
LOW COST/HIGH OUTCOMES APPROACHES IN OPEN, DISTANCE AND E-LEARNING

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Introduction

The title suggests an attempt in the tradition of comparing the cost-effectiveness of different systems in distance education. Historically, such comparisons have contributed highly in consolidating distance education as a legitimate option for educational provision (Wagner, 1972, 1977; Laidlaw & Layard, 1974; Eicher & Orivel, 1980; Orivel, 1987; Harry & Rumble; (Ed.), 1982). These studies have established a methodology of cost comparison and a base of evidence showing that distance education has the potential to be cost-effective or, putting it in the words of the title, may lead to *low costs and/or high outcomes*.

Over time the landscape of distance education has grown more varied both in terms of technology and in terms of organisation. Information and communication technologies allow more sophisticated use of media both for course development and for learner support with a tendency to drive overall costs up. To already established hybrid organisational models of distance education (dual mode, mixed mode, consortia) technological developments have added virtual and blended models of provision and co-operation, adding to the complexity of today's picture. The question arises to which extent organisational arrangements may counteract the upwards drift of costs triggered by the new technological options. The argument here is the following: (i) distance education is a system which includes a variety of sub-components, e.g. the development of materials and provision of learner support; (ii) technology convergence allows seamless integration of sophisticated resource media (including video clips and simulations) as well as tools for responsive communication between teacher and learner which tends to drive costs in both major subsystems; (iii) the ease by which collaboration between institutions is technically possible, means that it is increasingly unnecessary that all system components of a distance education system be hosted with a single provider; (iv) this means that lost efficiencies in distance education due to the increased cost of these enhancing capabilities could at least partially be recovered by intelligent networking.

"Technology and e-business approaches make it possible for integrated processes of open and distance education to be disintegrated into their constituent parts: curriculum development; content development; learner acquisition and support; learning delivery; assessment and advising; articulation; and credentialing. These processes can then be managed by different organisations." (Rumble & Latchem, 2003, p.134)

The most comprehensive list of reasons for co-operation has been provided by Rumble & Latchem (2003, p. 128). This list is used slightly modified in Table 1 as an advance organiser for the rest of the paper and illustrates how the Centre for Distance Education (ZEF) at Carl von Ossietzky University of Oldenburg has engaged in various forms of co-operation and achieved noticeable synergies. Five such models of co-operation are described:

- 1) *The Branch Model (BM)*: ZEF co-operates with the FernUniversität Hagen (the main distance teaching university in Germany) to provide educational counselling and tutorial services to their students in the North Western regions of Germany. For the state of Lower Saxony this is a low cost option since local students are qualified at marginal costs. At the same time this arrangement contributes to the efficiency of the FernUniversität Hagen.

- 2) *The Shared Leadership Model (SLM)*: As a member of the European Study Centre Network North West Germany (ESCN) ZEF co-operates with the distance study centres at the universities of Bremen and Hamburg, Hildesheim, and Lüneburg. The aim includes facilitating European-wide collaborations in distance education.
- 3) *The Subcontractor Model (SM)*: ZEF co-operates with the University of Maryland University College (UMUC) to develop and teach online courses within the Master of Distance Education (MDE) jointly offered by UMUC and Oldenburg University.
- 4) *The Shared Ownership Model (SOM)*: ZEF co-operates with three centres for distance education at other universities in Lower Saxony to operate a technical infrastructure for online distance education (Via Online). This again is an efficient way of capacity building, which allows the participating centres to offer services to their own universities as well as selling services to outside clients.
- 5) *The Franchise Model (FM)*: ZEF has developed course material for professional development in nursing which has been franchised to other universities. In this case ZEF operates as a curriculum developer and content provider. The cost-efficiency depends on scale economies which can only be achieved in such broad alliances.

Table 1: Reasons for co-operation (based on Rumble & Latchem, 2004, p.128)

	<i>1. BM</i>	<i>2. SLM</i>	<i>3. SM</i>	<i>4. SOM</i>	<i>5. FM</i>
share costs/spread them over a larger number of students	√	√	√	√	√
share resources, academic or commercial expertise	√	√	√	√	√
share risk	√	√	√	√	√
form alliances with potential competitors and interlopers	√	√	√	√	√
attract funding opportunities		√	√	√	√
form public-private partnerships to provide online courses		√	√	√	√
achieve a competitive edge and greater market share		√	√	√	√
be fast to market or cope with major market demand through joint course development		√	√	√	√
promote and operate credit transfer	√	√	√		√
jointly market programs		√	√	√	
capitalise on partners' knowledge of, and reputations in local markets	√	√	√	√	√
accommodate other countries' governmental requirements	√	√	√		√
ensure adequate provision of local services (e.g. marketing, counselling, admissions, registration, examination...)	√	√	√	√	√
de-bundle learning materials, tutorial support and course assessment	√	√	√	√	√
achieve a franchise arrangement		√		√	√

In order to understand the different models of co-operation it is necessary to understand the institution which engages in these alliances, the Centre for Distance Education (ZEF) at the Carl von Ossietzky University of Oldenburg in Germany.

The Centre for Distance Education (ZEF)

Germany is a Federal Republic and education is a state, rather than a federal responsibility. For a distance teaching university to operate across state jurisdictions it was necessary to seek partners within the different states. The FernUniversität in Hagen in the State of North-Rhine Westfalia, the main German distance teaching university, did this when it extended its reach to Lower Saxony. The State of Lower Saxony itself had a genuine interest in providing its citizens with a distance learning option and supported the creation of three distance study centres in 1978 at the universities in Hildesheim, Lüneburg and Oldenburg. In this 'Lower Saxony Model' the central university units are charged with two main responsibilities: (i) to provide effective support for Lower Saxony citizens who attend courses offered by the FernUniversität, and (ii) to contribute to the development of distance learning at their own universities (cf. Bernath 1994a)

To meet this double responsibility the state of Lower Saxony provided ZEF with ample funding until 1989. While the early focus was on supporting students of the FernUniversität, ZEF began as early as 1983 to launch additional initiatives, mainly by attracting outside funding. Since 1990 all further expansion of activities had been exclusively funded by (i) increasing internal efficiency (e.g. the use of ICT for administration and more flexible student support); (ii) engaging in local, regional, national, and international alliances and networks; (iii) attracting third-party funding; and (iv) generating revenue through tuition and fees.

To get an idea of the order of magnitude of the funding: In 2002 the state allocated ZEF with € 430 000 for personnel and materials. This corresponds with 0.6% of the overall funds allocated to the University of Oldenburg. € 263 380 of these € 430 000 were used for permanent staff leaving only € 166 620 for ZEF to manage at its discretion. Of this € 125 000 are recurrent costs for additional personnel and merely € 41 000 were freely available for running the centre.

This shows the need for ZEF to supplement its budget by generating revenue from other activities if it wanted to further expand. And indeed, ZEF succeeded in generating additional flows of revenue, which varied between € 200 000 and € 400 000 in the fiscal years 2000 to 2003. The self-financed share of the total personnel and material costs swayed between thirty and fifty percent. Depending on the field of activity the self-financing quotas range from zero to about eighty percent (Bernath, 2003).

The Branch Model

As mentioned above, ZEF was established in 1978 by the state of Lower Saxony in recognition of the services that a distance teaching university like the FernUniversität in Hagen could offer to many still excluded from higher education. ZEF was to support Lower Saxony residents in making effective use of this new option by providing support services similar to those the FernUniversität provides to its own students in North-Rhine Westfalia. In the winter semester of 2002/3, 609 students from the FernUniversität registered with the ZEF at the University of Oldenburg. 78 students studied full time and 428 were part time students; the remainder registered for only a single course.

In addition to advising and counselling of interested and/or already active students at the FernUniversität ZEF offers 3 000 hours of tutorial support annually. This support is provided by mentors in face-to-face meetings in the evenings, Saturdays, during residential weekends and summer schools or as online tutorial support.

In the following outcome measures in terms of degree equivalents will be used. Degree equivalents are accumulated credits earned by all students divided by the number of credits required for a full degree. In the context of distance teaching universities this measure of success is more appropriate than only counting degrees and is applied by the FernUniversität itself (cf. Bartz, 1996). Systematic enquiries of students supported by ZEF suggest that they successfully participated in ca. 600 exams in 2002/3. For a full degree 16 such exams are required, thus the outcome measure for 2002/3 is 37 full degree equivalents.

This allows us to determine the cost per full degree equivalent incurred by the State of Lower Saxony. Within the ZEF budget about € 300 000 annually are set aside for supporting the FernUniversität's students registered with ZEF. One could therefore conclude that the state of Lower Saxony pays € 500 per student and about € 8 100 per degree equivalent. If we add overheads based on shadow prices for rent and apportioned management costs according to the controller of the University of Oldenburg, costs would rise from € 300 000 to € 400 000, leading to a per student cost of € 670 and € 10 000 per degree equivalent. While there are no benchmark figures which would allow comparing costs per graduates (or degree equivalents) it is possible to compare costs per student. According to the Federal Statistical Office, the State of Lower Saxony annually spends € 8 000 for every Lower Saxony university student. Hence, compared with this amount € 670 spent by ZEF is by far the more cost-efficient option. It suggests that the investment into the Lower Saxony study centre model may qualify as a low cost/high outcome choice.

The FernUniversität's reasons to co-operate are obvious (cf. Table 1). Oldenburg University's main reason to participate is to enable Lower Saxony citizens' access to effective participation in the FernUniversität's courses. This is in the interest of the State of Lower Saxony, the university's main funding body. It also coincides with the remit of a public university to serve the local community, in this case the citizens of Lower Saxony.

The high quality of outcomes is further confirmed by SERVQUAL survey results from the years 1998 and 2002 which attest Oldenburg ZEF a high quality of service (Hohlfeld, 2003).

The Shared Leadership Model

In 1992 the European Study Centre Network North West Germany (ESCN) was established by the three Lower Saxony distance study centres and the distance study institutions at the universities of Bremen and Hamburg. The objectives of the network are related to the Maastricht Treaty, which envisions a central role for distance education in facilitating cross border collaborations in education (Bernath, 1994b). Within this model of co-operation partners take turns in co-ordinating ESCN activities for one year. However, temporary or more specific tasks are handled by colleagues from the participating centres.

The average annual costs incurred by ZEF for to this co-operation amounted to € 10 000 over the past three years. In spite of this small financial outlay the ESCN membership spins off considerable benefits, e.g.(i) being a member of the Euro*MBA consortium; (ii) co-operating on a contractual base with the British Open University (OUUK); (iii) realising third-party funded project like the integration of foreign-language distance studies in traditional university study (Bernath, 1994c); and (iv) running various other projects supported and promoted by the European Commission.

The main benefit of the co-operation is to have built a vantage point that allows to scan options of co-operation for which European funding would be available (cf. Table 1).

The Subcontractor Model

In the years 1996 to 1998 ZEF, in conjunction with the University of Maryland Institute for Distance Education and the University of Maryland University College (UMUC) successfully developed and implemented a world wide accessible 'virtual seminar for professional development' for distance learning experts (Bernath & Rubin, 1999). These experiences inspired UMUC to plan a Master of Distance Education (MDE) delivered completely online. These plans were realised in co-operation with ZEF, which in turn sought the co-operation of the School of Education at Oldenburg University. Teaching started in the spring term 2000. Neither university would have been able to develop and offer such a program on its own (cf. Bernath & Rubin, 2003).

From January 2000 to the Summer term 2003 a total of 949 students successfully completed 42 courses provided by the University of Oldenburg. Since each course is rated with three credit points and the degree requires 36 credits these figures allow us to calculate the number of degree equivalents: Oldenburg students earned 2 847 credits or 79 (i.e. $2\,847/36$) full degree equivalents.

During the time between January 2000 and August 2002 the University of Oldenburg earned € 530 000 in tuition fees, while the total costs to ZEF during this time amounted to € 660 000. Thus, approximately 80% of the activities were financed through revenues. The spectrum of activities included the development and implementation of Oldenburg's courses, the formation of an independent research focus point through the *Arbeitsstelle Fernstudienforschung* (ASF) - a joint unit of the Schools of Education and ZEF to promote research and development in distance education -, and participation in the joint planning of the overall program. Other elements such as student administration, and the provision and operation of the technical platform are contributed by UMUC.

Hülsmann (2003) provides a detailed cost analysis for both the development and the implementation process of Oldenburg's MDE courses. The determined costs of course development are between

€ 6 000 and € 23 500. The costs for presentation (i.e. the actual teaching) of a course sway between € 5 000 and € 6 500 per course.

Given a total cost of € 660 000 Euro and 79 degree equivalents the cost per degree equivalent amounts to approximately € 8 350 Euro; and for 949 course enrolments the costs per course amount to approximately € 700. Thus, the University of Oldenburg contributes the amount of € 1 670 to each degree and € 140 to each course participant from its own funds. This includes non-recurring and short-term funds provided from the university's structural fund. At the end of 2004 when the University of Oldenburg's internal funding ceases the financial contribution will drop to approximately € 900 per degree and approximately € 80 per course enrolment. Given the high rate of cost recovery through tuition the university's investment in the project is quite low.

The quality of the outcomes has been acclaimed. The MDE received the "2003 Program of Excellence Award" from the Distance Learning Community of Practice of the University Continuing Education Association (UCEA) (www.ucea.edu/2003copawards.htm) and received the Sloan Consortium's 2003 "Most Outstanding Online Teaching & Learning Program" Award (www.sloan-c.org/aboutus/awards.asp/). Against the benchmark of UMUC's standardised course evaluations the instructional activities in the University of Oldenburg courses are well above average and contribute to this success.

There have been a number of spin-offs from the MDE co-operation. They include:

- The ASF book series on distance education (www.uni-oldenburg.de/zef/mde/series/);
- The partnership with the World Bank's Global Development Learning Network, which led to the Task Force Distance Education for Sustainable Development (www.uni-oldenburg.de/zef/desde/) including the joint development of the certificate program "Distance Education for Development" with the University of British Columbia (www.uni-oldenburg.de/zef/desde/ded2.htm);
- The successful bid for hosting the 3rd EDEN Research Workshop in Oldenburg; etc.

However, given that the outcomes of the co-operation neither serve students of the University of Oldenburg nor are economically profitable, it may be asked why Oldenburg University supports the program? This may be seen on three levels: First, taking part in such an internationally acclaimed online program enhances the profile and international visibility of the institution and within the professional world of distance education. Second, participating in such pioneering programs can also be seen as a measure of internal capacity building. The co-operation enables gaining rich experiences in (i) how to reach international audiences including the teaching of courses in a language other than German; (ii) how to conduct effective online courses; (iii) how to generate additional revenue flows by offering further education and professional training programs. Third, these operations provide employment opportunities, which allow the university to sustain a knowledge base in an operational area which is likely to expand (cf. Table 1).

The Shared Ownership Model

The Centre for Distance Education has used electronic media in distance studies since the mid 1990's. Successful grant applications from various third party funds propelled the development of online teaching (e.g. 'virtual seminars') and continuing education (Bernath et al., 2003). These funds allowed the collaboration with the distance learning and computing centres at the universities in Lüneburg and Hildesheim in order to set up an efficient Learning Management and Content Management System (LMS, CMS) based on Lotus Notes and Lotus LearningSpace. This led to a sustainable shared infrastructure called "VIA Online" with the purpose of guaranteeing a robust e-learning and online distance learning infrastructure, and to advise, train and support instructors and students from within the university as well as outside clients.

The co-operation model equally splits the costs of operation of the infrastructure between the distance study centres of the Universities of Hildesheim, Lüneburg and Oldenburg. Oldenburg carries an annual share of € 50 000 which is spread over a multitude of project and students. Experience suggests that the average cost per project (including course shell creation and user administration) varies

between € 1 500 and € 3 000, and that the per student cost for software and user license amounts to about € 20. Given that more than 1 000 users currently participate in the system the annual cost per user is already down to about € 50.

None of the centres on their own would have been able to initiate and operate a technical infrastructure of comparable capacity. The model of co-operation made the Oldenburg University a main stakeholder in a technical infrastructure which allows for a global outreach. Operations extend over state, national and, indeed, European borders and capabilities have been developed to serve different language communities including English and Russian. To which extent the university will be able to turn these achievements into a competitive edge depends on its policies.

The Franchise Model

Between 1985 and 2002 ZEF, in conjunction with the Psychology Department of the University of Oldenburg, developed a certificate program for professional development in "Psycho-Social Aspects of Nursing". Since the beginning of the program in 1992, which included weekend seminars for nurses over 2 500 interested learners from one Swiss and ten German universities have participated. The co-operation developed into a network capable of delivering an effective, mostly self-financing continuing education program for public health care specialists (cf. Bernath & Fichten, 1999).

The project costs for the years 1992 to 1997 are described in Hülsmann (2000). Course development costs amounted to about € 50 000. Spread over 1 260 students this amounts to only € 40 per student. Participants were charged € 50 per student for the course materials and allowed for continuous re-development and updating of the material. These fees were collected by the partnering universities which distributed the materials. Had this project remained restricted to the University of Oldenburg the development costs for the study texts would have amounted to 250 Euro per student!

This professional development measure was subject to a permanent quality control to which all network participants had agreed. In 2001 an extensive survey examined the effectiveness and sustainability of this program and was conducted with all "Psycho-Social Aspects of Nursing" program participants (Fichten, 2004).

Conclusions

The message this paper implies is that one needs to observe and take the current (and changing) educational landscape into account. The various approaches illustrate that ZEF used different means for different undertakings. We do not propagate subcontractor or franchise models as the best option. Our aim is to encourage the exploration of possible synergies and construct mutually beneficial alliances. By doing so there is some evidence that high outcomes at low costs can be achieved.

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