

## Student Support in Online Learning—We Need to Talk About Money

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Article abstract

Online higher education has been a success in part because it is less costly to students and governments than conventional education, so both students and governments receive higher returns on their investment than in conventional higher education. However, many online institutions appear to have considerably lower graduation rates than conventional education—the so-called online education deficit that reduces its advantage. This deficit can be reduced through online education institutions investing money in both their course design strategies and their student support, including teaching. This article focuses on student support and suggests that if support increases student retention, institutions will receive a financial return through increased income. It argues: if that increase in income can then be managed to be greater than the original investment, institutions will make a positive return on the investment—that is, a surplus. That surplus can then be reinvested in further student support and potentially increase student success still further. The article then determines what those returns on investment might be in various scenarios depending on institutional funding arrangements. These determinations produce a series of formulae in which actual financial figures can be substituted to calculate those returns.

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November – 2023

# Student Support in Online Learning—We Need to Talk About Money

Ormond Simpson

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## Abstract

Online higher education has been a success in part because it is less costly to students and governments than conventional education, so both students and governments receive higher returns on their investment than in conventional higher education. However, many online institutions appear to have considerably lower graduation rates than conventional education—the so-called online education deficit that reduces its advantage. This deficit can be reduced through online education institutions investing money in both their course design strategies and their student support, including teaching. This article focuses on student support and suggests that if support increases student retention, institutions will receive a financial return through increased income. It argues: if that increase in income can then be managed to be greater than the original investment, institutions will make a positive return on the investment—that is, a surplus. That surplus can then be reinvested in further student support and potentially increase student success still further. The article then determines what those returns on investment might be in various scenarios depending on institutional funding arrangements. These determinations produce a series of formulae in which actual financial figures can be substituted to calculate those returns.

**Keywords:** dropout, attrition, online education deficit, graduation rates, benefits and costs, returns on investment, student retention, money

## Student Support in Online Learning—We Need to Talk About Money

Some years ago, the late professor Sir Eric Ashby, FRS (1904–1992), writing about how university academics make decisions, said,

All over the country groups of scholars, who would not make a decision on the shape of a leaf or the derivation of a word without painstakingly assembling the evidence, [nevertheless] make decisions about admission policy, staff–student ratios, content of courses and similar issues, based on dubious assumptions, scrappy data and mere hunch. (as cited in Brown, 2005, p.3)

At that time, Sir Eric (later Lord Ashby), a scientist by training, was vice-chancellor of Cambridge University. If he were alive now, he would have to admit that we have a great deal more evidence about online education through developments such as learning analytics. But he might still have reservations about how that evidence is used in practice. In particular, he might maintain that his comments still apply to the question of how online education institutions use their most important resource—money.

He might point to a quote from a recent report from the Organisation for Economic Cooperation and Development (OECD) on *Resourcing Higher Education: Challenges, Choices and Consequences*:

Systematic evidence on the cost effects of digitalising course development, delivery, and assessment is limited—and, for many, disappointing. Contrary to expectations, many digitised courses have had comparable costs to in-person instruction ... Online teaching is just as expensive as in-person instruction. (OECD, 2020, p. 45)

He might also note that another part of the OECD report also found that, while real expenditure per student doubled between 1995 and 2015, student numbers have grown by only 81% (OECD, 2020, p. 30). So, not only may productivity in higher education have not increased; it may actually have fallen, despite the increasing use of online teaching.

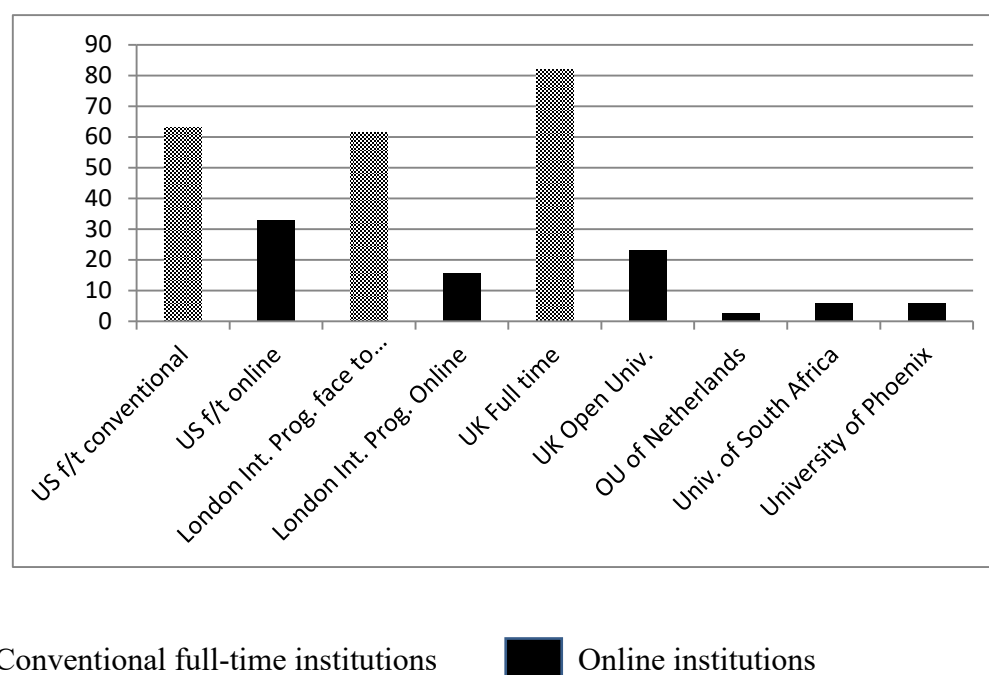
Much attention has of course been paid to the finances of online higher education by authors such as Rumble (2001, 2014), Bramble and Panda (2008), Demiray and Sever (2011), Daniel et al. (2009), Hulsmann (2004), and others. These studies have analysed the complexities of institutional finances, often in considerable depth. However, relatively little attention has been given to how online institutional funding might be used in actual practice to address a fundamental characteristic of higher online education—its high levels of student dropout or attrition compared with conventional higher education. As Karl Marx famously wrote, “The philosophers have only interpreted the world, in various ways. The point, however, is to change it.” This article attempts to understand how an institution’s money might be effectively applied to overcome this dropout rate. To do that, it first looks at the scale and consequences of that dropout.

## Dropout and Attrition in Online Learning

Dropout figures can be complex to define. Higher education institutions can measure their dropout rates in many different ways, students may opt for intermediate qualifications in default of degrees or take lengthy periods to finish, and data are often very hard to both discover and compare. However, since most benefits of online education may accrue after graduation, graduation or completion rates may be the most significant and comparable measure. But such figures can be hard to find. Figure 1 shows a few that have been published compared with two UK face-to-face higher education figures.

**Figure 1**

*Comparison of Conventional and Online Education Graduation Percentage Rates*



*Note.* Adapted from “Online Options Give Adults Access, but Outcomes Lag” by D. Ledermann, *Inside Higher Education*, June 19, 2018 (<https://www.insidehighered.com/digital-learning/article/2018/06/20/online-education-gives-adults-access-student-outcomes-lag#.WypGgexaCY8.twitter>) and *Supporting Students for Success in Online and Distance Education* (p. 7), by O Simpson, 2012, Routledge. Copyright 2012 by Routledge.

Online education graduation rates are noticeably lower than the figures for graduation from face-to-face education. Admittedly, some of these data are quite old. However, a Freedom of Information request to the UK Open University by the author in January 2021 revealed that its more recent graduation rates are still of the order of 23%. And more recent studies confirm that online graduation rates have not only not improved but in some cases have actually decreased (e.g., Bawa, 2016; Delnoij et al., 2020; Hamann et al., 2021; Muljana & Luo, 2019; Sorensen & Donovan, 2017).

The figures for the University of London International Programmes are particularly interesting, as identical courses are presented in both face-to-face and purely online modes. So the graduation difference between the face-to-face and purely online modes (some 46% points) may be mostly due to

the factor of being purely online. There is also a difference of 16 percentage points between the UK Open University's graduation rate (23%) and the UK conventional face-to-face part-time graduation rate (39%), whose students may be comparable with online students, thus possibly experiencing similar study constraints. This difference has been termed the "online education deficit" (Simpson, 2012).

### **The Consequences of Dropout for Students**

Evidence indicates that UK full-time students who have dropped out experience markedly higher probabilities of depression, unemployment, debt, and (for women) partner violence than both graduates and people who never went to university at all (Bynner, 2001). Little research has been conducted into students who dropout of online education despite the large numbers who do so. It may be that the personal, social, and financial effects of dropping out of an online course are less serious than the consequences of dropping out of a full-time course, as the students' commitment may be less. But there is little evidence either way.

### **Consequences of Dropout for Online Institutions**

The online education deficit may have consequences for institutions themselves. Where governments support online education, will they be content to continue to fund such an apparently relatively inefficient form of learning? The answer in the United Kingdom may lie in the UK Office for Students (UKOfS), which, in 2022, announced a "consultation on a new approach to regulating student outcomes" (UKOfS, 2022, p.6). The UKOfS has very considerable powers in regulating UK universities in terms of financial grants and fines, allowing universities access to government-funded student loans, and even denying the title of "university" to higher educational institutions. In its consultation, the UKOfS proposes to set indicators that every university must reach in continuation, completion, and progression. In discussing the delivery of "positive outcomes for students," it noted that it would "set increased, more challenging, numerical baselines that apply to each indicator and all providers. We propose that numerical baselines will not be adjusted to take account of differences in performance between demographic groups" (UKOfS, 2020, p.4). The baseline announced for part-time student completion then was 55%. More recently, as a result of consultation, the UKOfS has made some changes in its proposals. The most important for part-time students is that the completion baseline has been reduced to 40% (UKOfS, 2022) which still compares unfavourably with the UK Open University's (UKOU) current completion rate of around 23%. The UKOU will probably argue that around a third of its intake may have less than conventional UK university entry qualifications and that some of its students settle for intermediate qualifications such as diplomas. How effective these arguments will be with the UKOfS remains to be seen, given the office's apparent determination not to adjust baselines any further. In addition to this challenge, the UK's Department for Education (2022) recommends in a more recent consultation that UK universities should quote their graduation rates in their advertising. This has not yet been made mandatory, as the department is waiting to see what the effects of this proposal are. But it has made it clear that it is willing to make the rule compulsory although it has not yet done so. The effect of having to advertise a graduation rate of 23% on UKOU student recruitment can hardly be positive.

If the approaches of the UKOfS and Department for Education were to be copied elsewhere around the world, this could have negative effects on many online educational institutions. Whether online education institutions are funded directly by governments or indirectly through student loan schemes, having high dropout rates may affect their incomes. Drops in income may then force cuts in staffing

and services to students, leading to a negative cycle of increasing dropout. The resulting financial problems could then lead to closure. For example, in 2016, the Obama administration stripped federal recognition of the accreditor responsible for two large chains—ITT Technical Institute and Corinthian Colleges—whose collapses drew attention to issues of misrepresentation and poor student outcomes within the sector (Cohen, 2016).

Subsequently, the US Department of Education said it would publish information about higher education institutions placed on probation by accreditors and post standards used to judge institutions. It would list student outcomes, such as graduation rates and loan defaults, by accreditor and encourage the agencies to consider poor outcomes in the approval process (Danielle, 2015).

No publically funded institution in the UK has yet been allowed to close by the government, although there have been some close calls and some forced mergers. However, a survey (Hunt & Boliver, 2021) has shown that 198 of 564 private higher education providers in the UK closed in the years 2014–2019. While their closures occurred for a variety of reasons, ultimately, financial reasons were at the heart of most terminations.

So, will students continue to enrol in online courses with high dropout rates indefinitely? Will such students be more attracted to other forms of education that offer considerably better chances of graduating, or can online education institutions increase their retention rates to more competitive levels? The effect of the online education deficit on some institutions might be existential.

## Improving Online Education Graduation Rates

Online educational institutions might have two main approaches to improving their graduation rates:

- writing more retention-friendly online courses, or
- investing in student support systems.

Both these approaches will be important; this article focuses specifically on student support. When discussing student support, this paper will use the following definitions (Simpson, 2012):

- academic (or cognitive) support: teaching supplementing the online course material content; and
- nonacademic (or affective and organisational) support: every other kind of support.

Support can be reactive—responding to student contact—or proactive, taking the initiative to reach out to students. Such proactive support can also be referred to as *interventions*, and there is evidence for the retention effects of such interventions (see Table 1).

**Table 1**

*Proactive Nonacademic Student Support and Subsequent Retention Effects*

Study	Method	Retention	Notes
Case & Elliot (1997), US	Phone calls	15%–20% increase	2–5 calls effective
Visser (1990), UK	Postcards	27% increase	Small-scale study
Chyung (2001), US	Phone calls	Dropout reduced from 44% to 22%	
Simpson (2006), UK	Calling before starting	5.1% increase	640% RoI*
Twyford (2007), Australia	Motivating e-mails	11.7% increase	Significant at 0.5%
Huett (2008), US	Motivating e-mails	23.4% increase	

Note. Adapted from Supporting students for success in online and distance education, by O. Simpson, 2012, Routledge. Copyright 2012 by Routledge.

\*RoI = return on investment.

While these studies are quite old, more recent studies confirm these early findings (e.g., Inkelaar & Simpson, 2015; Rotar, 2022). Most of these studies use proactive contact with an experimental group of students, comparing their retention with a control group. The type of contact varies—Simpson (2008) argued that the contact needs to be mainly motivational, but it appears that several different kinds of intervention can have some effect (Rotar, 2022). Some of these interventions have been costed and show a positive return on investment.

### **Cost–Benefits of Retention Activities Through Proactive Nonacademic Student Support in Online Education**

I suggest that investing money in some forms of nonacademic proactive support can increase student retention while also having a positive cost–benefits result—that is, the institution will get more money back from the investment than it has spent. It can then invest more in further support with hopefully yet more positive retention results.

Of course, it should be noted that investing in purely academic support—that is, online teaching—whether via course materials or through online tutorials, will also increase student retention. Clearly, excellent teaching must increase student success. But the link between teaching and student success has been harder to measure and certainly much harder to cost. We must hope for researchers to tackle that problem, but until then, focusing on the costs and benefits of nonacademic support may at least help us understand this new investing approach to online learning.

However, one of the problems of developing such an understanding is the variety of funding systems used by different universities. This paper analyses a number of different financial scenarios to see if methods can be developed to work out the costs and benefits of retention activities. Unfortunately, very few reports of retention activities appear to be costed in any way. Nevertheless, it will be useful to proceed to an analysis of costs and benefits in the hope that future studies will record their costs as well as their outcomes.

### ***Scenario 1: Externally Funded Institutions Where Funding Is Linked to Outcomes***

Until recently, universities in the UK were granted state funding partly based on the number of students completing each year (i.e., sitting the end-of-year final exam). That is no longer the case, but the situation is covered here as it illustrates a simple method and because there are still some institutions that are partly funded this way—for example, the Open Polytechnic of New Zealand.

Take a course module with  $N$  students on it and apply a retention activity costing  $£P$  for each student, which increases student retention on a course module by  $n\%$ .

Then the total cost of the activity is:

$$£NP \quad (1)$$

and the extra number of students retained is:

$$Nn/100 \quad (2)$$

So the cost per extra student retained is:

$$£[NP/(Nn/100)] = £100P/n \quad (3)$$

On the benefit side, if the government grant per student completing is  $G$  and the cost of recruitment per new student is  $M$ , then the extra institutional income per student from the increased retention is:

$$£(G + M) \quad (4)$$

in grant and recruitment cost savings since fewer new students will have to be recruited to replace the numbers dropping out. (Of course marketing overheads will remain, so the actual recruitment costs saved will be less than  $M$ . It is assumed that the actual savings are  $cM$ , where the factor  $c$  accounts for that proportion of overheads.)

Thus, the institutional profit per student out of the retention activity (if any) is:

$$G + cM - 100P/n \quad (5)$$

**Example—Scenario 1.** In a five-year project in the UKOU (Simpson, 2004), a phone call costing roughly  $£10$  was made to individual students before they started their course modules. It was found that the contacted group had an average  $5.1\%$  increase in retention over a control group (this may seem a small increase, but it was significant not only statistically but in the context of the relatively short nature of the proactive intervention). Thus, the cost per student retained from Equation 1:

$$= £100P/n_p = 100 \times 10/5.1 = £196 \quad (6)$$

This may seem a high figure to pay for one student's retention, but it must be set against the then-UK government grant per retained student ( $G$ ), which at the time was approximately  $£1,400$ , and the then-recruitment cost per student ( $M$ ) of about  $£500$  (this assumes that the factor  $c$  might be very roughly around  $0.5$  so that about half the marketing cost might be saved).

Then, the *institutional surplus per student* from Equation 2 becomes:

$$£(G + 0.5M - 100P/n)$$



$$\begin{aligned}
 &= 1,400 + 0.5 \times 500 - 196 \\
 &= £1,454
 \end{aligned}
 \tag{7}$$

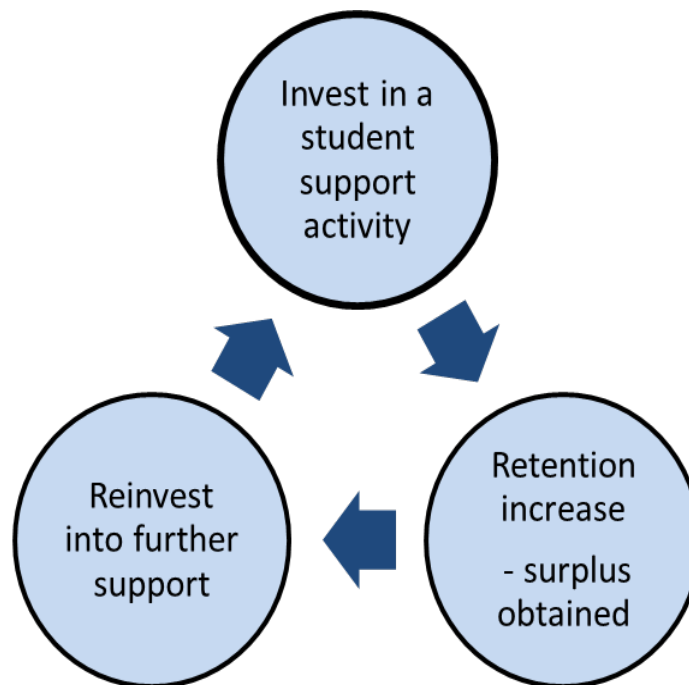
In 2004 the number of new students each year in the UKOU was around 30,000. So if the retention activity was applied to all those students, the *total institutional surplus* would have been:

$$30,000 \times £1,454 = £4,362,000 \tag{8}$$

—a not inconsiderable figure, even for an institution with an annual income of several hundred million pounds. It was also a figure that, if reinvested in student support in a kind of feedback triangle, would make a very considerable difference to future student retention (see Figure 2).

**Figure 2**

*A Feedback Triangle—Reinvesting a Support Activity Surplus Back into Student Support*



Contrast this feedback triangle with Daniel’s “iron triangle” of access, quality, and cost (Daniel et al., 2009) in education, where it is impossible to change one side of the triangle without having a deleterious effect on the other sides: “Packing more students into bigger lecture halls may increase access but will lower quality, defined as faculty–student interaction, unless the cost is increased by hiring more teachers. Similarly, attempts to improve quality usually restrict access and raise costs” (p. 4).

The feedback triangle suggests a way of overcoming the rigidity of Daniel’s iron triangle by showing that increasing quality of support can increase retention, which provides a surplus, which in turn can allow access to be increased.

**Return on Investment.** Another perspective on these figures is to treat the cost of the retention activity as an investment and calculate the return on that investment (RoI) from the surplus. That would be:

$$\begin{aligned}
 & (\text{Gain from investment} - \text{cost of activity}) / \text{cost of the activity} \\
 & = (1,454 - 196) / 196 \\
 & = 640\%
 \end{aligned}
 \tag{9}$$

This is a return that would be envied by most commercial companies.

### ***Scenario 2: Institutions Funded by Fees from Students***

Many institutions are funded through combinations of fees from students, such as registration fees, initial tuition fees, and exam fees. Such combinations can be complex. To understand how such combination might work, it is useful to take examples of different fees separately.

**Example Scenario 2(i)—Exam Fees.** The University of London International Programmes (UoLIP) charges a fee for students who wish to sit the end of module exam. In this case, an extra number of students completing will increase institutional income by the net exam fee £E, where £E is the difference between the fee paid by students and the cost to the institution of providing the exam per student (it is assumed that institution at least aims to cover this cost with the fee so that this net fee E is positive).

So again, if a retention activity costing P per student increases retention by n%, the extra institutional income generated by an increase of (n/100)N extra students completing the course and paying the exam fee will be:

$$(n/100)NE \tag{10}$$

So the overall extra income to UoLIP will be:

$$(n/100)NE \quad NP \tag{11}$$

Assume a retention activity costing £2 per student produces a retention increase of 5% amongst 1,000 students on a course module whose exam fee is £200 (an approximate figure for UoLIP). If we also assume that the actual cost of providing worldwide face-to-face examinations is about £150 per student, then that leaves a net exam fee to UoLIP of £50. Then the overall extra income to UoLIP becomes:

$$£(5/100) \times 1,000 \times 200 - 2 \times 1,000 = £8,000 \tag{12}$$

This particular retention activity example would then run at a surplus of £8,000. In such a circumstance, the net exam fee might be increased to increase the surplus or reduced to encourage more students to sit the exam. Either way, the process should offer some insight into the costing processes within UoLIP.

**Example Scenario 2(ii)—Tuition Fees.** A more common scenario is the one where the institution is wholly or largely funded by student fees. This is a more complex situation, but a simple analysis is to look at the increased income from the increased number of students completing one module going onto the next module in the programme.

Thus, as in Scenario 1, assume that a retention activity costing £P per student is applied to all N students in a programme and causes an increase in retention of n%. Then, as before:

$$\text{Increase in students retained} = (n/100)N \quad (13)$$

$$\text{Total cost of the retention activity} = \text{£}NP \quad (14)$$

It can be hoped that there will be extra income because of the activity, due to the successful extra  $(n/100) \times N$  students re-registering for the following year and paying a tuition fee of  $\text{£}F$ :

$$\text{Extra income in following year} = \text{£}(n/100)NF \quad (15)$$

Thus, the surplus income will be the difference between the extra income and the cost of the activity:

$$= \text{£}[(n/100)NF - NP] \quad (16)$$

So for the activity to be self-supporting or to generate a surplus, we need:

$$\text{£}[nF/100] \geq P \quad (17)$$

In the UoLIP, typically, the number of students on a module might be  $N = 1,000$  and the student fee  $F = \text{£}800$ . Again, assume a retention activity cost of  $P = \text{£}10$  per student. Then, for the retention activity to be self-supporting or generate a surplus:

$$\begin{aligned} n \times 800/100 &\geq 10 \text{ or } n \geq (10/8)\% \\ \text{that is, } n &\geq 1.25\% \end{aligned} \quad (18)$$

So, in this example, as long as the increase in retention is equal to or greater than 1.25%, the activity will be self-supporting or generate a surplus.

If the percentage increase was as much as 5% with an activity cost of  $\text{£}2$  per student as it was in the study by Inkelaar & Simpson (2015), then the institutional surplus income would be:

$$\begin{aligned} \text{£}[nF/100 - P]N &= \text{£}[5 \times 800/100 - 2] \times 1,000 \\ &= \text{£}38,000 \end{aligned} \quad (19)$$

—a much smaller amount than in Scenario 1 but still a useful sum to perhaps reinvest into the retention activity. And given that the initial investment into the retention activity was  $NP = 1,000 \times 2 = \text{£}2,000$ , the RoI will be:

$$(30,000 - 2,000)/2,000 = 1,400\% \quad (20)$$

—a return better than Scenario 1 and still an enviable one by commercial standards.

#### **Example Scenario 2(iii)—Maximum Expenditure on Retention Activities Value.**

Alternatively, if the institution set a specific increase in retention target, it is possible to calculate the maximum expenditure on a retention activity, which would still break even or generate a surplus. The possible surplus is:

$$\text{£}[nF/100 - P] \text{ per student} \quad (21)$$

Then as long as

$$P \leq nF/100 \quad (22)$$

the activity will break even or make a surplus. For example, if the retention target in the above example is 5%, then:

$$P \leq 5 \times 800/100 = £40 \quad (23)$$

The institution could then spend up to £40 per student on a retention activity and still break even or make a surplus—if the target were reached. Of course, this increase in income will occur in the year following the one in which the expenditure occurred, which increases the complication of assessing the actual profit and RoI, but the method still gives an estimate of the way in which both may be very roughly calculated.

UoLIP actually charges both a tuition fee and exam fee. In this example, the combination of the surplus from the increase in student fee from a 5% increase in retention of £38,000 and the surplus of £8,000 on exam fees means that the overall surplus is £46,000.

### ***Scenario 3—Institutions That Charge Both a Tuition Fee and an Exam Fee, Taking into Account Institutional Overheads***

Combining the first two scenarios of tuition fee and exam fee is of course a considerable simplification. A better analysis needs to take into account an institution's basic overheads. This situation is again considerably more complex than any of the previous ones.

Assume that in any programme there is a fixed institutional overhead £V per year plus a student-related expense of £S per student per year. Then, if the number of students on the programme is N, the total expenditure on the programme is:

$$= £(V + NS) \quad (24)$$

This of course is a huge oversimplification of the complex funding flows in an institution, but it is a useful starting point for analysis. If the annual student registration fee is F, then total institutional income per year is:

$$= £N(F) \quad (25)$$

Total surplus income (if any) will be:

$$= £[NF - (V + NS)] = £[N(F - S) - V] \quad (26)$$

The increase in income from n% extra students taking the exam and re-registering for the next module will be:

$$= £[(n/100)N(F + E - S - V/N) - NP] \quad (27)$$

**Example Scenario 3—Tuition Fee and Exam Fee Combined with Overheads.** If there is a 4% increase in retention at a cost of £5 per student on a programme with 1,000 students and the registration fee is £800, and the exam fee is £200, with a student-related expense of £200 and a fixed overhead of £5,000—n = 4%, P = £5, N = 1,000, F = £800, S = £200, and V = £50,000—then the extra total income due to the activity will be:

$$\begin{aligned} &= £[(n/100)N(F + E - S - V/N) - NP] \\ &= £[(4/100)1,000(800 + 200 - 200 - 50,000/1,000) - 1,000 \times 5] \end{aligned} \quad (28)$$

$$= £25,000 = \text{increase in income due to increased retention} \quad (30)$$

Alternatively, given all the figures above except  $n$ , it can be worked out what  $n$  (the percentage increase in retention) has to be to make a surplus. That is,

$$£[(n/100)N(F + E - S - V/N) - NP] \quad (31)$$

must be greater than zero. So:

$$(n/100)N(F + E - S - V/N) > NP \quad (32)$$

$$n(800 + 200 - 200 - 50,000/1,000) > 1,000 \times 5$$

$$n(750) > 5000 \quad (33)$$

$$\text{Therefore, } n > 6.7 \quad (34)$$

Thus the increase in retention must be greater than 6.7% to make the activity self-supporting.

**Example Scenario 3—Graphical Representation.** It may be easier to see what is happening in these equations if they are represented graphically. For any retention activity in this example to be self-supporting:

$$£[(n/100)N(F + E - S - V/N) - NP] > 0 \text{ as before} \quad (35)$$

$$(n/100)(F + E - S - V/N) > P \quad (36)$$

Inserting the assumed figures as before with the exception of  $n$  and  $P$ , which we now treat as variables, we get:

$$(n/100)(800 + 200 - 200 - 50,000/1,000) > P \quad (37)$$

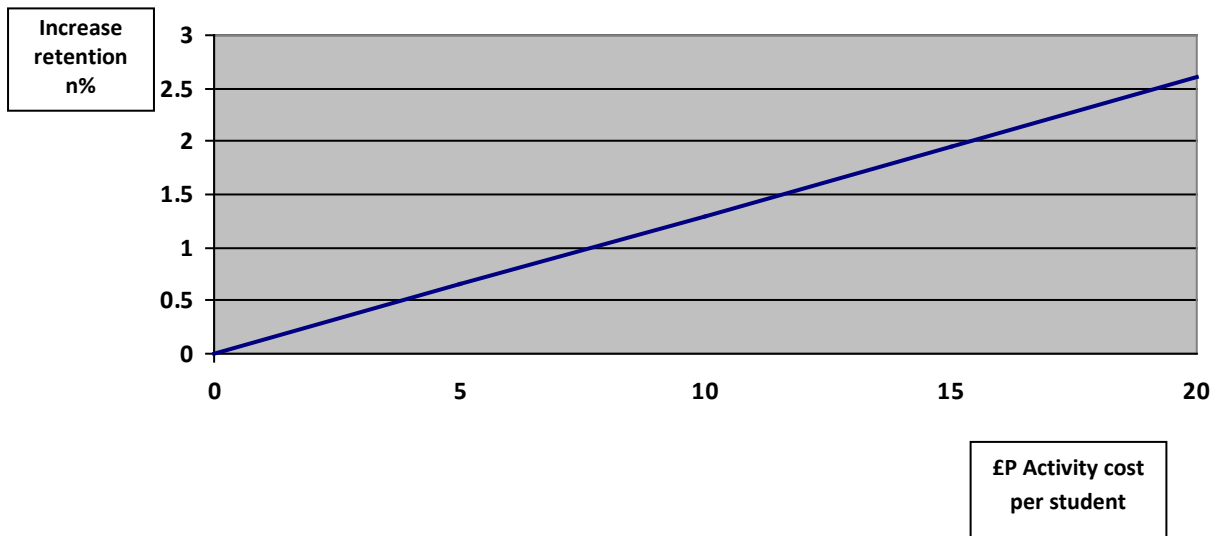
which simplifies to

$$n > 0.13P \quad (38)$$

In other words, in this case, if the percent increase in retention  $n$  is greater than 0.13 times the cost per student of the retention activity  $P$ , the institutional income from the activity (the return) will be greater than the cost of the activity. Thus, the activity will make a surplus for the institution. If  $n$  is less than  $0.13P$ , then the activity will create a loss. Plotting the graph of  $n = 0.13P$ , we get Figure 3:

**Figure 3**

*Graph of £P—Retention Activity: Cost per Student Versus n%—Increase in Retention*



Any activity costing P whose n% falls above the line will be self-supporting or make a positive return. The higher the point above the line, the greater the return will be. For instance, a retention activity that costs £10 per student, which then results in an increase in retention of 2%, will fall above the line and therefore will make a net surplus for the institution. An activity costing £10 per student but that only gains an increase in retention of 0.5% will fall below the line and so will run at a net loss to the institution. An activity costing £10 per student, which results in a retention increase of 1.3%, will fall exactly on the line and will make neither a surplus nor a loss but will at least be self-supporting.

Obviously, these figures will depend entirely on the actual values of F, S, V, and N at any time and the assumption that the increase in the number of students completing one module will transfer to registration on the next.

## Discussion and Conclusions

This study suggests that it is vital that higher educational institutions pay detailed attention to how they invest their money. This is particularly important for online institutions, which appear to suffer online education deficits, with markedly lower graduation or completion rates compared with conventional education institutions. Such deficits could even threaten their existence. However, the study suggests that investing money in certain kinds of carefully designed proactive nonacademic student support can both reduce deficits as well as produce financial surpluses, which can then be reinvested in further support.

This study may be challenged in many ways, and not just in its assumptions, approximations, and simplifications. One particular limitation, for example, is that the formulae apply only in specific circumstances where well-costed specific support activities lead to statistically clear retention outcomes in random controlled trials. Such trials are still rare in the research literature.

A further limitation is that this study says nothing about the basic splits in institutional funding between nonacademic support, academic support (supplemental teaching), and the amortised cost of online course production and presentation. Many online educators might argue that course production is the more important element in online learning, since it seems likely that no amount of academic or nonacademic support could overcome the adverse outcome of a retention-hostile course. Equally, it is difficult to assess the level of appropriate funding for supplemental teaching to increase retention. As Bozarth (2011) notes, “Much learning takes place without teaching, and indeed much teaching takes place without learning” (para. 8).

In addition, teaching and course writing may sometimes be seen as more desirable activities for academics than the daily effort of nonacademic student support and, therefore, may attract more resources. Indeed, in some institutions, student support may well be delegated to part-time or temporary staff. And student support will usually be at the front of the line for inevitable cuts when institutions are required to retrench (Hulsmann, 2004).

These and other limitations aside, there appears to be one salient fact: everything online educators do to increase the success of their students is ultimately a function of the resources available to them—that is, the money they have access to. Without an attempt to see how that money is most effectively applied to the problem of student retention, institutions will continue to struggle to overcome their online education deficit problems.

The late Sir Eric Ashby might still wonder if online institutions are working more on hunches than anything else. But online institutions are full of highly intelligent analysts, statisticians, accountants, and academics. There is also the potential game changer of artificial intelligence to be applied to student support. This article argues that it is high time the talents of such staff be applied to the complex challenges of discussing and evaluating the role of money in online educational student support.

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