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A response to "A pedagogical and economic critique of student charges for Internet access"

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ABSTRACT

This paper is a practitioner response by an IT manager to a paper by Duncan Greaves entitled "A pedagogical and economic critique of student charges for Internet access", which appears in the same issue of IJEDICT. Greaves' article proposes four mechanisms to solve this "public goods problem". The author explores the challenges of Internet service provision in a no-charging low bandwidth environment and specifically considers the implications of Greaves' recommendations to solve this problem: right-sizing the bandwidth; having appropriate policy frameworks; capitalising on community mores and sensibility; and using technology smartly.

Keywords: *Bandwidth management, South Africa, university, public goods, Internet*

INTRODUCTION

At a philosophical and pedagogical level I agree wholeheartedly with Duncan Greaves' thesis in his paper "A pedagogical and economic critique of student charges for Internet access". Indeed, Greaves makes a well-argued and thoughtful case for not charging students for Internet access. In particular, his comment about "the intrinsically ludic nature of the web" rings true with my own experiences of learning to use the web and of teaching 'newbies'.

However, my interest in this topic is not academic. I am responsible for service provision in the kind of non-charging, low-bandwidth environment described in Greaves's article. It is up to me and my colleagues to make sure that users at my institution have a reasonable level of Internet access. And when the Internet is 'slow' or 'down' we have a barrage of complaints from enraged and frustrated customers. Thus I face a dilemma. From a theoretical perspective, I concur that charging students for internet access may be well harmful and "amplify the digital divide". On the other hand, as a "rational, self-interested" person, I know that in practice charging would make my life as a service provider much easier. This paper is therefore about the nuts-and-bolts of implementation.

Greaves argues that Internet bandwidth is a public good. According to *The Economist* (2005), public goods have three characteristics. "They are:

- Non-rival – one person consuming them does not stop another person consuming them;
- Non-excludable – if one person can consume them, it is impossible to stop another person consuming them;
- Non-rejectable – people cannot choose not to consume them even if they want to.[1]

Greaves' article proposes four mechanisms to solve this "public goods problem". These are:

1) Right-sizing the bandwidth;
2) Having appropriate policy frameworks;

3) Capitalising on community mores and sensibility;

4) Using technology smartly.

I will discuss each of these in turn, and list some challenges involved in putting these mechanisms into place.

RIGHT-SIZING THE BANDWIDTH

Greaves writes that "given a basic workstation count there has to be a commensurate level of supply. An easy thing to do is to benchmark against comparable institutions." Right-sizing the bandwidth inevitably has to be the starting point, but there are a number of difficulties with implementation.

Firstly, how does one choose a "comparable" institution? This needs to be an institution that also operates in a low-bandwidth environment, does not charge and has similar usage requirements. It also needs to have acceptable Internet access speeds and largely satisfied users, otherwise there is no point in benchmarking against it.

Secondly, Internet applications are growing more and more bandwidth-intensive. In the early days, the Web was a text-only medium, but this was soon followed by images, then audio, then streaming video, all of which are extremely demanding of bandwidth. This poses a budgetary difficulty: the institution will have to commit to an annual benchmarking exercise, on the understanding that the demand will grow each year, possibly in exponential leaps. Although bandwidth costs are dropping on the whole, they are not dropping fast enough to balance the growing demand. Increasing costs will be a bitter pill to swallow, given the funding problems that bedevil institutions in developing countries.

Thirdly, right-sizing the institution's bandwidth provision will only provide temporary relief. Where usage was previously inhibited by poor response times, newly satisfied users will find new applications for Internet use. This will lead to increased demand. Benchmarking thus will not establish a stable level of service provision – institutions will almost always be playing a catch-up game.

Finally, it is not enough to right-size the bandwidth. In order to properly manage this scarce resource, IT departments need a complementary budget for supporting infrastructure and staff. Simply put, there is no point in spending millions each year on bandwidth, only to skimp and scrape to save thousands on cache servers, which allow for more efficient usage of bandwidth. In particular, adequate budget will be needed to enforce policies and to use technology smartly.

APPROPRIATE POLICY FRAMEWORKS

As Greaves says, policy is a key tool in the effort to keep the Internet free and fast. However, even the best policy has no value unless it is communicated and enforced. It also needs to be able to handle exceptions.

A policy must be continually communicated to stakeholders in a meaningful way, especially as many students will not be familiar with the technical jargon that such a policy will inevitably contain. Communication will also require ongoing attention, since each year brings a new cohort of students.

The policy must be enforced, and violations must have real consequences. This should be done via existing channels for staff and student discipline, so that it is given the same weight as other infringements of rules. The IT department will need technical systems and staff to monitor usage and report on infractions.

It is also important to handle the inevitable exceptions properly. The policy needs to be flexible enough to accommodate special or unusual needs in a fair and transparent manner. But there is a danger here. In a university environment, many individuals and groupings will argue that they are exceptions and should be given special treatment. Eventually, once enough exceptions have been made, the policy loses impact. In addition, managing the exceptions is costly and time-consuming, and they should therefore be kept to a minimum.

CAPITALISING ON COMMUNITY MORES AND SENSIBILITY

The third mechanism that Greaves describes is "capitalising on community mores and sensibility". While this is an appealing concept, I think this is unlikely to have much impact. Most students do not differentiate between personal and academic Internet usage. In fact, the Internet is valued highly as social and recreational tool, and I am not convinced that the community of students places a higher value on academic usage than on other types of use.

Even if the student population did feel strongly that this shared resource should be used wisely, community norms and values tend to be most effective when an individual infringement is visible. However, web browsing and downloading usually takes place in private. Technically, we could make the activity public, for example, by publishing student usage stats to a website that is available to all, in the hope that peer pressure would cause 'bandwidth hogs' to reform their antisocial behaviour. Aside from the concern that this would be a serious violation of privacy, this could well lead to unpleasant incidents of bandwidth vigilantism.

A related problem is that of copyright infringement since the use of the Internet to download copyrighted material is a common problem in institutions of higher learning across the world. From a bandwidth perspective, this is a waste of the institution's scarce resources, because such downloads tend to be very large files with little academic value. Over and above that, one would hope that the community's sensibilities would be outraged by this clear breach of intellectual property law. Given the prevalence of the problem, my view is that a significant number of people do not view such copyright infringements as immoral. If illegal actions are viewed with tolerance, then what hope is there that students' behaviour will be changed by appeals to social responsibility.

Despite these expressed reservations about its effectiveness, I believe that the appeal to community values can be a sound approach when communicating and marketing bandwidth policies. A creative example is the "Be Nice to the Net" site of the University of California (UC) Berkeley (http://www.rescomp.berkeley.edu/benice/). This site is aimed at student users who have connection points in their residence rooms. As part of the enforcement procedures, first-time offenders (students who use more than their bandwidth quota) have their connection disabled until they have completed "an educational quiz about bandwidth".

It is of note that these UC Berkeley residence halls have 60 megabits per second of Internet bandwidth available. The Tertiary Education Network (TENET), which serves all South African higher education institutions, has about 100 megabits per second of international bandwidth. Even although the UC Berkeley residences have 60% of the bandwidth of all South African institutions put together, they still need to have bandwidth management strategies in place.

USING TECHNOLOGY SMARTLY

Using technology smartly is clearly important, but has two key, related difficulties: financial and technical. As I said earlier, it is not enough to right-size the bandwidth. Institutions must also provide adequate budget for supporting infrastructure, and for the technical staff to manage it. Greaves mentions some relatively inexpensive ways in which an institution can manage bandwidth, but even these require a level of investment in hardware and skills.

Such investment must be ongoing, since there will always be some diehards who are not won over by appeals to their community spirit, and who have the time and the tools to search for a way around whatever enforcement mechanisms are used. In any event, the Internet is continually evolving, and new technologies require constant changes in bandwidth management techniques.

CONCLUSION

Internet bandwidth is a scarce and expensive resource that requires wise management. In his article, Duncan Greaves argues that although charging students is in many ways an attractive solution, it impairs the learning process.

I have explored some of the practical problems that face those who choose to manage bandwidth without directly recovering costs from users. Institutions that decide to take this route need sophisticated information technology policy and governance structures, strong management, excellent technical skills and sufficient technology resources. For universities struggling to afford adequate connectivity, this is a challenge.

Moreover, there is no out-the-box one-size-fits-all solution. Each institution will have to develop policy, enforcement, communication and technical strategies that fit its unique circumstances. These must be aligned to educational goals, and so we should take cognisance of Paulo Freire's observation that "Experiments cannot be transplanted; they must be reinvented" (Freire 1978, p.9).

Not charging students may philosophically be the high road, but practically it is a rocky, arduous and challenging path.

Disclaimer:

Pippa Moll writes in her personal capacity and not as a representative of the University of Cape Town.

Endnote:

[1] One of the problems with public goods is that they are often over-consumed.

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