# Case study 4

## Barnehagen: a course for teachers and social workers at NKS Distance Education in Oslo/Norway

The course is intended for teachers and social workers, working with age groups ranging between 4 to 10 years old children. The course content emphasises the transition to schooling: only recently the year of school entry in Norway has been lowered from seven to six. Hence the course is targeted at teachers and social workers facilitating this transitional period. The course consists of seven modules and a project assignment. The duration of the course is 1.5 years or three semesters. The student learning hours specified for this course were 700. Up to the time of data collection (August 1995) 638 students were enrolled. The course had been operating since August 1993.

### Resource media: inputs and costs

The teaching materials provided for this course consisted of printed material and 7.5 hours of video.

*Print*

The teaching materials provided for this course consisted of seven printed texts and two supplementary texts. Translated into unit equivalents of 50 pages, the print input amounts to 9.5 UE (print). Table CS 4.1 summarises the fixed costs of development for the printed material. In the first semester the material 1 to 3 is studied, during the 2nd semester 4 to 7. The third semester is reserved for the assignment.

**Table CS 4.1: Fixed cost of development of printed material**

| Text no | Booklets | General[a] | Total |
|---|---|---|---|
| No. of pages | 524 | | |
| Author related | | | |
| Project management | 3 074 | 1 292 | 4 366 |
| Author | 3 843 | 56 903 | 60 746 |
| Consultancy | 1 675 | | 1 675 |
| Ling./paed. advice | 6 522 | | 6 522 |
| Correction/control | 1 775 | 18 | 1 793 |
| Other | 97 | | 97 |
| Subtotal | 16 983 | 58 213 | 75 199 |

| | | | |
|---|---:|---:|---:|
| Design related | | | |
| Graphics | 192 | | 192 |
| Setting | 624 | | 624 |
| Illustrations | 609 | | 608 |
| Cover | 673 | | 674 |
| Page make up | 2 548 | | 2 548 |
| Correction | 430 | | 430 |
| Divers | 114 | 922 | 1 036 |
| Subtotal | 5 190 | 922 | 6 112 |
| Total | | | 81 311 |

Source: NKS data; 1996; Notes: a: this column includes costs which cannot be attributed to any single booklet.

The production costs of the printed material are summarised in table CS 4.2. These amount to £7 761. For the number of students enrolled the unit production costs for printed material therefore come near to £12 (i.e. £7 761/638).

**Table CS 4.2: Variable costs of production**

| Production | All texts including supplementary texts |
|---|---:|
| Paper | 56 |
| Cover print | 610 |
| Print | 4 328 |
| Binding | 77 |
| Reproduction | 657 |
| Other | 2 033 |
| Total | 7 761 |

Source: NKS data; all costs in £'96

*Video*

The video input is considerable. Altogether 7.5 hours of video are provided for: two 20 minute videos, two 60 minute videos and three 90 minute videos. Development costs were indicated as £23 695. No detailed breakdown was given for production costs. Together they were said to be about £30 000.

The videos for this course were not produced from scratch but were edited versions of live satellite transmissions. This explains the large difference of development and production costs of videos as compared to case study 3, which refers to the same institution.

## Student support: inputs and costs

Student support consists of tutor marked assignments (TMAs) and telephone advice if required. No face-to-face sessions are provided.

*Tutor marked assignments*

Students are given the opportunity to complete eight assignments. The cost per assignment is calculated according to the following formula described in table CS 4.3.

**Table CS 4.3: the cost structure of TMAs**

| tutor marking fee | x social cost factor | + handling cost | = assignment cost |
|---|---|---|---|
| £8.29 | x 1.3 | + £0.81 | = £11.59 |

Source: NKS data; all costs in £'95

The assignments are voluntary since examinations are external. According to table 4.4, the total number of assignments already completed amounts to 3449 out of a total of possible 5 104 (i.e. if all the students enrolled already would have completed all their assignments). This is a relatively high participation rate of 68%. This may be explained by the practical relevance of the course to the target audience.

**Table CS 4.4:cost of tutor marked assignments (TMA)**

| No of TMA offered | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 0 |
|---|---|---|---|---|---|---|---|---|---|
| No of students who have done the respective no of TMAs | 42 | 20 | 20 | 13 | 17 | 6 | 50 | 348 | 127 |
| No of TMA completed (subtotals) | 42 | 40 | 60 | 52 | 85 | 36 | 350 | 2784 | 0 |
| Cost per TMA (subtotals) | 487 | 463 | 695 | 603 | 985 | 417 | 4055 | 32258 | 0 |
| Total TMA cost | | | | | | | | | 39964 |

Source: NKS data; all costs in £'95

Unit mailing costs were £8.13. For 638 students we have a cost of £5 187. Enrolment cost per student were £3.25. For 638 students the total enrolment costs were £2 074. Hence the total unit cost amounts to £7 261. The total unit costs incurred due to mailing and enrolment are £11.38.

*Telephone*

In addition to interaction through marked assignments, students may telephone their tutors for clarification. It seems, however, that most of the content related telephone advice is handled by NKS staff, either in the customer services department or in education. Though tutors theoretically can claim cost for giving content related advice, no claims have been made so far which indicates that students turn for advice rather to NKS staff rather than to tutors. Unfortunately, the extent to which student make use of the telephone to seek content clarification is not documented. However, NKS management judges it to be quite modest.

## Cost analysis

The cost analysis consists of a summary of the direct course costs (total costs), a determination of the average cost per student (and the respective cost function) and finally the cost per student learning hour.

*Total direct costs*

We assume here that the unit production cost per E60 is the same as in the Norsk course which was £5.60. This enables us to separate fixed costs of development from variable cost of production for the video input.

Table CS 4.5 can be used to write down the total cost function $TC = F + V \times s$. F represents the fixed, $V \times s$ the variable costs:

$$TC = F + V \times s$$

$$TC = £105\,006 + £69\,856 = £174\,862$$

*Average cost per student*

We can infer the unit cost (i.e. variable cost per student) :

For $s = 638$ we have

$$V = \frac{£69\,856}{638} = £109$$

**Table CS 4.5: Summary of direct costs**

| Total direct costs | Based on actual enrolment |
|---|---|
| Number of students | 638 |
| Fixed costs | |
|   Development costs print | 81 311 |
|   Development costs video | 23 695 |
|   Subtotal fixed | 105 006 |
| Variable costs | |
|   Production costs print | 19 151[a] |
|   Production costs video | 3 573 |
|   Subtotal production costs | 22 724 |
|   Assignments | 39 870 |
|   Mailing | 5 187 |
|   Enrolment | 2 074 |
|   Subtotal variable costs | 69 856 |
| Total direct costs | 174 859 |

Source: NKS data; all costs in £'95 Note: a: this figure includes costs of bought-in print material equivalent to £ 17.85 per student. For 638 students this amounts to £ 11 389. This added to the £ 7762 from CS4.2 gives the £ 19151.

The total cost equation allows us to determine the average cost per student. TC = F + V x s can be transformed into AC = F/s + V.

For s = 638 we have

$$AC = \frac{£105\ 006}{638} + £\ 109 = £\ 165 + £\ 109 = £\ 274$$

Evidently, if the number of students increases, e.g. to 1 000, then the average costs comes down to £120.

*Average cost per successful student*

Some 68% of students complete their assignments at NKS. They take public exams. For reasons of data protection, NKS is excluded from access to the success rate of their students in public exams. Hence the exact success rate is not known to NKS. If we take the completion rate at NKS as proxy for the graduation rate we get (based on the sample):

$$AC = \frac{£\,105\,006}{(638 \times 68\%)} + £\,109 = £\,351$$

The completion rate of 68% in this course can be considered as high. This may be partly due to the promotion candidates are likely to get if they have completed the course successfully.

*Cost per student learning hour*

The overall number of learning hours generated by the course were 700. Therefore we have:

$$\text{cost/SLH(course)} = \frac{£\,105\,006}{700} = £\,150$$

The overall cost per student learning hours provided for therefore is:

$$\text{cost/SLH(media)} = \frac{£\,105\,006}{102.5} = £\,1024$$

The ratio of the SLH provided for and those ones generated by the course is about 1/7.

The print input amounted to 9.5 UE (print) which is taken to provide for 95 SLH. The number of student learning hours the student spends using the video is 7.5 SLH. Hence we can calculate the cost per student learning hour associated with each medium:

$$\text{cost/SLH(print)} = \frac{£\,81\,311}{95} = £\,856$$

$$\text{cost/SLH(video)} = \frac{£\,23\,695}{7.5} = £\,3\,159$$

It should be recalled here that the videos for this course were not developed from the scratch for the course but consisted of edited versions of a live satellite transmission. In comparison with the cost per student learning hour video of the Norsk course (amounting to £20 835), costs here are quite small.