

The impact on retention of interventions to support distance learning students

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There is increasing interest in student retention in open and distance learning. This article looks at the role of proactive interventions from the institution to its students and discusses concepts such as the maximum possible increases in retention and issues such as who to target for intervention, the different types of retention possible and which media to use. It surveys the evidence for the effectiveness of such interventions both in and outside the UK Open University (UKOU) and concludes that in the case of the UKOU there are clear financial benefits to the institution, the individual and the UKOU's funding agency, the UK Government.

Introduction

Student retention rates in open and distance learning have always been low in comparison with full-time higher education. Until recently this seems to have been accepted as one of the consequences of the extra difficulties of the distance learning environment and open entry. A survey of recent issues of various distance education journals will find few articles directly aimed at retention and there is no specialist journal dedicated to the topic as there is in the United States. However, there now appears to be increasing interest in the issues of student retention in full-time higher education in the United Kingdom for several reasons. For example:

- UK Government funding policies are increasingly linked to retention rates in institutions.
- UK Government's policies on widening participation is likely to mean decreased student retention without focused action on the topic.
- The prevailing view that drop out is beyond the control of institutions appears to be being increasingly challenged.
- Increasing competition between institutions may mean that students will use retention as one factor in their choice of institution.

A number of UK universities, such as Napier, London Metropolitan and Paisley, now have high-profile retention projects, often with responsibility at pro-vice-chancellor level. This concern with retention is being picked up in open and distance education. For example, the UK Open University (UKOU) has recently completed

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a substantial retention project that has made over 30 recommendations for changes in the universities' policies and systems. One important area where changes are deemed to be necessary is in the way the university makes contact with its students, especially in its student support system. This contention of this paper is that the key to retention in any institution is proactive contact or intervention from the institution to its students.

Contact with students

Contact with students in any student support system generally falls into one of two categories:

- Reactive—responding to student-initiated contact; and
- proactive contact or interventions—taking the initiative to contact students either in a teaching or an advisory environment.

Both are important but it is useful to distinguish between them for retention purposes.

Reactive contact and retention

Common sense suggests that a well-organized and effective reactive student support system ought to have a retention effect. But it can be quite difficult to assess the effectiveness of such a system in student retention. For example, data suggest that in the UKOU less than one-third of its students make significant contact (other than routine information such as address changes) with the regional study support system in any one year of study. And students who do make contact often appear to be the more articulate and assertive, who in many cases may well be progressing satisfactorily.

There is not very much data on student–tutor contact in the UKOU, but tutorial attendance after the first tutorial in any course is often only about 30% of the registered students (OU Institute of Educational Technology Student Research Centre, 2000) and tutors often complain that the number of contacts from students in between tutorials appears low to them as well. Perhaps the most important reactive contact in teaching terms is the marking of assignments, and here the proportion of students who submit assignments on a typical course is about 60% of the starters for the first assignment, falling to around 40–50% for later assignments. And once again it seems probable that it is the more confident students who are more likely to complete assignments at any stage.

Thus at every stage it seems probable that students who are most likely to complete get most support. There may be an analogy here with health provision where it is suggested that an 'inverse care law' applies—people from poor socio-economic backgrounds need more healthcare but actually receive less than people from richer groups whose needs are in fact less (Dixon *et al.*, 2003).

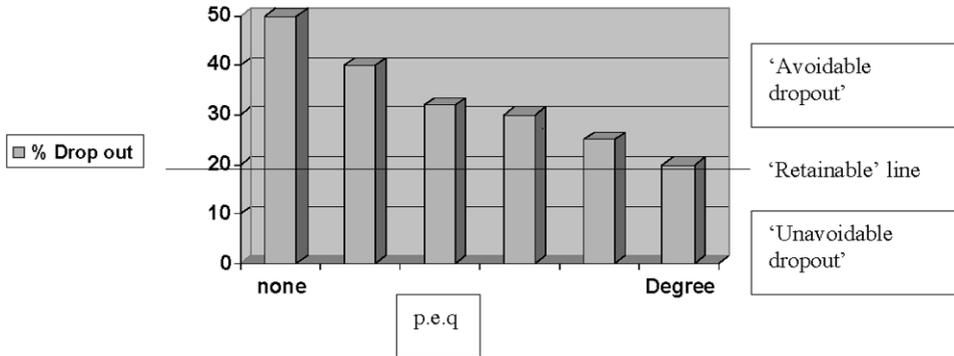


Figure 1. Drop-out rate versus level of previous education qualifications (p.e.q.) in the UKOU (OU Student Research Centre).

Proactive contact: intervention and student retention

Thus, although the quality of a reactive system is central to student retention, increasing attention is being given to developing systems of proactive contact or interventions both from the advisory and teaching services. These are important because they reach students who might not make contact with the student support system otherwise and may be more likely to drop out—as Bogdan (2000) notes, ‘We must reach the Quiet Student’ (quoted in Johnston, 2002).

When deciding on a programme of interventions there are various factors that may need to be taken into account, such as the maximum possible increases in retention, the patterns of withdrawal, the aims of the intervention, the targets to reach and the media to use.

Intervention and the maximum possible increase in retention

Clearly some drop out is beyond the power of any institution to influence. It may be due to illness, domestic and employment circumstances and other factors interacting in various ways. Indeed it is not so long since it was thought that practically all drop out was institutionally unavoidable (Martinez [2001] quoting an HMI report from 1991). That view has certainly changed but there is less agreement as to what the maximum possible increase in retention (MPIR) in any institution might be. There are various ways of estimating the MPIR, which will be covered in a forthcoming paper, but one simple method is to look at the most important factors that affect drop out. For example, Figure 1 is a graph of previous educational qualification versus drop-out rates for the UKOU.

This estimate assumes that withdrawal by a student with a high previous educational qualification such as a previous degree is unlikely to be for ‘academic’ reasons such as not having the necessary learning skills for the course. It may be more likely to be for ‘institutionally unavoidable’ reasons such as illness, job and domestic changes and so on. If the same proportion of institutionally unavoidable drop out is true of all students then all students above the ‘retainable’ line ought to be retainable

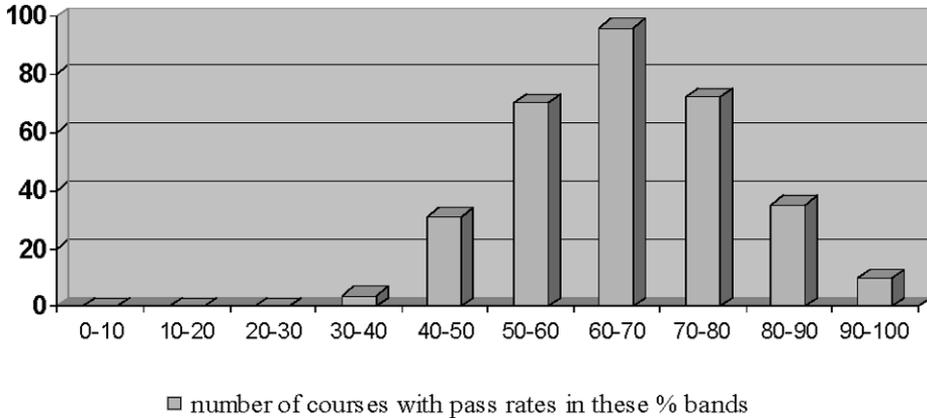


Figure 2. Number of UKOU course with pass rates in particular percentage bands.

in theory. Multiplying the percentage of students in each previous educational qualification category by the proportion of the ‘avoidable drop out’ in that category gives a figure of about 7% of the total drop out overall. This then is the drop out that might be institutionally avoidable and so is the MPIR for the UKOU.

This estimate is open to considerable criticism on the grounds of its assumptions but it does offer an ‘order of magnitude’ target for retention. This is helpful when, for example, a particular retention activity appears to have an effect of increasing retention by say 3%. This looks small but is around 40% of the MPIR. It is also helpful when dealing with objections to retention activities from hard-nosed academics who argue that drop out—like the poor—is always with us and outside the institution’s control. Different institutions will have different MPIRs, which may need to be estimated in other ways.

Of course this estimate is based on the assumption that course pass rates are invariable, which is not the case. An increase in retention could be achievable by manipulating course standards. In the UKOU the individual pass rates of the university’s 300 or so courses cover a wide range from around 35% to 95% pass (see Figure 2).

Clearly, changing the academic standard and hence the success rate for students on a course can have a very marked effect on the final retention rate on that course. It will best therefore to regard the MPIR as the greatest increase in retention that is possible through improving student advice and support, and not through other institutional action such as adjusting academic standards.

Intervention: the patterns of withdrawal

Another preliminary before deciding what interventionist approaches to adopt is to establish the patterns of withdrawal. In the UKOU there are several possible perspectives: withdrawal dates, stages and routes.

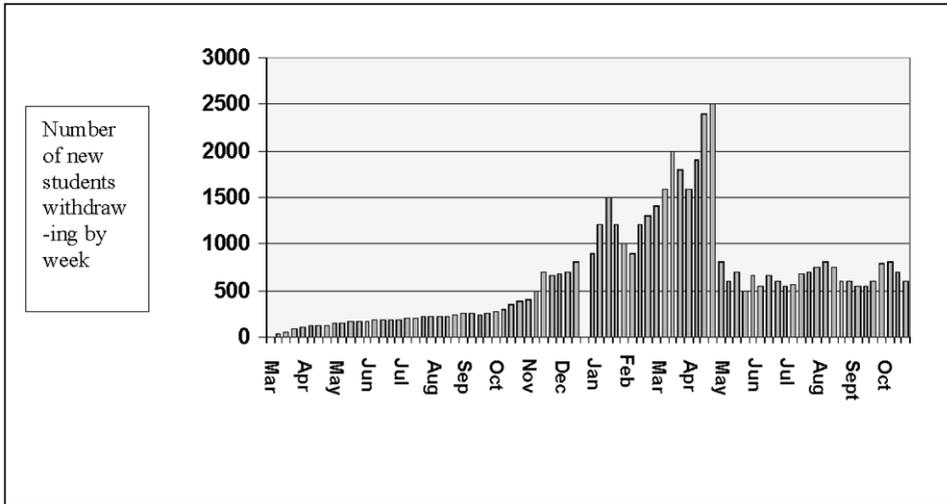


Figure 3. Withdrawal rates for new registered students from the year before course start (all courses) (OU IET Student Research Centre).

Withdrawal dates

UKOU students can register nearly one year before their courses start. Some withdraw shortly after that registration. Nearly 13% have gone before courses start (Figure 3).

Withdrawal stages

Another perspective can be derived from the rates of assignment submission for a course. These are illustrated in Figure 4 for a UKOU science course. In this 'river' diagram the thickness of the line is proportional to the number of assignments submitted. It can be seen that of students active at course start, some 38% do not submit the first assignment and only a very small number return to submit subsequent assignments.

Both these analyses suggest that interventions need to start very early to have an effect.

Withdrawal routes

One final analysis needed to determine what interventions might be needed in any system is to know when students leave. This can be quite complex (see Figure 5).

Again in this diagram the thickness of the line is proportional to the number of students leaving by that route. In fact, this diagram is considerably simplified—in the UKOU there are some 14 possible exit routes altogether through which students can escape, such as failing to complete administrative requirements, not attending a compulsory residential school, not attending the examination, not accepting the

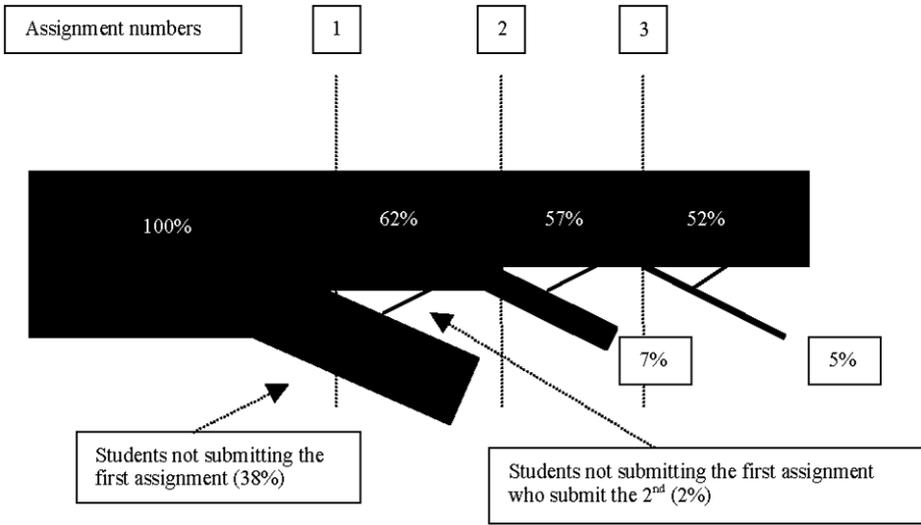


Figure 4. Assignment submission rates on a UKOU course (taken from data supplied by Gordon Burt OU Institute of Educational Technology).

offer of a resit and so on. Any intervention scheme will need to ‘block’ all these holes in some way.

Intervention for different aims

Interventions, if they work, may have different effects. For example, an intervention when a student withdraws may get the student back on course immediately or may have some effect in getting the student to undertake a course in the following presentation instead of leaving the university altogether. Both effects might be described as resulting from a successful intervention but have different implica-

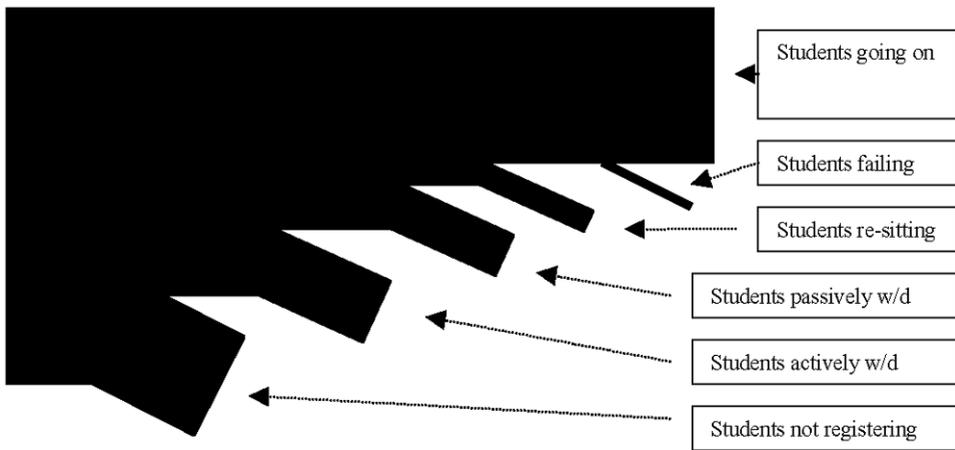


Figure 5. Withdrawal routes in the UKOU (w/d, withdrawn). Adapted from Simpson (2003).

tions—not the least financially. It may be important to distinguish between these effects so we can clearly understand what the outcome of a particular retention intervention activity might be. One way of classifying these activities might be as follows:

- Recruitment—getting students from registration up to course start. It could be argued that the recruitment process should run from the first enquiry point to registration and course start. However, in the UKOU the numbers are formidable; the university receives nearly 500,000 enquiries a year, which are turned into 34,000 registrations before course start. Enhancing the rate of ‘Enquiry Conversion’ may be an issue for an institution’s marketing department rather than student support, which may be more suited to individual contacts.
- Retention on course—once a student has been brought to the point of course start, then retention on course is the process of keeping them there as far as possible.
- Retrieval—getting students straight back onto their course at the point of leaving. This in effect is the ‘blocking of the holes’ through which students can leak out of the institution.
- Reclamation—getting back students onto a subsequent presentation of the same course or a different course in some future year.

Of course these activities will only have positive outcomes if successful to the end of a course—for example, retrieval will only have a positive effect if the retrieved students subsequently proceed to pass their courses.

Intervention: who to reach

There will be costs attached to any intervention that will affect the total number of interventions that can be undertaken. One way of ensuring that interventions are as cost-effective as possible is to target them at students most likely to drop out rather than those most likely to succeed. This itself makes the assumption that interventions are more likely to be effective with such students, which remains to be shown.

There are various ways of identifying the most vulnerable students but possibly the most accurate method is to use a ‘logistic regression analysis’ based on the results of a previous student cohort to identify the most likely drop-outs from an incoming cohort (Woodman, 2001). Various previous student cohort characteristics such as age, sex, previous educational qualification and so on are linked statistically to the results they subsequently achieve and then the characteristics of the incoming cohort used in turn to predict their future results.

This method was applied to two successive cohorts of about 3500 UKOU students and a ‘predicted probability of success’ calculated for the incoming cohort. The results ranged from a 0.9% chance of passing to an 84% chance of passing. Two short sections, one from the beginning of the list and one from the end, are shown in Figure 6.

Thus interventions can be targeted on the students most likely to fail, although arbitrary decisions will still be needed about the cut-off point above which interven-

Student	Course	Sex	Predicted probability of success %
1	S281	M	0.9
2	M358	M	13.1
3	T171	M	13.5
4	M336	M	14.3
5	M336	M	14.3

which ran through to:

Student	Course	Sex	Predicted probability of success %
3489	A103	F	84
3490	A103	F	84
3491	A103	F	84
3492	A103	F	84
3493	A103	F	84

Figure 6. Predicted probabilities of success for UKOU students, 2002 (M, male; F, female).

tions will not generally occur. (It should be noted that in this example the top 20 or so students are all female on the same course, the Arts Foundation course A103, which raises equal opportunity issues not addressed in this paper.)

Of course the predictions are not exact. At the moment it appears that the pass/fail predictions are up to 65% accurate and work is proceeding using a larger database to try to increase that accuracy. The highest achievable accuracy will always be limited by the amount of data that can be collected from students before they start. Data that can be collected after the course start such as assignment submission data will increase that accuracy substantially but might only become available at a point when it will be too late to intervene effectively.

Intervention: what aims, what kind, what media and who from

Having then decided when to intervene and who to intervene with, there are several questions left. For example:

- what are the aims of interventions?
- what kinds of intervention are most effective?
- whether some kinds of media such as the phone have significant advantages over others; and
- in some systems, who is the best person to undertake the contact?

I shall assume that at least one of the aims of interventions is to promote the integration of students as described by Tinto (1975) and examined by Woodley (2002). But there is very little written on the kinds of interventions that are most

effective in retention. There is some evidence from the work of Visser (1999) working on a course run by the International Extension College. She looked at a model of motivation due to Keller (1987), the ARCS model (Attention, Relevance, Confidence and Satisfaction), which suggested that any contact must clearly catch the students' attention, must be seen to be relevant to their needs, enhance their confidence and promote their satisfaction with their experience. Visser then used Keller's model to devise a 'Motivational Messaging System' of short messages to students. She claimed—albeit from a relatively small-scale study—that such a system had significant retention effects. Her findings were that short messages were as effective as long ones and that the source of the messages—tutor or institution (sometimes on behalf of the tutor)—did not seem to make a significant difference to their effects.

There are other similar studies. Chyung (2001) in a US study used a system of telephone calls also based on the ARCS model. Case and Elliot (1997) used telephone contacts and found that between two and five contacts seemed to be the most effective. Finally, in a very early study, Rekkedal (1982) simply used postcards in a Norwegian study. All these studies claimed to have demonstrated retention effects.

Visser did not collect any evidence on the use of different media for intervention as she used a purely postal method. Indeed there seems to have been little attempt to collect comparative evidence as to the effectiveness of different media for retention. There are clearly considerable resource differences for the institution between the cost (say) of individual phone calls and bulk e-mails, and cost will be an important determinant of the final strategy.

The costs and benefits of intervention

Clearly what is achievable in terms of retention will depend on the resources available, and the costs of intervention activities will be of critical importance. In fact there are two costs to consider: the total cost of an activity per student and the cost per student retained by that activity.

The total cost per activity will usually be easy to calculate and will be important in establishing what activities are possible at all within a given budget.

The cost per student retained will be much harder to estimate and may not be measurable at all in some circumstances. But where it is possible to estimate it will be an important guide to setting the balance between various interventions within the overall budget and demonstrating the case for the cost-effectiveness of retention interventions. For example, in the UKOU there are three income flows that are particularly important in retention:

- The student fee. New students withdrawing receive a fee waiver or refund depending on their date of withdrawal. This refund is roughly linked to the amount expended on the student to that date.
- The enlistment cost. Every new student who permanently withdraws has to be replaced by in effect enlisting a new student. This enlistment cost in the UKOU

is very high and is thought to be anything up to £500 per new student enlisted in marketing and administrative costs. Clearly some of that cost would be expended anyway to replace graduating students, but as the number graduating each year is about one-half of the number of new students enlisting the cost of replacing withdrawn students will be around £200 per student allowing for some fixed overheads.

- The university's Government grant. The UKOU receives a grant from the UK Government's Higher Education Funding Council for England of £1130 for every student on a 60 point credit Arts course who sits the examination (2003). This figure is different for other courses but again I shall take it as an order of magnitude figure for illustration.

Thus the overall cost in marketing expenditure and loss of grant to the university of a new student withdrawing who does not return to the UKOU is around £1330. If for example a retention activity such as a pre-course phone call is undertaken with the whole cohort of new students (30,000) at a cost of £10 per student receiving that activity, then the total cost of the activity is £300,000. If that activity increases retention by say 2% then the number of students retained will be 2% of 30,000 &equals 600 students. Then the 'cost per student retained' of that activity is £300,000/600 &equals £500. This sounds a large sum but it actually represents a financial benefit to the university of £1330 - £500 &equals £830 per student retained, a total benefit of £830 × 2% × 30,000 &equals £498,000. Thus the importance of being able to assess the value of activities in this way is hard to over-estimate.

It is also important to bear in mind the potential benefits of retention to students. It has recently been estimated (*Times Higher Education Supplement*, 14 March 2003) that a degree boosts earnings by up to 25%—a total of £220,000 extra over a full working life or about £7000 per year. If the increase in income of such students is taxed at 40% then the net benefit to the government each year of the 10,000 or so UKOU graduates each year is of the order of £30,000,000. There are many approximations in this argument of course that make this figure very approximate indeed, but it is clear that there is very considerable value added to institutions, individuals and funding agencies through retention activities.

Intervention for retention in practice

Having looked at some at least of the factors linked to interventions for retention we now may be able to proceed to the question of whether it has been possible to show retention effects from such interventions. The following examples are an attempt to summarize the results of interventions of various kinds.

These examples omit important retention activities such as face-to-face induction, the provision of course choice and preview materials, promoting family and friends support, online conferences and so on. These are essentially either reactive contacts (such as face-to-face induction events where it is the student who in effect makes the

contact by coming) or which pose very considerable evaluation problems (such as promoting family and friends support).

That does not make them necessarily less important for retention—for example, a low-cost activity that has any retention effect will by definition have a low cost per student retained and may well be worthwhile doing despite our inability to quantify that cost and effect. In the same way even commercial companies cannot always measure the cost-effectiveness of marketing activities (such as ‘product placement’ in films, for instance) but nevertheless may decide to undertake them, the decision being based on the companies’ experience and judgement.

Interventions for recruitment

In a study conducted in the UKOU East of England Region (Peoples, 2003), approximately 3500 new students were ranked by predicted probability of success using the logarithmic analysis described previously. The lowest 60% were split into two groups of about 700 each and one group contacted by telephone before and around the course start date. The other group was used as a control.

The contact was a short telephone call—around 10 minutes on average—which was designed to explore the student’s feelings and issues about study and offer reassurance and support.

Halfway through the course the contacted group showed a 4.8% increase in still registered students over the control group. The final results showed a 3% increase in pass rates for contacted students over non-contacted students.

The detailed breakdown of the final results by predicted probability of success bands showed that the model predicted success fairly accurately with some curious variations in the results differences for contacted and non-contacted groups as presented in Table 1.

Thus, for 10 out of the 12 bands the contacted group had higher retention rates overall than the non-contacted groups. However, the numbers of students in some bands were too small to draw reliable results from so it is not possible to see whether interventions had a greater or lesser effect with students with higher or lower predicted probabilities of success.

Nevertheless, it appears that a simple contact at the beginning of the course had a clear retention effect of around 3%. If the maximum possible increase in retention in the institution is 7% then this result is 45% of that maximum, a remarkable result for such a simple activity.

On a national UKOU basis, if this result was replicated the cost–benefit analysis for this activity would be:

- i. The activity is aimed at—new students predicted to withdraw or fail (about 50% of total starting from registration)—about 18000 students nationally.
- ii. Cost per student receiving the activity = £5 (this depends on who undertakes the activity); total cost £90,000.
- iii. Increase in students retained = 3% (total 540); cost per student retained = £165.

Table 1.

Q10

Predicted pass rate band (%)	Actual average pass rate for band (%)	Contacted student pass rate (%)	Non-contacted student pass rate (%)	Difference: contacted – non-contacted (%)
5–10	0	0	0	0
10–15	0	0	0	0
15–20	20	30	13	17
20–25	23	24	22	2
25–30	29	25	32	–7
30–35	31	34	29	5
35–40	34	33	34	–1
40–45	38	39	37	2
45–50	50	52	48	4
50–55	53	54	52	2
55–60	57	76	54	22
60–65	62	78	62	16
65–70	67	75	67	8
70–75	72	–	72	–
75–80	76	–	76	–
80–85	80	–	80	–

- iv. Benefit to the university per student retained $\text{£}1330 - \text{£}165 = \text{£}1165$.
- v. Total benefit to the university $\text{£}540 \times \text{£}1165 = \text{£}630,000$ per annum.

The more accurate the identification and the more effective the contact, the lower the cost per student retained will become.

Interventions for retention on course

Once students are on course in the UKOU there is a choice of source for any interventionist contact as it may come from the tutor or from the student support section of the institution. According to Visser it does not matter where the contact comes from, although that may depend on many institutional factors.

Interventions from the institution before the first assignment

The clearest intervention point from Figure 3 appears to be the first assignment, a point at which in the UKOU up to 30% of students from course start appear to drop out (although some of this drop out may actually have occurred considerably earlier). A study in the UKOU (Kaye, 2002) suggested a 2.7% increase in assignment submission rates after a mail or e-mail contact from the institution compared with a control group. Because of the use of e-mail this was an inexpensive exercise—

Q5

the cost per student retained *to the first assignment* was around £1. However, this was not retention to the end of the course.

In this particular study there was no follow-up to see whether increasing the number of first assignments submitted carried through to increased retention at the end of the course. The overall retention rate for the selected group was 6% higher than the average for the whole university but there were almost certainly other factors operating that make it difficult to draw clear conclusions from this comparison.

Interventions from the tutor

A similar exercise was undertaken in which tutors were asked to contact their students before the first assignment (Gibbs & Simpson, 2002). This resulted in a 3% increase in assignment submissions. However, early indications are that this did not carry over into an increased retention rate over the courses concerned. This finding may mean that one intervention at this stage is not enough and that further interventions are needed at later stages but this remains to be verified. There are also issues around the proportion of tutors who undertook this activity—there were indications that up to 30% of tutors did not contact students despite being asked to do so (see the conclusions to this report).

Q6

Interventions for retrieval

Withdrawal at any time

Some 17% of UKOU students actively withdraw during their course. In a somewhat old small-scale study (Gaskell *et al.*, 1990), withdrawing students were sent a short leaflet that contained a questionnaire. Approximately 20% of the questionnaires were returned and an intervention made with those students who appeared to have withdrawn for reasons that could be overcome. Of the students so contacted about 7% were able to continue to the end of the course so that there was a retrieval effect of 1.4%.

On a national basis the cost–benefit analysis is as follows:

- i. The activity is aimed at new students who actively withdraw—about 25,000 students nationally.
- ii. Cost per student receiving the activity = £5; total cost = £75,000.
- iii. Increase in students retrieved = 1.4% (total 350); cost per student retrieved = £350.
- iv. Benefit to the university per student retrieved = £1330 – £350 = £980.
- v. Total benefit to the university = £980 × £350 = £340,000.

This calculation is for the benefits for retrieving students only. If the activity has a reclamation effect (i.e. the student returns to the next presentation of the course) then there will be a benefit, although it will be smaller by the Higher Education

Funding Council for England grant, which will not be generated at least in the year concerned. This could mean that the activity will actually run at a loss (i.e. £200 – £350 &equals – £150 per student reclaimed) unless that student proceeds to pass their course in the second year.

It is important to bear in mind that the data on which this evaluation is based is quite old and further research would be necessary before a wider activity is based on it.

Withdrawal near the end of the course

A subset of the withdrawal category is the group of students who withdraw near the end of their course having submitted a number of assignments. This is a category that might be unique to the UKOU because the relative complexity of its assessment strategies makes it difficult for students to understand what they have to do to pass their course. In a small study of just under 100 students (Blanchfield, 1999) it was found that just under 25% of students who withdrew in the last four months of their course could have passed their course by simply passing the final examination—the ‘needless fails’. In a separate study 23 students who were assessed to be needless fails were individually contacted. Of these 14 went on to re-register and sit the examination, of whom nine passed and three were allowed to resit at a later date. This represents a retrieval rate of 52%. But it must be borne in mind that this again is a very small sample that must be re-evaluated before it could be used on a wider scale.

On a national basis the cost–benefit analysis is as follows:

- i. The activity is aimed at all students who withdraw in the last four months of their course but who could pass their course by passing their examination—about 800 students nationally.
- ii. Cost per student receiving this activity &equals £8 (the extra cost over 2 is due to the need to check the student’s continuous assessment record and process it through appropriate software). Total cost &equals £8 × 800 &equals £6400.
- iii. Increase in students retrieved &equals 52% (total 416); cost per student retrieved &equals £15.
- iv. Benefit to the university per student retrieved &equals £1330 – £15 &equals £1315.
- v. Total benefit to the university &equals £416 × £1315 &equals £540,000.

Q7

Interventions for reclamation

There have been a number of efforts made to reclaim students who have not re-registered for a further course after study, usually through mailings of various kinds. A recent activity in the UKOU East of England produced a reclamation effect after three months of 1.2% in a mailed group compared with 0.6% reclamation in an un-mailed control group. The cost–benefit analysis for this activity is as follows:

- i. Number of students mailed and number in the un-mailed control group was 1000 each.

- ii. The cost of the activity per students mailed was 40p so that the total cost was £400.
- iii. The extra reclamation was 0.6% so that the cost per extra student reclaimed was $0.4/0.6 \times 100$ &equals £67.
- iv. If the cost saved through not having to recruit new students to replace those dropped out is about £200, then the benefit of this activity is £200 – £67 per student reclaimed &equals £133.
- v. The total number of students in this category is around 70,000 so that the total number of extra students reclaimed will be 0.6% of 70,000 &equals 420, so the net benefit will be about £420 × £133 &equals £56,000.

However, it will be another six months before students who register will start their courses so a check on this data will need to be made then to obtain a fuller picture.

Other intervention possibilities

The cases illustrated are those where some kind of evaluation has been undertaken that suggests there is a retention effect and where a cost per student retained has been estimated. There are several other possible intervention points where it may be possible to generate recruitment, retention retrieval or reclamation effects, such as:

- non-submission of an assignment;
- failure of an assignment;
- pre-examination intervention;
- non-sitting of an examination;
- no re-registration for a further course;
- non-acceptance of a resit examination offer, and so on.

But at the moment, while there is widespread belief that there are retention effects, there seems to be no firm evidence yet that will allow us to estimate the size of these effects and calculate the cost–benefits at any of these stages.

Interventions and retention: conclusions

There is evidence here then that interventions can increase student retention by appreciable proportions of the maximum possible increase and that (in the particular case of the UKOU) this can be cost-effective in terms of the university's income and expenditure. Since other UK universities have similar financial structures it seems likely that this is true for them as well.

But there are many questions to be answered. For example:

- i. Validity. Some of the work on which these conclusions are based is either rather small scale, rather old or not formally published and therefore not subjected to review. Further work needs to be done to ensure that these findings are realistic.
- ii. How many interventions are needed? It appears (not unexpectedly) that just one intervention may not be enough to ensure an appreciable retention effect—for example, the pre-first assignment contact by tutors that produced a significant

submission effect but that did not appear to carry through to the end of the course. Thus to achieve effective retention to the end of a course it will probably be necessary to develop a systematic programme of carefully timed interventions covering the whole course. Such interventions might be targeted on particular students as the result of the analysis of previous interventions to make them more cost effective (Chyung, 2001).

- iii. Who intervenes? There remain issues in a distributed system of student support as to who undertakes these interventions. Clearly interventions before allocation to tutors have to come from the main student support system. It seems reasonable to expect that subsequent intervention should come from the student's tutor. But since there seems to be a proportion in the UKOU of tutors who do not undertake this activity (about 30%) this raises issues of monitoring and follow-up of tutors that is both costly and intrusive. Such close monitoring may even be counter-productive; there is some evidence from outside the UKOU that tutor autonomy is an important factor in promoting student retention (Martinez & Maynard, 2002).

Thus there remains much to be done in the way of a systematic evaluation of systematic interventions. But the prize in terms of increased retention with all its positive consequences—not least of increased financial benefits to institutions governments and to students—is well worth having.

Notes on Contributor

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