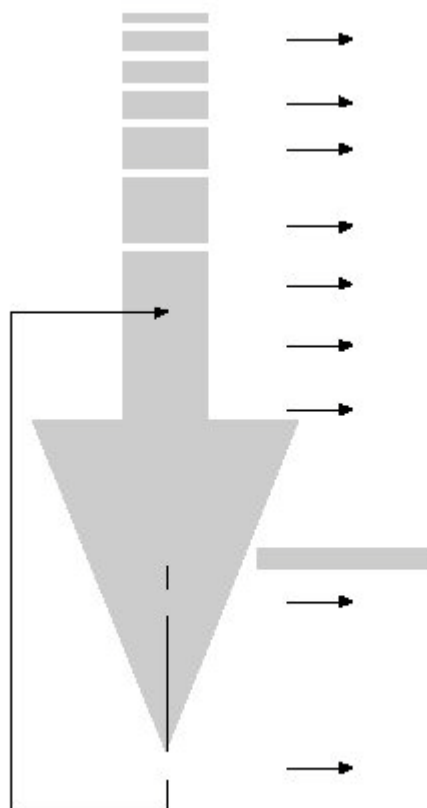


Illustration 8: Open Universiteit: Actors and phases of the course development

We have just seen how the first phase of evaluation is organized. The second evaluation stage was never attained because it was too costly. As to the third phase, it is of particular interest to us in this context. The statutes of the OU prescribe that every course must be re-evaluated after five years. This evaluation should make it possible to decide whether it is necessary to begin an update and, if so, on what terms: updating and adapting the subject matter according to developments in academic knowledge or of the instructional processes in that field. This task falls in principle on the Department of Research and Evaluation (OuE), which conducts an inquiry via questionnaire to the students; it completes the data base with more qualitative information collected at the study centres because of their proximity to the learners. At the end of this double inquiry, a detailed evaluation report synthesises the results of the evaluation procedure and furnishes the criteria for updating the course. The updating is then undertaken according to the same process as the design of a new course, that is to say, by teamwork: grouping teachers/authors and experts in didactics.

However, in practice the evaluation does not happen this way. The OuE does not have enough personnel to ensure the re-evaluation of all courses as they reach the five-year deadline. So the re-evaluation only covers a restricted number of courses, in general, five per year. Only the most used courses or those in which problems have been pointed out by students, teachers, or tutors are thus the object of a re-evaluation. Most of the courses must therefore be updated

without a really systematic re-evaluation. To fill this gap, the faculties generally make an informal evaluation of their own by establishing an evaluation file that will be taken into account in the updating process.

It follows that the quality control of the teaching material of the OU is most effective during the design stage. This situation underlines once again the preponderant role played in the development process by the instructional specialist, who does indeed seem to constitute the central pivot of quality control of teaching material at the OU.

Synthesis and Conclusion

The design methodologies and the production processes for teaching material differ considerably from one institution to another. There is no doubt that the FU formulated the most coherent theoretical model for its methodology. It is based on the interaction of the three components of distance teaching: the subject matter, the media, and the learner. During the design of the teaching material, their respective roles are shared by four agents:

- the teacher/ author, central pivot of the subject matter development process
- the expert in media didactics
- the expert in didactics of the subject as media specialist the needs analyst, who takes the learner into account.

This diagram, for which we refer the reader to illustrations 1 and 2, is completed by media methodology, which takes into account the axes of distribution-reception and communication-activity in the process of self- study that is specific to distance teaching. These axes refer to a taxonomy of the media based on the distinction between written, sound, visual, and interactive material.

The OU has chosen, for its part, a more pragmatic methodology and approach; therefore, it is less formalized. It also takes into account a taxonomy of the media comparable to that of the FU, but its methodology is inspired less by an interactionist model than by a series of extrinsic criteria, which it divides up into three groups:

- market criteria, such as cost-effectiveness and economies of scale
- implementation factors, such as distribution, ease of examination, provision for practical work, and tutoring
- accessibility, applicability of technological context, and, finally, the life-expectancy of the technologies.

At the OU the process leading from design to final production of a course follow a strictly structured approach. Methods of collaboration between teachers/authors (professors and academic team members) and education technologists (experts in didactics of the media and of the subjects) of the didactics department (COP) are strictly regulated. The aim is to ensure the best integration of the functions involved in the development of teaching material. Each course produced by the OU is thus the result of teamwork. The requirements of academic quality and instructional effectiveness are considered at every moment of the process leading to the final product. The production of complementary audiovisual and interactive material is entirely integrated with the production of the printed documents, which is the basis for the originality and specific contribution of this methodology. However, there is a surprising

disparity between the pragmatism of the methodology and the formalism of the production process, which is not explained here.

The production of teaching material at the FU does not follow the same pattern. In keeping with the dominant status of the titular professor in the structure of the FU, the production of the written document is entirely the responsibility of the author, who only complies with a code of editing rules recommended by the instructional department, the ZFE. The production of complementary material is, on the other hand, entrusted to that department. Such material is only produced, however, after the circulation of the written material. It is the work of well-defined team members working in the framework of the ZFE: video producers, computer specialists, graphic specialists, and experts in didactics of the subject. One thus sees a reverse position from that of the OU; a strictly structured model but great pragmatism during production, no doubt because the ZFE must accommodate the operating principles of the institution, notably academic freedom.

At the outset we noted that all production of distance teaching material-traditional printed material, interactive software, communication technology, and so forth-requires a strictly defined pedagogical outlook and methodology. This is indeed the case for both the universities studied. However, the methodologies set up do not simply follow the criteria of their respective outlook or pedagogical bias. They are shaped as much, if not more, by the institutional realities and constraints. The role of the teacher, which greatly determines the processes of production of the material, is from this point of view a characteristic example. Conceptual models and institutional models therefore seem to condition each other mutually to push the practices in a direction that the pedagogical criteria do not entirely govern.

Acknowledgements

The authors gratefully acknowledge the help of the collaborators of the two Universities, Hagen and Heerlen, who welcomed them. They also thank their colleagues of the Basle University, M. Marino Ostini, scientific advisor at the Federal Bureau for Education and Science (OFES) and coordinator of the Swiss participation in the project Fernstudienzentrum Budapest; and M. P. Dunand (TECFA) for having kept an eye on the proofreading of this paper.

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Endnotes

[1.](#) On the one hand, there are the Technical University of Budapest, the Management Development Centre of the University of Economic Sciences, the Faculty of Mathematics of the University of Eötvös-Loránd, the National Institute of Vocational Education and, on the other hand, there are the distance teaching universities of Hagen (FernUniversität) in Germany and of Heerlen (Openuniversiteit) in the Netherlands, the Study Centre for Distance Teaching in Vienna (Fernstudienzentrum Wien), the trans-European Association SATURN (Europe's

Open Learning Network) and finally the Federal Office of Education and Science (OFES) in Bern.

[2.](#) The participation of TECFA in this project is a continuation of the involvement of the University of Geneva in the Start-up Project (European Programme DELTA), one of whose objectives was to analyze the design and production methodologies of the European multimedia producers. The first stage of the report was published as an internal report. The second stage of TECFA's contribution to the project concerns training of trainers in pedagogical design and engineering.

[3.](#) We have, however, seen that exceptions exist. The bearers of a degree of a short study cycle type (notably engineering studies) have access to the FU through remedial courses, and certain candidates who have professional experience but no secondary school degree may attempt university entrance examinations.

[4.](#) For the most used course model, the study-unit model.

[5.](#) Our research evokes many questions among which we would like to note the effect of didactic material on learner persistence. Of special importance in this context is a study under completion by the Distance Education Office of the Communauté Française de Belgique. It seems that the redesigning of the written courses, taking into consideration both pedagogical aspects and aesthetic appearance, has had the effect of reducing by half the rate of student dropout (Dechnes, 1994).

[6.](#) Classical pedagogical communication in face-to-face situations also takes the forms of mediatized (M+) or non-mediatized (M-) communication: the first case refers to technological mediatization whereas the second to the classical situation of direct face-to-face oral communication from a person, a speaker whatever may be his role-trainer, teacher, animator, and so forth. In fact, in practice it is rare to find educational communication situations of a "pure" form. Both approaches are usually combined, alternating between verbal presentation and a mediated image. On this subject see D. Peraya (1994).

[7.](#) Several other models have also been developed, such as the "workbook/source material model" and the "essay/thesis model."

[8.](#) It happens exceptionally that certain courses from other institutions are adopted.

[9.](#) Freek Gastkemper, interview of May 20 1992.

[10.](#) Things were not always thus. At the founding of the OU, printed material was designated as the basic medium, and on the basis of it non-written media were to be developed progressively. See, for example, Henk de Wolf, "Development of Courses and Quality Control Instruments for Educational Innovation," in *The Open University of the Netherlands after Four Years Facts and Developments*, op.cit., p. 26. Concerning this question of equality between media, it appears that we are facing an evolution towards this equality. We were able to observe diverging opinions about this during our interviews.

[11.](#) An analogous system exists at the service of distance learning of the French community of Belgium: the service sends printed texts as the student sends back his homework; the learner's rhythm of work thus determines the rhythm and regularity of the mailing of training material.

This way of operating is understandable considering the high dropout rate and the relatively low fees.

12. Let us add that the apparent production costs of a video cassette amount to approximately 1000 DM/minute; personnel costs (700,000 DM per year for a team of seven people) as well as the initial investment of 2,000,000 DM for the studio as included in the budget of the ZFE. Year in and year out, the video production reaches an average volume of 10 hours a year. The production of a cassette generally spreads out over a three-month period (estimated figures furnished by the ZFE).

13. The Department of Research and Evaluation only intervenes for the evaluation of courses already in use.

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