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Student Attitudes Towards Distance Education: A Comparison of Views in Australia and the US

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Abstract

There have been frequent and repeated calls for empirical studies examining distance learning. This paper presents the results of a study that compares US and Australian post-graduate students involved in similar courses. It finds marked differences in perceptions between those involved in distance education and those studying by more traditional means. Differences between the two nationalities are also noted. The paper calls for further work in this area and invites a series of collaborative studies.

Keywords

IS education, distance learning, on-line education, culture

INTRODUCTION

Distance education, particularly “on-line” distance education is attracting considerable attention from both providers of education and potential students. A recent paper (Dick, 2000) noted significant similarities between this form of education and telecommuting – from the employer (or provider) perspective, there is the attraction of a wider pool of potential recruits (read potential students) savings on facilities and organisational infrastructure, meeting demand and changing work practices. From a student perspective, the telecommuting advantages of reduced travel, flexibility and the time to devote to other commitments (work, family etc.) are at least initially attractive. The paper proposed an adoption model for distance education.

This paper uses that adoption model of distance education as a basis and reports the results of a study conducted on students in the US and Australia, where both groups were undertaking similar courses and both had sub-groups where one used a form of distance education and the other the more traditional classroom based approach.

BACKGROUND

The proposed adoption model (see below) was based on the benefits costs and risks associated with distance education from the perspective of both the student and the educational institution and the enablers, drives and constraints (Mokhtarian and Salomon, 1994; Tung and Turban, 1996) which provides some insight into the factors that are likely to influence the acceptance of this form of education. The proposed model included as potential benefits or drivers:

- Reasons associated with travel to for educational purposes, such as not having to attend on a regular basis may reduce travel costs for the student, particularly if long distance travel is involved. In this context it should be noted that reduction of living costs maybe a significant factor for the potential student. Also, this area might be broadened to include those for whom travel would be impossible, such as those living abroad or in remote areas.
 - Better able to manage one’s own affairs eg. more independence, flexibility, control of the physical living environment, to pursue personal interests – particular relevance perhaps to the post-graduate student in the sense of better managing work commitments.
 - The increased possibility of education for those who may be disabled or extensively involved in the care of dependent children or other relatives.
 - More attractive to those who might find the campus environment threatening or intimidating.
 - To spend more time with one’s family.
-

- Campus life offers many distractions for the student; while mostly seen as an advantage, some students may benefit from the possibility of removing themselves from these distractions.

Against this,

- More difficult to study at home due to less help available, motivational problems, increased family conflict and distractions – one might expect these to be serious impediments to distance education for many people, requiring particular personal attributes for them to be overcome.
- The potential feeling among distance students that those with physical access to the academic staff get enhanced help and assistance.
- Missing out on resources and occasional casual work to supplement student incomes.
- Travel is seen as a time for completing assignments, reading, study, etc.
- A significant issue for potential distance students may be the need to equip a home study area with a PC and appropriate software, telephone line, communications software.
- Missing out on the extra-curricular activities that take place on campus could be viewed by many as a serious impediment to distance education.
- Not getting to know one's fellow students, easy access (formal and informal) to academic staff. At a more strategic level, a diminished educational experience may result.

In addition to the above there is a long list of electronic enablers which facilitate telecommuting – PCs and laptops, printers, modems, copiers, fax machines, cellular telephones, answering machines, high speed communications links and access to e-mail and the Internet (Hotch, 1993; Tung and Turban, 1996). While clearly not all are required for educational tasks, this list is a useful starting point for the types of electronic assistance that would facilitate distance education. At present much of this equipment is made available free of charge to students in the traditional campus environment – considerable expense would be incurred by the student in equipping himself with such technology. On the other hand many universities are moving to requiring (or expecting) students to have such technology available at home.

Parallels were drawn between educational and work-place tasks – the understanding of prescribed material, assignments, experiences and acquisition of knowledge on one hand and the components of a job on the other. Using a theoretical task model to encompass the component, co-ordinative and dynamic themes of complexity (Wood, 1986), the task characteristics of uncertainty and equivocality (Daft and Macintosh, 1981) and the organisational issues of resources and scheduling of work (Thompson, 1967), a set of attributes for educational tasks was developed. It was proposed that this model form a central component of a research model for the evaluation of the suitability of educational tasks to distance education.

In terms of task complexity (Wood, 1986), in general terms as the degree of complexity rises, the task becomes less suitable (or more difficult) for distance education. Component complexity is a function of the number of distinct acts that are required to perform the task and the number of information cues to be processed in performing these acts. Component complexity is also affected by the task being dependent on completion of other tasks. The type of task may have relevance here too – some concepts may be difficult to explain or demonstrate without “hands on” experience – for example dissection, modelling and instrument operation. Co-ordinative complexity refers to the form and strength of relationships and the sequence of inputs. Wood suggests that the more complex the timing, frequency, intensity and location requirements, the greater the knowledge and skill the individual must have to be able to perform the task. Changes in the acts and information required or in the relationships between inputs and products Wood calls dynamic complexity. This too can create shifts in the knowledge or skills required.

To illustrate, if we consider component complexity, tasks with minimal component complexity may be those such as reading a study guide, notes or a text book and answering a series of “review” questions. At the other end of the scale, research using multiple resources, including hard copy and electronic journals, text books and the Internet, discussions with a colleague and writing up a summary of the research may present difficulties for the distance education student. Likewise co-ordinative complexity could range from one person completing an assignment to working as part of a team, with each member responsible for various components and then the team having to link them together to produce a final product.

The task characteristics (Daft and Macintosh, 1981; Daft, Lengel and Trevino 1987) of equivocality (ambiguous meanings or instructions) and uncertainty (about what is required or how to go about it) are relevant to tasks involved in distance education too – considerable difficulty might be expected to be experienced by the student if tasks are not clearly explained with no ambiguity and specified to reduce uncertainty.

Similarly, the environment in which the tasks take place (Thompson, 1967) may have some relevance to their suitability – serial dependence refers to the need to wait on others (academic or student) in order to commence or

complete one's own work. Also relevant is the degree of "networking" and team building that educational tasks are designed to include.

The personal attributes of the individual student would seem to have relevance too. These are most likely to be in the areas of characteristics such as the ability to get information required, knowing when advice is needed, the ability to solve one's own problems and good self-management (Venkatesh and Vitalari, 1992; Gray, Hodson and Gordon 1993; Wheeler and Zackin, 1994; Mokhtarian and Salomon, 1996) and the home environment (Yap and Tng, 1990; Mannering and Mokhtarian, 1995). For the distance student, knowing where to get relevant information and when to seek advice would seem to have particular importance, as does the ability to solve his own problems – the added reliance on information technology and communications equipment gives this aspect added weight. Under-graduates are more likely (perhaps than their post-graduate counterparts) to have motivational problems and will need to develop time management skills to enable work of an appropriate quality to be delivered on time. On the subject of the household environment, the telecommuting issues (Mannering and Mokhtarian, 1995) of presence of small children, number of people in the household and family orientation may also have some effect on the preference to study at a distance.

To some extent the role of the academic is analogous with that of the supervisor. As the supervisor controls allocation, timing and resources for tasks (Starr, 1971), the academic controls task content, timing and the required resources and becomes an important point of contact and resource for the student.

Telecommuting literature also provides some pointers to demographic influences on the preference to telecommute – age, gender, time in the work-place, job type, education, transport, presence of small children and the number of cars in the household (Mokhtarian and Salomon, 1997; Belanger, 1999; Dick and Duncanson, 1999) – some of these seem to have relevance to the decision to engage in distance education.

The above, plus the perspective of the educational institution led to the development of a proposed model to assess the likely adoption of distance education, shown in Figure 1 below. The research reported in this paper deals with shaded portion of the model only and is principally concerned with the perception of distance education in the minds of graduate students (in both US and Australia) who have some exposure to it, or at least considered it as a possible option for their current course of study. A further paper (Dick, Case and Burns, 2001) gives a detailed analysis (based on stepwise regression) of the importance of each of the factors and their influence on the preference for distance education. For the sake of completeness these results are repeated in summary form in the "Results" section below.

In the distance education literature there is considerable support for the above issues - accessibility, convenience, international (or recognised) instructors and a "consumer orientation" (Alavi, Yoo and Vogel 1997; Emmons, 1999), and the ability to continue education or keep up to date while having only limited time available due to heavy work commitments (Jana, 1999 and Boisvert, 2000). Likewise, many of these potential disadvantages – there is broad support for the notion that an educational programme is far more than a curriculum and that there are benefits from a "surround interaction" between the students, the instructor and the lectures. This rich variety of interaction is likely to be lost (Bertagnoli, 2001). Others include not learning the skills to think on one's feet, the absence of support and help, longer to develop a rapport between student and Professor and cost issues related to tuition and technology (Emmons, 1999). Attempts to measure satisfaction with distance education have been sporadic, other than the measure of enrolments and the growth in the number of institutions offering some form of distance education. One recent approach using the service industry as a base (Long, Tricker, Rangecroft and Gilroy 2000) based the assessment largely on immediate application in the work place – not in an invalid measure, but perhaps only one of many.

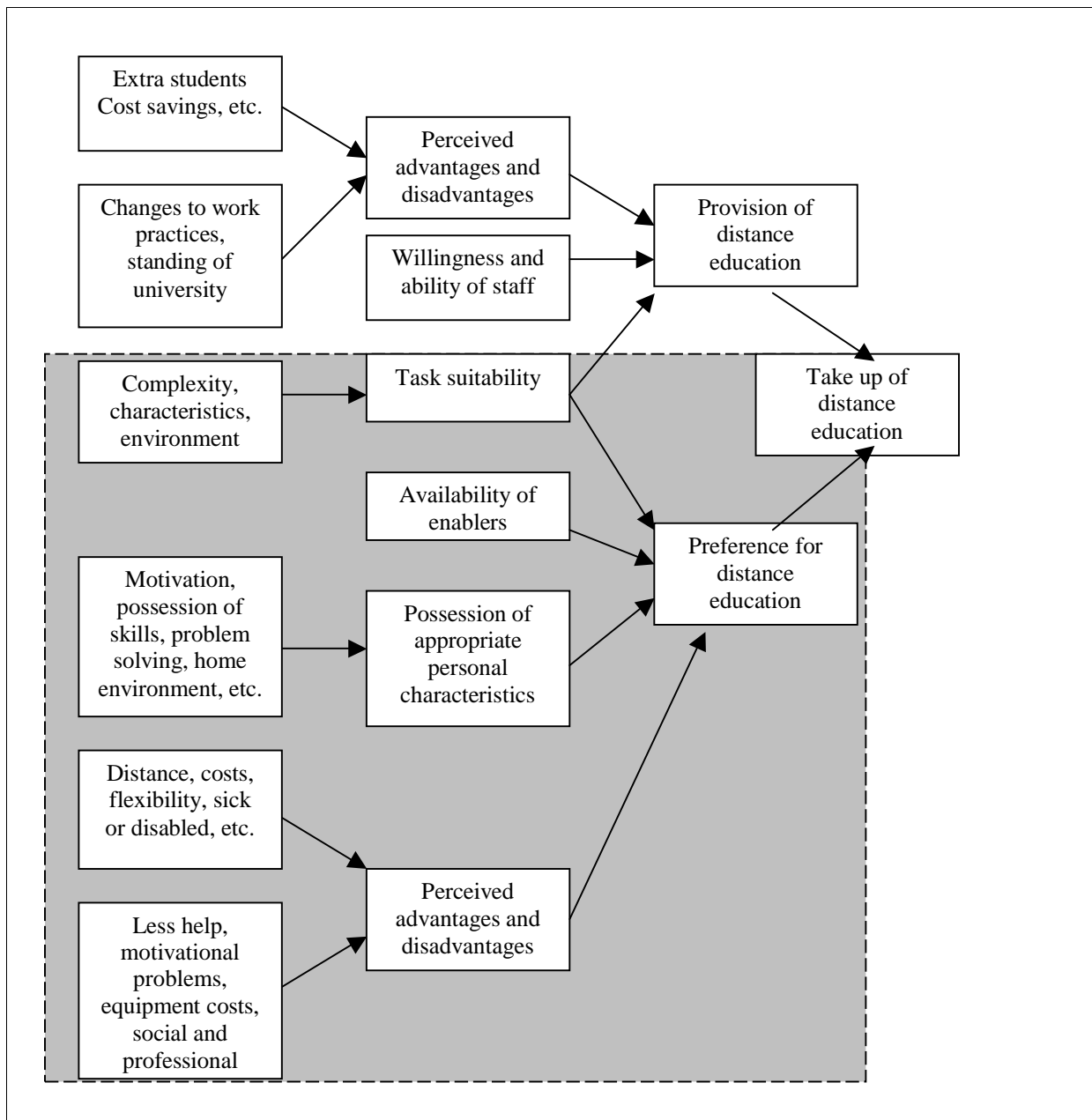


Figure 1: The research model

There have been many calls in the literature for more research into particular areas of distance education. Alavi (1994) sought future studies, which would reduce the potential impact of student interactions by administering the study during different semesters or at different geographic locations (e.g., different campuses). The author also considered two sections of each course in the studies would be desirable. Alavi, Wheeler and Bradley (1995) concluded that it was important to continue the inquiry into the effectiveness of collaborative telelearning environments. They stated that with the declining cost and continued convergence of computing and communication technologies and the subsequent increase in prevalence of networked, multimedia computers, collaborative telelearning will be an increasingly viable educational alternative. The call for further research was repeated (Alavi and Leidner, 2001).

THE DATA

The data collected for this study comes from 4 sources – although this is an early test of this model and to some extent must be considered a pilot study, the following groups, reflecting as they do different cultures and varying experiences with distance education provide for considerable comparative analysis.

Group	n	Description
A	10	MBA students at a US University doing an IS Management course face-to-face on campus
B	21	MBA students at a US University doing the same course as group A (and the same instructor) with some students (n = 11) at remote locations interacting via full tele-conferencing facilities
C	18	MBA-type students at an Australian University doing an IS Management course face-to-face on campus
D	29	MBA-type students at an Australian University doing the same course as Group C (different instructor) via a web based education package – interaction with the instructor was largely limited to this package and email.

Table 1: Data Groups

METHODOLOGY

The researchers designed the initial survey instrument after careful consideration of the issues raised in the literature and reflected in the above model. The basic structure of the survey instrument measured perceptions in the following areas:

Section	Contents
1	Advantages of distance education
2	Disadvantages of distance education
3	Education related tasks
4	Ability to undertake distance education
5	Suitability of distance education
6	Personal demographics

To check for ambiguity, its ability to be understood, and the amount of time taken to complete, a member of academic staff and 4 students completed this survey. No modifications were made to the survey instrument as a result of the review of the completed surveys.

The data reported above for groups A–D is a subset of the full dataset collected. Reliability of the instrument in terms of stability was measured (using a the full, and much larger, dataset) by test-retest surveys and in terms of construct validity by Cronbach alpha scores to determine internal-consistency reliability. This is a generally accepted procedure (Judd, Smith and Kidder 1991; Frankfort-Nachmias and Nachmias, 1996). There is considerable support for the use of the test-retest procedure to ensure that the answers are stable and there is minimal noise in the measurement process at the individual level. The Cronbach alpha is now the preferred measure of internal-consistency reliability for construct measurement and is performed by analysing the statements in the survey (Judd et al. 1991). In this study, both were used. 80% of the test-retest correlations were greater than .68 and all were significant at the .001 level. The Cronbach alpha scores ranged between .70 and .81 for each of the constructs, falling into the “respectable” to “very good” ranges (DeVellis, 1991).

For this subset of the data, there were 11 items relating to perception of distance education – these are detailed in Table 2 below.

In order to commence the assessment of the effect of each of the independent variables on respondents’ attitudes towards distance education, correlation and factor analysis was performed on the data. After confirmation of the constructs, a series of non-parametric t-tests (Mann-Whitney) was conducted to identify variations in the perceptions and preferences between the different groups of students in the data.

RESULTS

With the limitation of the sample size in mind, correlations of the statements in the survey instrument were performed, along with confirmatory factor analysis using the Principal Components method with varimax rotation for Eigenvalues > 1 on the statements assessing preference suitability and value. As anticipated, three factors did emerge from this process – see Table 2. These three factors (preference, suitability and value) explained 56% of the variance.

	Component		
	Suitability	Preference	Value
Distance education is of lesser quality than traditional class-room-based campus education	-.270	.803	<.100
I only participate in distance education because I can't attend campus classes	<.100	.530	.174
The tasks associated with my course are suitable for the distance education environment	.738	<.100	<.100
I should not have to pay as much for distance education as for traditional campus based education	.291	<.100	.703
I would encourage most professionals to participate in distance education	.683	-.411	.152
Instructors should not assign the same tasks to distance based students as they assign to campus based students	-.154	<.100	.786
Distance education courses are designed with the distance student in mind	.592	-.328	<.100
I believe I have the skills and ability to be a successful distance education student	.835	<.100	<.100
Distance education is attractive to Universities because it provides additional revenue without the need for additional resources	<.100	.345	.495
I prefer distance education courses over traditional classroom based courses	.292	-.688	.145
Distance education is an acceptable instructional delivery system, but it falls short of the traditional classroom experience	<.100	.721	.184

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 2: Rotated component matrix

While Table 2 and its inherent measure of the “Preference for distance education” box in Figure 1 tends to confirm the researchers’ *a priori* beliefs that the characteristics of the tasks, the individuals, the perception of the advantages and disadvantages and the provision or availability of enablers will be viewed in a somewhat different dimension by respondents as they consider the desirability of this form of educational delivery, it does indicate that some modification to the model may be warranted. Perhaps it would be appropriate to include these factors in the model as measures for the potential acceptance of, or preference for, distance education. In the meantime, the assessment of the findings for each group will include comment on:

- preference – the extent to which potential or current students see it as advantageous to their lifestyle, their ability to undertake courses of study in this way and the extent to which these issues outweigh the potential disadvantages;
- suitability (from both a task and individual viewpoint) – the perception of the tasks as suitable for performance in this mode and whether or not the individual has the required characteristics such as motivation, possession of skills, etc.; and
- value – compared to the more traditional method of delivery and the perceived effort and reasoning from the provider.

Australian students

Two groups of students (groups C and D above) undertaking the same MBA-type course in Australia were included in this study. For the traditional group, considering the (non) preference for distance education (a mean of 4.06 in a 5 point scale, where 5 = “strongly disagree”) regression analysis suggests that for this group of students, the significant elements ($R^2 = .59$) are missing out on benefits available on campus, and not seeing the ability to choose a time for study as important. For the distance group, considering the preference for distance education (a mean of 2.57 in the 5 point scale,) regression analysis suggests that for this group of students, the significant elements ($R^2 = .54$) are being able to concentrate for long periods on course related tasks, and not feeling that there is better help available on campus.

Looking at the factors of suitability, preference and value in that order, the results of series of Mann Whitney tests indicate that for the suitability factor, the distance students are more likely (than the campus based group) to

agree that the tasks are suitable for distance education ($p < .05$). They would encourage others to study in this way ($p < .001$). For the preference factor, the distance students see all four components positively – they do not agree that it is of lesser quality, ($p < .001$), do not agree that they only participate in distance education because they have to ($p < .05$), prefer distance education ($p < .001$) and do not see it as falling short of the traditional classroom experience ($p < .001$). The two groups expressed no significant differences in the value factor. It is worthy of note that these Australian students generally agreed with the statements that distance education should come at a lesser cost and that universities saw distance education as a way of increasing revenue without the need for additional resources.

US students

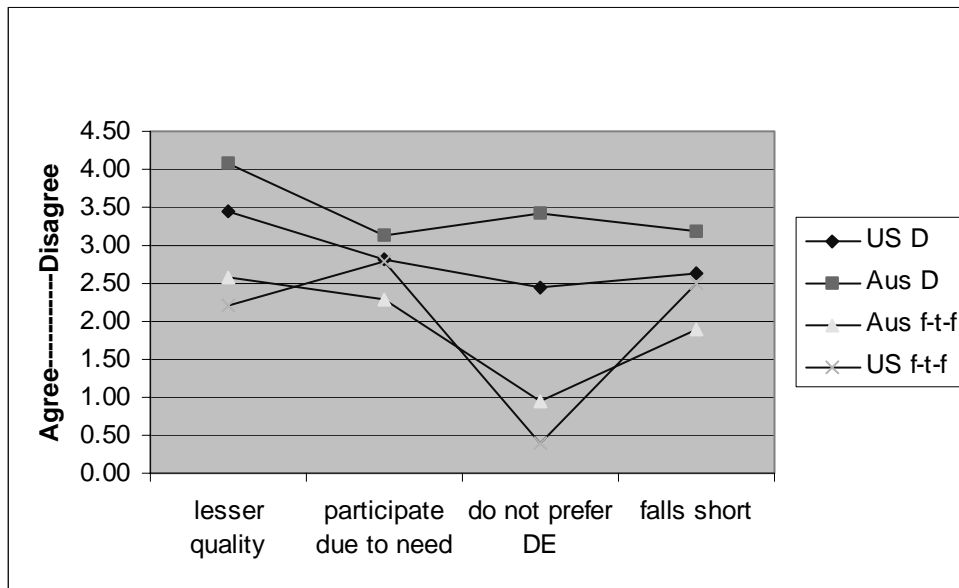
Two groups of students (groups A and those in group B attending class remotely) undertaking the same MBA-type course in the US were included in this study. While there were other students attending the same class on campus while those included were attending remotely, it was decided not to include the campus-based students in order to preserve the dichotomy.

The campus-based group was the group most opposed to distance education – the responses to the statement “I prefer distance education over traditional education” gave a mean of 4.6 on the 5 point scale. Regression analysis suggests that for this group of students, the significant elements determining the (non) preference for distance education ($R^2 = .74$) are tasks requiring considerable resources (e.g. software, library etc.) to complete, and not seeing distance education as enabling them to concentrate on course related tasks for long periods. For the distance students, the regression suggested that their (non) preference (mean = 3.55 on the 5 point scale) for distance education was driven ($R^2 = .77$) by a diminished classroom experience and benefits available on campus (resources, possible employment etc.)

For the suitability factor, no significant differences between the two groups were noted in any of the components. For the preference factor, the distance students see two components in a more positive light than the campus-based group – they do not agree as strongly that it is of lesser quality, ($p < .05$), and their negative preference for distance education is a somewhat less ($p < .05$). The two groups expressed a significant difference in one of the value factor components – the distance group were less likely to agree that different tasks were needed for distance education students. Similarly to the Australian group, these US students agreed with the statements that distance education should come at a lesser cost and that universities saw distance education as a way of increasing revenue without the need for additional resources.

Comparison of Australian and US students

There were no significant differences between the Australian and US campus-based groups in any of the components for the first two factors. In factor 3, there was one component that the groups saw differently – the US group agreed more strongly that different tasks were necessary for distance students ($p < .05$). Comparing the distance groups, it is in the area of factor 2 – the preference for distance education – where the differences between the two groups are most noticeable. There were no significant differences in factor 1, (suitability) and none in factor 3 (value). In factor 2, the preference for distance education was much stronger in the Australia group ($p < .05$). The Australians also trended towards not seeing distance education as of lesser quality than the US group. The following graph (Figure 2) illustrates these variations in perceptions.



Note that the values for the 3rd component have been inverted due to the nature of the wording of the statements.

Figure 2: Preference for distance education

Comparison of traditional and Distance Students

As is evident in Figure 2 above, there are significantly different perceptions between the students studying in the traditional environment and those studying by distance education. For Factor 1, these are in the areas of encouraging others to participate ($p < .001$) and believing they had the ability to be a successful distance education student ($p < .05$). In both cases the distance students were more likely to agree with the statement. In Factor 2 (shown above in Table 2) all 4 items were significant at or below the .05 level. There were no significant differences for Factor 3.

CONCLUSIONS, LIMITATIONS AND FURTHER RESEARCH

Australian respondents clearly demonstrate different perceptions of distance education based on their individual desires for it. The findings are almost completely reversed for the two groups involved in the one course – one group who have chosen to study by distance have chosen it for almost the same reasons as the other group chose to study in a more traditional manner, just a different perception of these reasons. US post-graduate students were generally more strongly opposed to distance education than Australian post-graduate students – this may reflect the technology in use – the asynchronous nature of the web-based interaction maybe preferred over the videoconference approach. Further work on evaluating the technologies is required. For the US group, one additional data item was collected – the respondents experience with distance education. No differences in perceptions were noted based on experience.

It is perhaps worthy of note that there is a widespread perception that one should not have to pay as much for distance education as for traditional campus based education and that universities see distance education as attractive because it provides additional revenue without the need for additional resources. This finding holds true for even the group of Australian distance students who expressed a preference for distance education.

An obvious limitation of this study has been the degree of self-selection in the data. Clearly, the students involved in the study have chosen courses that suit them, their skills and their attributes. However, this limitation in itself is useful, demonstrating that students will choose the best option for themselves and adding weight to the belief or conjecture that not all courses are suited to all types of students. Another limitation is the sample size – this has implications for the validity of the instrument, the factor analysis and the ability to generalise from the findings – it is the researchers' intention to conduct further studies to address this issue.

The study does support the model to a considerable degree, although the factors emerging from the factor analysis deserve further consideration in future studies. The high R^2 scores from the regression analysis suggest that the measurement items are valid for the constructs and that the constructs being tested lead to determining the preference for distance education. More work is necessary in this area, covering a wider range of courses, cultures and students. The authors would welcome collaborating with other researchers to conduct studies in other disciplines and countries.

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