Old Apprehensions, New Anxieties: A Study of Student 'Psychological Cost' in Traditional and Distance Education

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Abstract

Two hundred and four students enrolled at a Greek university in the Economics department were asked to estimate the costs for participation in traditional and in distance education. These costs included 'psychological cost', which this paper reports on. 'Psychological cost', such as stress and anxiety for each educational method, was estimated by students on the assumption that they would hire (1) an assistant to facilitate learning and using a PC in the case of distance learning, and (2) an independent expert to help the student understand courses and to overcome any stress associated with class participation in the case of traditional learning. It was hypothesised that the psychological cost for each educational procedure would decline with experience. It was found that for university students following a distance learning course, psychological cost declined with experience and familiarisation with e-learning. However, psychological cost did not decrease with experience in the case of students following a traditional course. The latter finding may be partly due to constantly changing professors, classmates and expectations, and to the cyclical nature of academic stress in the traditional setting. In conclusion, it is suggested that a mixture of distance learning and traditional learning may be the soundest strategy, allowing the student to profit from the advantages of both distance and traditional higher education methods.

Introduction

Embarking on a course of studies at an institution of higher education is a major decision that may reverberate throughout an individual's life. Earning a post-secondary degree can open up many new career possibilities and substantially increase earning power. To gain those rewards, however, requires a very substantial investment of energy, time and money. Higher education incurs a number of costs to the student, including (Ioakimidis, 2006):

- direct financial costs for
  - tuition and fees
  - educational tools such as books and computers
  - transportation
  - housing, food and other essentials if the student does not live at home;
- cost of time; and
- opportunity cost.

Yet another cost category that should not be forgotten is the psychological cost the student pays during his or her education. Attempting to complete a course of studies can generate a substantial psychological cost for the student, including anxiety, stress and/or fear. This psychological cost may be related to a number of factors. For example, the degree of stress that students experience depends on the amount of academic work required (Sloboda, 1990), the student's purpose for enrolling (Michie, Glachan and Bray, 2001) and his or her coping style (Struthers, Perry and Menec, 2000).

One major factor that may affect student psychological cost is whether the studies are done in the traditional way or through distance learning. The traditional way is for the student physically to attend classes alongside other students in classrooms presided over by professors or other human instructors. Distance learning, on the other hand, is carried on mainly through computer connections between students and instructors via the Internet and e-mail (also called *e-learning*). Given the substantial differences of these methods, it is reasonable to suspect that student psychological costs for the two may differ.

This paper is based on a study that was conducted among Greek university students to compare costs for a course of

study using either traditional higher education or distance learning through the use of PCs. Student psychological cost was among the costs compared. The paper reports the investigation's results in relation to psychological costs and discusses implications of the findings.

Background

Student psychological cost can be understood as the psychological distress, including anxiety, stress and/or fear that a student experiences that is related to his or her education. This cost is an important issue for countless students pursuing a higher education degree. Psychological cost in the form of stress has been shown to be negatively correlated with academic performance (Akgun and Ciarrochi, 2003; Sloboda, 1990; Struthers, Perry and Menec, 2000), mental health (Bovier, Chamot and Perneger, 2004) and various physiological indications of good health such as DNA repair (Cohen *et al*., 2000) and normal blood pressure (Hughes, 2005).

A number of studies have investigated psychological stress among students who follow a traditional course of higher education. These students face many challenges initially and throughout their course of study. The most obvious demands are the many academic requirements that the student must successfully fulfil, such as extensive reading and writing assignments and examinations. In meeting those demands, the student must face time constraints and deadlines for completing assignments and preparing for examinations, which requires him or her to allocate time and energy effectively and to develop efficient study habits, sometimes under difficult study conditions (Zeidner, 1992).

Of course, such academic demands are not peculiar to those who undertake coursework in a traditional setting. Students in distance education e-learning courses can also expect to face stringent academic requirements and must learn to use their time and energy effectively. Thus, academic pressures can incur a psychological cost for distance learners as well as they do for traditional students. There are also other factors that appear to be common to both traditional and distance students. These include constraints placed on the student's time and energy by social and family relationships and constraints imposed by other interests and requirements, such as work.

However, some factors that can increase psychological cost are mainly relevant to students when they enter a traditional course of studies than they are to those who embark on distance learning. These include the following:

- learning about and dealing with an academic subculture and a social milieu with its own rules and norms;
- living and working while embedded within a highly competitive atmosphere;
- becoming familiar with instructional systems such as tutorials, lectures and labs; and
- learning to use the institution's libraries and computer system effectively (Zeidner, 1992).

Students who enter a traditional course of study must face these, as well as the other academic and social demands previously mentioned. Furthermore, many of these stressors may continue throughout his or her years of education. In doing so, they may result in the traditional student paying a substantial psychological cost over a considerable period of time.

Students who are in a minority group on a traditional campus may face difficulties in addition to those mentioned above. Wan, Chapman and Biggs (1992) noted that academic stress often occurs for graduate-level international students in US colleges and universities due to the heavy and fast-paced academic workload and the relative lack of social support mechanisms. They found that international students' perceptions of how skilled they were in several areas, including English language proficiency, academics and problem solving, were predictors of their self-perceived ability to deal with academic requirements.

Post-graduate international students at a New Zealand university reported feelings of anxiety at writing essays and speaking in class or tutorials (Lewthwaite, 1997). These feelings were related to their self-appraisal of their English skills and being unfamiliar with cultural expectations in relating to instructors. The students were also markedly apprehensive about the possibility of failure, especially given family expectations.

In relation to these two studies, it is important to note that having to orally participate in class can be a stressor not only for international students who doubt their proficiency in the host language, but for any student who has doubts about his or her language skills. Indeed, any student who finds it difficult to talk before others, for any reason whatsoever, may find it stressful to be in a class alongside others if he or she is expected to contribute to classroom discussion. Class participation often depends on a student's personality, which disadvantages those who are shy or introverted (Jacobs and Chase, 1992). Payne (2004) notes that the number of individuals reporting some degree of shyness is increasing and suggests that this may be partly due to reduced social interaction in childhood as children and youths spend substantial time on solitary activities such as video gaming. Thus, the number of students who experience shyness during classroom situations may be increasing.

Shyness can be considered as a form of social anxiety, which appears to include two primary dimensions, social interaction anxiety and social observation anxiety. The first refers to fears and anxieties related to interacting with other people, while the second refers to fears and anxieties related to being observed by others (Kashdan, 2002). Either may be triggered by classroom situations when a socially anxious student is asked to interact with or speak before other students or the instructor. Furthermore, social interaction anxiety may be related to other psychological costs. Kashdan (2002) found that social interaction anxiety among a sample of 214 undergraduates in the USA was negatively correlated with several domains of positive psychological functioning. Extreme cases of social anxiety may lead to social anxiety disorder, an excessive fear of social situations in which an individual believes that he or

she will do something embarrassing or show symptoms of anxiety (American Psychiatric Association, 1994). The prevalence of such social phobias may be as high as 13% in the USA (Payne, 2004). Though the prevalence in other countries is not clear, these figures again suggest that for a significant number of students, classroom interactions may levy a heavy psychological cost in terms of fear, anxiety and stress.

A study related to the anxiety that minorities may feel in a traditional educational environment was conducted by Parker and Jones (1999), who found that African-American students in a predominantly White university in the USA had mixed degrees of psychological adaptation to the academic world. Students with a high degree of minority status stress were found to be less adapted to the academic environment than those with lower minority stress.

A number of investigations have examined factors related to psychological cost in traditional education venues. Research on UK university students found that females had a higher degree of anxiety related to academics than males, that directly entering students had more stress than students re-entering the educational system, and that students who entered higher education primarily for the sake of learning itself had less academic stress than those whose purpose it was to prepare for a career (Michie, Glachan and Bray, 2001). The researchers also noted that there is evidence that non-academic concerns such as financial problems and lack of time with family and friends can be stressful for students.

A Canadian study found that in a traditional university setting, student coping style was related to academic stress. In particular, those who coped through problem solving performed better than those with a more emotion-focused coping style (Struthers, Perry and Menec, 2000). Learned resourcefulness has also been found to moderate the effects of academic stress (Akgun and Ciarrochi, 2003).

Whereas the above studies were done in traditional higher education venues, other investigations have examined psychological cost among students enrolled in distance learning courses. Often, writers concerned with distance learning emphasise its advantages for the student over traditional learning while paying relatively little attention to unique problems that affect students in this new and rapidly expanding educational environment (Hara and Kling, 2000).

First, as noted above, many of the stressors that are faced by students in traditional higher education environments are also faced by those who are distance learners. In particular, fulfilling stringent academic requirements – activities such as reading and memorising sometimes copious material, understanding new concepts, composing papers and preparing for examinations – constitutes as much a challenge for distance learners as it does for traditional students.

In addition to these common factors, however, there are sources of psychological cost which are peculiar to the e-learning environment. One of these is that distance learners generally work alone, which can result in a sense of isolation (McInnerney and Roberts, 2004). Related to this is the fact that collaborative learning can be more difficult for distance learners. Whereas students in traditional learning environments find it relatively easy to meet physically with other students to discuss material, work together on projects and prepare for examinations, collaborative learning can be more difficult for distance learners (Lawless and Allan, 2004).

A number of other stressors have been found among distance learning students. These include (Bauer, 2001; Hara and Kling, 2000):

- unfamiliarity with the technology involved – PCs, software, e-mail, the Internet, etc.;
- course prerequisites concerning the required technological knowledge not being made clear;
- technological problems (computer problems, inaccessible web sites, etc.);
- inability to have questions answered promptly by the instructor and instead having to e-mail the question and then wait for a reply;
- the sometimes considerable time required to compose and read e-mails, compared to having real-time conversations with teachers and fellow students in a traditional setting;
- lack of structure in online courses;
- ambiguity when instructions are provided only through writing and cannot be clarified verbally with the instructor;
- overall difficulty in students and teacher understanding each other due to the weaker social cues available when communicating solely by text; and
- student feelings of isolation.

In a study of how emotion relates to e-learning among distance learners taking courses from an Australian university, O'Regan (2003) found that frustration was the primary emotion expressed by the students about their distance learning experience. Among the students' complaints were unreliable Internet connections, non-working Internet links, inadequate instructions about assignments, excessive time needed to access resources, confusing structure of the online course material, out-of-date course material, superficiality of online discussion among students due to the discussions being unmoderated, and inability to explore ideas with other students in oral conversation.

It is possible that unfamiliarity with the technology involved in distance education is becoming less of a psychological cost factor for distance learners as PCs become a part of everyday life. Glass and Knight (1988) held that the number of individuals who were anxious or intimidated by PCs was increasing as computer technology advanced. However, that was almost 20 years ago. More recently, Yaghi and Abu-Saba (1998) claimed that computer anxiety tends to dissipate as individuals gain experience with PCs (reported in Smith and Caputi, 2001). This is upheld by a number of studies. For example, post-secondary students in Singapore were found to have fairly high positive attitudes toward

computers, with those who owned PCs having the most positive attitudes and the lowest computer anxiety (Teo, 2006).

The positive relationship between computer experience and positive attitudes toward computers appears to have a broad geographic scope. A study of computer attitudes among higher education students in Australia, China, Ghana, Puerto Rico and the USA found that students who owned PCs had significantly more positive attitudes than those that did not (Carey, Chisholm and Irwin, 2002). The authors concluded that computer access and usage have a positive impact on how college students across geographic regions perceive and feel about computers. They cited other studies that have found that computer instruction, computer experience and computer self-confidence are all related to decreased computer anxiety. They concluded that the greater the student's access to and usage of PCs, the more positive his or her attitudes toward the technology will be.

Student psychological cost that results from computer anxiety or computer problems may also depend on a number of other factors. Hudiburg and Necessary (1996) found that individuals with problem-solving coping strategies were less stressed by computer problems than those with emotion-focused coping strategy. This was similar to Struthers *et al.*'s (2000) findings for traditional students, reported above.

Much of what creates stress and anxiety for distance learning students is related to the unfamiliar social dimension of learning. Aspects of this unfamiliar social dimension include the fact that many of the social references and cues that are present in traditional learning are absent, there is generally a time lapse between communications and written text is often used as the exclusive means of communication (Nicol, Minty and Sinclair, 2003). Researchers and educators are realising the importance of designing online learning communities to help reduce students' sense of isolation and to improve learning. Creating a sense of presence and a social dimension for the distance learning student is crucial for success (Al-Ashkar, 2002; Lehman, 2006; McInnerney and Roberts, 2004; Wegerif, 1998). Russo and Benson (2005) found that student perceptions of the presence of other students and the instructor in a distance education class have been found to be positively correlated with favorable attitudes toward the class and learning satisfaction.

To help battle loneliness for the distance student, McInnerney and Roberts (2004) have made several suggestions. These include creating a greater sense of online community by developing real-time (not delayed time) communications opportunities, providing a warming-up period early in a course to enable students to get used to new formats, and creating and implementing effective guidelines for online communication.

Overall, there appears to be an increasing understanding among educators that distance learners face unique issues that can affect the psychological cost they 'pay' for their education. When these issues are contrasted with those affecting traditional students, a better understanding of the psychological costs paid by both groups can result. This study is part of the effort to comprehend how psychological costs may differ among traditional and distance learners.

Method

In this section we explain the method used to analyse the psychological cost in both cases: traditional education and distance education. A model is going to be introduced which has been validated by a survey-based study to help us estimate the psychological cost that burdens a student in each educational procedure.

The model

In the model that we used, the total cost that overloads the students is analysed with a two-level hierarchical structure of individual expenses that concern accommodation, transportation–travelling, the purchase of educational material and equipment, the psychological cost, the effort of familiarisation with the educational process, etc. This hierarchical structure of analysing costs is the same for both traditional and distance education, allowing a direct comparison of cost in the two cases. According to this model the total cost for student is analysed in seven main cost categories C_1, C_2, C_3,..., C_7, which in turn are distinguished in more detailed costs. The total cost TSC (Total Student Cost) derives as the sum of all category costs, i.e.:

$$TSC = C_1 + C_2 + C_3 + \ldots + C_7 \quad (1)$$

The above-mentioned costs are analysed as follows:

- Cost category (C_1): Cost of purchase and use of electronic and other equipment, Cost of Attendance in the educational process,
- Cost Category (C_2): Cost for Tuition fees,
- Cost category (C_3): Travelling–Transportation Cost,
- Cost category (C_4): «Time» Cost or Cost from Time Consumption,
- Cost category (C_5): Opportunity Cost or The value of lost productivity,
- Cost category (C_6): 'Psychological Cost',
- Cost category (C_7): Seminar Cost. (Ioakimidis *et al.*, 2005)

In this paper we are only going to focus our analysis on the findings concerning cost category C_6. This cost refers to psychological pressures brought to bear on the student of either a traditional or a distance course of studies. For example, the stress of faults of attendance in the educational process of either traditional or distance learning, such as interruptions caused by unexpected incidents (e.g. computer malfunctions caused by a computer virus) or the stress caused by a student having to participate verbally in a university classroom, etc.

Further analysis and basic findings of the psychological cost

The above-mentioned model was applied for validation purposes in the case of a Greek university (Department of Economics) to estimate each cost category that affects students. During a questionnaire-based survey, a number of students were asked to declare approximately the money that they spend in order to participate in the traditional and/or distance procedure of education. A total of 204 students (108 girls and 96 boys), uniformly distributed in the semesters, participated in the fieldwork. A number of them (132) originated from local areas (the Attica region), 53 from the Greek provinces and 19 from abroad. All the elements of cost of study have been reported on an annual basis and in euros (€).

The psychological cost (Cost category C_6) was estimated assuming that it will be insignificant if we employed an assistant who will facilitate the handling of the PC in the case of distance learning. Regarding the traditional education procedure, we made the same assumption concerning the employment of a professor or someone expert that students would probably hire independently to help them understand better their face-to-face courses or/and to help them overcome their probable fear, stress or anxiety about expressing themselves verbally inside the university class. The quantification of this category for the distance education case is the running payment for repair and re-establishment of the operation of a PC as well as the payment of an assistant in order to prevent any faults occurring. For the traditional education case this is the payment of a professor or expert, or the fees of 'frontisteria' (Kostakis, 1990), as the private courses helping students to understand better the content of an academic lesson are called in Greece. It was considered that psychological cost in both educational procedures (like participation stress or the correct operation of a PC) is a declining interrelation of experience.

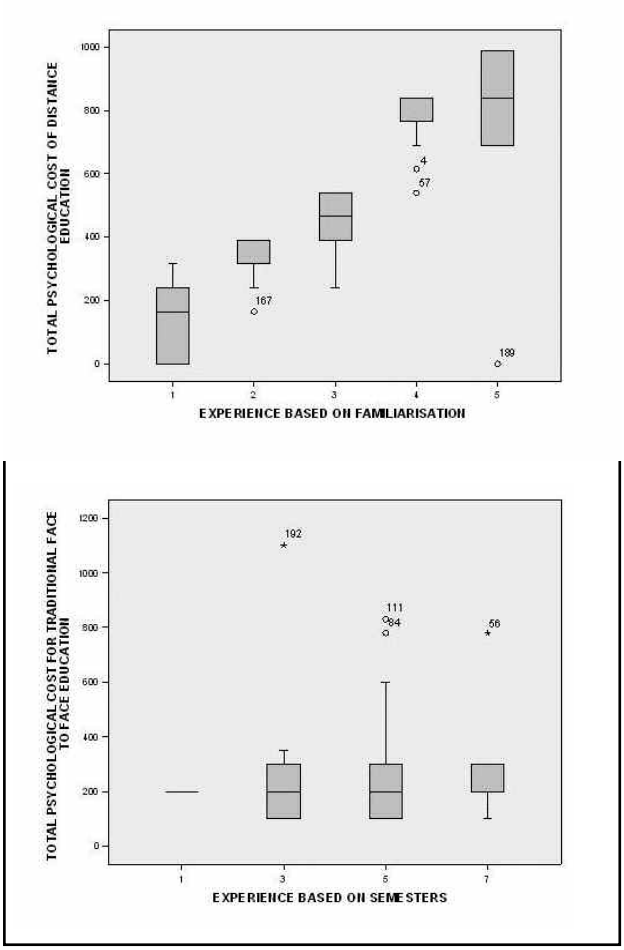

Figure 1. Psychological cost for traditional and distance education based on student experience

Numbers on the x-axis represent the level of students' familiarisation with the distance educational procedure as 1: Very Good, 2: Good, 3: Satisfactory level, 4: Nearly bad, 5: Bad

Results

The main finding regarding university students following a distance/e-learning course of study is that 'experience' and 'familiarisation' play a very important role as their psychological cost (stress or anxiety) declines the more experienced they are.

The case in traditional, face-to-face education is not the same. One might argue that, as students are just starting in a third-level traditional educational environment, they will be more stressed in their earliest semester. However, as they keep on studying through the semesters they get used to the procedure of, for example, tests and assessments, and become more relaxed. Indeed, it is well recognised that students face periods of adjustment each time they enter a higher level of education, including post-secondary education (Barber and Olsen, 2004; Kerr, Johnson, Gans and Krumrine, 2004; Zeidner, 1992). Moreover, this can result in substantial stress and anxiety until the student becomes adjusted. Laanan (2007) likens this period to the experience of sojourners who enter a foreign environment and must learn to deal with new sets of circumstances. The student faces a kind of culture shock. However, it does not follow that the psychological cost the student pays is greater during the early weeks and months than later, nor is this idea upheld by our results.

The above findings can be illustrated from the box-plots 1 and 2 in Figure 1.

The outlier cases correspond to a limited number of students who overestimated or underestimated the cost in every case.

From the data analysis and the calculation of psychological cost the following basic conclusions resulted:

1. The average psychological cost in the case of traditional education is the same for all students, freshmen or not. In other words, experience is irrelevant or unrelated when we are analysing stress in the traditional education procedure. On the contrary, in the distance education environment the average psychological cost increases the less experienced or familiarised the students are. In a comparison of the two costs, in both educational procedures, the main finding is that in distance education the lower level of cost is almost if not exactly zero. In the case of traditional education the lowest possible value that the psychological cost could take is around €100 regardless of the experience students have.

2. The collected data showed that 50.5% of female students (27.1% originated from Attica, 15% from the Greek provinces and 8.4% from abroad) in traditional education, face particularly high psychological stress compared to the corresponding percentage for male students at 24.2% (15.8% originated from Attica, 7.4% from the Greek province and 1% from abroad). The majority of the male students 45.3% (29.5% originated from Attica, 11.6% from the Greek provinces and 4.2% from abroad) stated that they face little or no anxiety during a face-to-face educational procedure. The data showed no significant difference in the psychological cost between male or female students in distance education environments and no substantial variation of that cost as far as the place of students' origination is concerned.

The conclusion that psychological cost is the same for students in traditional educational environment whether they are in their first year or later may be due to the fact that throughout their higher education, students are continually facing new courses, new professors, new classmates and perhaps new educational procedures. Moreover, coursework and examinations may become more difficult as the student's education proceeds and expectations for student achievement, including class participation, may become higher each semester. Students may be constantly required to cope with circumstances dissimilar to those experienced before. This would, in effect, result in an adjustment period being required of the student every semester. As a result, student stress and anxiety may stay at about the same level throughout the university years.

The idea that levels of student stress and anxiety may not decrease once the student has had time to adjust to the university environment is also suggested by other research. In a large study of 17,331 first-year college students in 50 US institutions of higher education, it was found that emotional health declined from the first to the second semester. This suggests that even after the students had become familiar with college life, the psychological cost they paid increased (Sax, Bryant and Gilmartin, 2004). Furthermore, Misra and McKean (2000) noted that several studies have shown that each semester there are predictable times during which students experience the greatest source of academic stress due to exams, grade competition and the need to master content. This suggests that instead of decreasing over time, stress and anxiety associated with academic achievement is a cyclical phenomenon that tends to have highs and lows throughout the student's higher education. It is possible that this cyclical stress affects students in traditional settings more than distance learners partly because distance learners perceive themselves as having greater flexibility in fulfilling deadlines.

The proposed education method

As a second part of our questionnaire, the students were asked to state their views of whether traditional education has an advantage over distance education and vice versa, in specific statements. Figure 2 presents the results from questions where students gave a clear advantage to traditional rather than distance education.

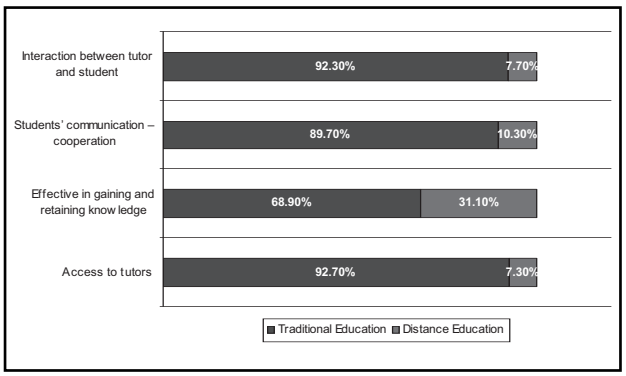

Figure 2: Traditional vs. Distance education: Relative advantages

Looking at Figure 2, where traditional education is shown as having a clear advantage compared with distance education, as far as more qualitative data are concerned (such as communication, cooperation, interactivity, motivation, etc.), as well as the fact that in clear financial terms the psychological cost in distance education is considered to be less for students who are experienced and familiar with the specific educational procedure, then the proposed way of learning that combines the benefits from both educational procedures is a mixed or blended educational approach. With the blended educational view many commentators note that distance learning, while it can provide a good education in terms of the provision of knowledge (as in facts) to students, does not fully cover or substitute vital points of traditional education as the communication or the 'networking' between professor and student and schoolmates between them.

In the above argument we must add the fact that the psychological cost in traditional education cannot be equal to zero and cannot be ignored as the analysis of the data showed that even in the case of students with high experience in the specific education method, psychological cost still amounts to a significant amount of money. Moreover, 60% of students that have followed a private course to better understand better their face-to-face university courses declared that their levels of psychological stress remained high. In contrast, distance education students that had followed a course in order to be more familiar with distance and e-learning procedures declared very little anxiety and stress in using this method. Furthermore many (if not all) universities that are offering distance learning courses create and introduce in their syllabus an orientation course for new distance learners and also provide training to instructors on how to facilitate an e-learning course. This can help students to deal more successfully with the distance educational environment (Bozarth, Chapman and LaMonica, 2004). Both strategies, familiarising students with distance learning before they begin their courses and helping instructors to understand how to deal with the special problems presented by e-learning, could help to reduce the stressors that may affect distance learners. The fact that there are clear measures that can be taken to reduce stress for distance learners constitutes a further asset for this mode of education.

Discussion and conclusion

Even if students are taking a sober approach to the implementation of technological means of learning, distance education – especially in the form of e-learning – has generated a revolution in many of the ways in which education is delivered, without fundamentally changing the very nature of learning itself. In fact, distance learning works best when it enters the production function without changing pre-extant educational models: the tools have changed, but the outcome remains fundamentally the same. It should be strongly affirmed that e-learning and classroom-based methods of training are not necessarily alternatives to each other and may be complementary. While for suppliers of training, greater use of e-learning goes with less use of classroom-based methods, for users this is much less the case (CEDEFOP, 2001).

One should never assume that change must be absolute. For each course that has the potential to be offered online, a 'mix and match' approach may be taken, combining the most suitable aspects of traditional and electronic learning respectively. As Owen, Aworuwa, Fragoso-Diaz and Ntoko state (2004), 'it is possible to mimic the richness of a traditional in-class experience when we move to online course applications but … we need to know exactly what is being lost (or gained) with respect to educational outcomes.'

To paraphrase Christensen *et al*. (2001), distance learning works for students who meet one or more of three critical requirements: (1) those who in the past could not attend a course of higher study for lack of money or skills, (2) those who welcome the 'product' that is a technologically provided course of education, and (3) those who, by utilising new and emerging technologies, are enabled to do something better than they are already doing.

In this study, an analysis of psychological costs burdening third level traditional and/or distance education students was presented. It was found that in economic terms, psychological cost for familiarised students following a distance education course was close to if not exactly zero. This, along with its flexibility, is clearly an advantage to students of distance education. At the same time, however, there are also advantages to traditional education, including personal contact with tutors and professors along with the ability to network easily with classmates, as the students surveyed pointed out. The results of this study thus lead us to the conclusion that the soundest path in higher education may be a mixed, 'blended' approach, in which students learn from both distance and traditional courses, thereby enjoying the advantages of each. In this way, the student can profit from the flexibility and low psychological cost of e-learning while simultaneously profiting from the close contact with peers and professors that comes from the traditional process of education and that will also serve to reduce if not erase the sense of isolation that often results in distance education.

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