

STUDENT PERSISTENCE IN DISTANCE EDUCATION:
A CROSS-CULTURE MULTI-INSTITUTIONAL PERSPECTIVE
BY

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INTRODUCTION

The recommendation to use Rekkedal's (1973) study as the starting point placed the project in the broader context of the problem of student drop-out (Woodley and Parlett 1983), which has generated a great deal of discussion and argument among distance educators. Typical of the interest in the low completion rates of many distance education students are relatively recent studies by Kember (1981). Shale (1982), Scales (1984), Roberts (1984). Thompson (1984) and the recent re-publication (in 1984) of the aforementioned Rekkedal study. A review of this latter study revealed the major conclusion that it was "quite likely that drop-out rates can be lowered by reducing turn-around time" (p. 250). In Rekkedal's study, turn-around time was defined as "the time from the moment the student mails in the home work assignment for a study unit until it is received by the student with the tutor's corrections and comments" (p. 232).

During the course of Rekkedal's study, turn-round time was manipulated experimentally so that one group of students, classified as the "Quick Group" had a median turn-round time of 5, 6 days, while the other group (the "Delayed Group") experienced a turn-round, which had as its median 8.3 days. The overall range of turn-around times in the experiment was between 2 days and "10 days or more". Obviously the nature of the assignments involved is a critical factor in determining turn-around time. Rekkedal's study was undertaken within the context of a basic course in mathematics, where one would assume that marking time may not be excessive. Further, the course was aimed at students with "very poor training" or those students who "feel that they are so unsure of their knowledge that they wish to repeat basic materials" (p 238). The extent to which such findings can be readily generalized to other distance education contexts (for example, those for undergraduate students in an accredited degree course) is somewhat problematic. Indeed this concern for the lack of generalizability of much of the research in distance education was one of the reasons for undertaking the current project. It seems likely that relat-

1. Refer at the end of the article.

ively weak students in an area like basic mathematics would perhaps be more dependent on a rapid turn-around time than more mature students studying a range of other disciplines who had experienced a successful high school education. Indeed it might be somewhat surprising were Rekkedal's results to be generally applicable to distance education given the apparently limited range of turn-around times evident in his study.

Without denigrating the value of Rekkedal's study, part of the problem of generalizing such research to other settings is the fact that the study is generally devoid of any theoretical underpinning. Several potentially useful models of student attrition have been developed since the time that Rekkedal's study was undertaken. Recent reviews of the literature (Terenzini and Pascarella, 1980; Tinto, 1975) have agreed on several generalizations emanating from research on students' attrition. First, it is clear that no single factor explains attrition in high education. Second, it is clear that the research on attrition would be better conducted using a theoretical model rather than a descriptive approach. Several theoretical models including those of Spady (1971), Tinto (1975) and Beam (1980) have been developed and have subsequently generated empirical work. The present study was based on Tinto's model which conceptualizes attrition as a product of the student's characteristics, abilities and goal commitments interacting with the institutional environment. This interaction is usually described in terms of the academic and social integration of students into the academic environment and social sub-structure of the institution. In short, integration produces students' commitment to the institution and a strengthened commitment to attaining his or her educational goals, whereas a lack of integration leads to withdrawal from the institution.

These theoretical notions of academic and social integration have obviously been inspired by concerns for traditional on-campus students rather than for those enrolled in distance education. In reviewing the limits of theory and practice in student attrition, Tinto (1982) defined academic and social interaction primarily in terms of contacts (both formal and informal) between faculty and students. He subsequently recommended that "institutions should encourage those contacts whenever and wherever possible". (Tinto 1982 p 697). This emphasis on optimizing social and academic

interactions between students and faculty appears to be worthy of investigation in the distance education arena.

Whereas the social and academic integration of on-campus students seems likely to be enhanced by regular attendance at lectures, tutorials and regular contacts with academic staff and other students, the integration of off-campus students can be seen to be dependent on the model of distance education used by a particular institution. Such models vary from those that are perhaps purely self-instructional entailing minimal interpersonal interaction with students to those institutions which attempt to maximize interpersonal interactions by either employing local tutors (who meet regularly with students) or by running weekend schools on a regular basis with attendance for students being compulsory. Other institutions make extensive use of telephone tutorials residential schools and the like. The extent of social and academic integration with an institution then seems likely to be largely dependent upon the model of distance education employed. In most distance education systems, such interactions are often optional, whereas it is compulsory for students to interact with faculty via work submitted for assessment. Thus, the number of assignments and the timing of assignments throughout a period of study could well be common significant aspects of intergration when viewed from a distance education perspective.

In the present study, the notion of integration of students was investigated in light of the number and timing of required contact between the faculty and students. These required contacts were investigated in terms of the number of assignments submitted, the turn-round time on these assignments and the "feedback interval" between assignments, which was defined as the elapsed time (in days) between the receipt of feedback on consecutive assignments. Such required contacts were therefore examined in terms of the pace of interaction (turn-round time) and the density of feedback (feedback interval). Additionally, attempts were made to monitor the number of contacts between the student and the institution during the course of study. From Tinto's (1975, 1982) perspective, it could be argued that students who were exposed to regular, rapid contacts during their distance education experience might well be expected to exhibit persistence in their studies, compared to those whose contacts with the institution were perhaps somewhat sporadic and

rather slow.

This point of view must be regarded as somewhat truncated, since no allowance is made for the quality of interaction in determining the social and academic integration of students. It is acknowledged that the quality of interpersonal contact (and its interaction with various student characteristics c.f. Thomposon, 1984) will have a significant impact on social and academic integration. At the same time however, any research project must be sensitive to logistical and practical constraints. The valid and reliable measurement of quality of interaction in the context of a cross-cultural multi-institutional study is at the present time nigh impossible. Similarly the complete explanation of social and academic integration would inevitably demand a focus on learner characteristics such as level of previous education, age, sex, motivation, time available for study and so on.

Many distance education institutions, however, are not in a position to screen prospective students thoroughly and tend to operationalize admission policies based largely on a minimal acceptable level of previous education, rather than on other potentially important personal characteristics such as living and employment conditions which are inevitably outside the control of the institution. Add to this the tendency of many distance education institutions to endorse some form of open access policy for mature age students who may not have the required standard of previous education, and it becomes evident that a focus primarily on institutionally controllable variables is a defensible pragmatic approach to research. In short given the complexity of conducting a cross-cultural multi-institutional study. It seems reasonable to adopt an orientation towards research in which learners are regarded as relatively fixed inputs into the system, and improvement in the persistence of students is seen to be a function largely of institutionally manipulable variables

The present project therefore concentrated on those aspects of social and academic integration which are primarily, under relatively ready institutional control, namely: turn-round time and feedback interval. Further data on these variables is often collected by distance education systems in the day-to-day monitoring of the efficiency of their operations thus facilitating data collection for the project. An effort was also made to collect other readily available data

on basic student characteristics, namely age and sex. An attempt to collect data on additional contacts was also made since such data are important from Tinto's (1975, 1982) theoretical perspective: though it was anticipated that not all participating institutions would be able to supply such information.

The manageability of the project was enhanced by focusing on the issue of student persistence at the level of a unit of study as Rekkedal (1973) had done. The scope of the empirical study was further delimited by the elimination of non-starters from the sample. The elimination of this group of students from the project meant that students included in the project were those who had sufficient motivation to forward at least one assignment during their course of study and excluded those who enrolled but did not appear to participate further in their studies. Given the well documented phenomenon of the first year drop-out an effort was made to focus on first year students in their initial contact with the distance education system where the drop-out phenomenon is accentuated. To further delimit contextual variables data were collected at the level of undergraduate studies, leading to a formally accredited award at the Bachelor degree level. As mentioned previously, however, such parameters are probably less significant than the model of distance education used by participating institutions in teaching the unit of study selected for perusal. A brief description of the major contextual variables including reference to the model of distance education, of each of the participating institutions follows:

ALLAMA IQBAL OPEN UNIVERSITY (AIOU)

The jurisdiction of AIOU extends to the whole of Pakistan: In effect, its campus is a national one. It provides facilities for the educational uplift of the masses including those who are unable to attend conventional institutions by bringing it to their door-steps. Its programmes offer a wide choice of courses at a variety of levels for the general public as well as for professional people.

The AIOU aims at providing them with an opportunity for further education through organizing the following learning activities: systematic study of correspondance texts by students at their homes; regular listening and viewing facilities for radio and television lessons at study centres;

contact with tutors at study centres and written assignments, final written examinations and practical work with special home experiment kits, etc.

Students in the AIOU sample were those studying the unit "Pakistan Studies", an elective in the Bachelor of Arts degree. While data were supplied on 1411 students, data on only 674 students were coded and subsequently analysed due to resource constraints. Such a sample was regarded as sufficiently representative of AIOU's operations to warrant its valid inclusion in the project. Of the 664 students for whom data on age were available, the majority were in the range of 20-35 years, 530 being male and 134 female. 10 students did not mention sex.

Darling Downs Institute of Advanced Education (DDIAE)

Since its foundation in 1967, the Institute has developed as a comprehensive multi-level, regional college of advanced education offering courses in Engineering, Education, Applied Science, Arts and Business Studies. Courses are offered which lead to awards of Associate Diploma, Diploma, Bachelor's Degree and Graduate Diploma. While it emphasises its commitment to the community of the Darling Downs, the Institute enrolls its students from all areas of Queensland and beyond. Through its extensive distance education courses, the Institute has offered opportunities for higher education to many persons whose personal or vocational circumstances do not permit them to enrol as on-campus students. Since 1982 the proportion of the Institute's total student body (approx 6,000) studying at a distance has been just over 50%.

The Institute operates a dual-mode teaching system with academic staff members being responsible for teaching the same unit of study to both off-campus and on-campus students. In the distance education mode, the teaching staff make extensive use of telephone tutorials, which link the main campus with several of the Institute's 15 study centres located throughout Queensland. These study centres are supported by 20 regional liaison officers, who play an important role in facilitating communication between students and the Institute. Unlike some institutions, which appoint tutorial staff to fulfil an academic role in these regional centres, the regional liaison officers act as administrative support officers, assisting with the organisation

of telephone tutorials, conducting evaluative telephone surveys, enhancing communication and maintaining a booking sheet for the Institute's computer-managed learning (CML) system.

The CML system is based on the use of microcomputers in the Institute's study centre (Barker, White and Taylor, 1985). The unit of study selected for scrutiny in the present project was a foundation unit. Introduction to law in the Bachelor of Business degree. This unit is one of over 40 units which makes use of the CML system. During the semester students are required to complete 7 CML tests on contract law. In using the microcomputer, students receive immediate diagnostic feedback on their performance on the tests with turn-round time being effectively reduced to a few seconds. Those students who cannot gain easy access to the microcomputers are required to submit computer-marked answer sheets, which are processed on campus, with students ultimately receiving diagnostic feedback in the form of a letter printed by the computer. Institutional response-time for such letters is usually no more than 2 days. Students enrolled in this unit may therefore experience somewhat different instructional treatments, which may be accentuated by their choice to attend an optional 5 days residential school held at the main campus during the mid-semester break for on-campus students. Apart from these variations in treatment, students receive a self-instructional package specially prepared by a unit team consisting of a subject matter specialist, an instructional designer and an education officer. The package for the law unit in question consists of a study book, a book of readings, a computer-managed learning booklet, and an audiotape containing an introduction to that unit as well as answers to the self-assessment questions which are embedded in the study book.

The students enrolled in the unit were primarily resident in Queensland. Most of the 241 students who embarked on the unit were male (165), with 76 female completing the total. The mean age of these student was 29.3 years, though it is worth noting that 39 students were aged 21 years or under, while 24 students were aged 40 years or over. The youngest student was 17 years and the eldest 51 years.

THE OPEN LEARNING INSTITUTE OF BRITISH COLUMBIA (OLI)

Since its establishment in 1978, OLI has become a well-developed organisation providing programmes in adult basic

education in career-technical-vocational areas, in continuing education and leading to undergraduate degrees in arts and sciences. OLI's distance education system caters for the needs of British Columbia's population of approximately two and a half million spread over an area of almost 370,000 square miles. In a province of this size, OLI had to face the difficulty of the limited extent to which face-to-face contact between tutors and students would be viable. Tutors were therefore provided with an Institute telephone which facilitated contact with students, who were able to make contact without charge. Additionally, the Institute established an advisory service, whereby advice is provided to students in various parts of the province on a variety of matters, including programme planning, registration, financial aid and problems (not specifically academic) related to their interaction with the Institute.

From a teaching-learning perspective, the instructional packages forwarded to students are as self-contained as possible, and endorse principles of self-instruction. Nevertheless an important point of contact between students and tutors is written comments on submitted assignments. Additionally, in cooperation with Simon Fraser University, OLI devised a scheme for providing a reasonably extensive library service to distance students. The students in the sample (drawn from a range of undergraduate courses) therefore had access to a useful range of support systems. Due to the extensive decentralised nature of these services, however, it was not logistically feasible to monitor the number of additional contacts students had with officers of the Institute. Similarly, no data were available on the age or sex of students included in the sample. .

TASMANIAN STATE INSTITUTE OF TECHNOLOGY (TSIT)

Formerly established in 1968 as the Tasmanian College of Advanced Education, TSIT is a multi-disciplinary college located in Launceston, with study centres at Burnie, Hobart and Devonport. The external studies programme covers an extensive range of Associate Diploma, Bachelor's Degree and graduate Diploma courses, including those in Education, Applied Science, Business Studies, Computing and Arts. While it concentrates its efforts on Tasmanian residents, under special circumstances, exceptions are made for students living in other Australian states.

The Institute operates a dual mode teaching system with

academic staff teaching the unit to both on-campus and external students. The three study centres are permanently staffed by full-time academic staff who conduct regular tutorials of two hours' duration every four weeks throughout the year. These tutorials are, however, optional. Some students depend solely on the self-instructional study guides and audio-cassette tapes that constitute the core of the instructional package which is mailed to them. Written feedback on submitted assignments is a significant aspect of the distance education experience of the student.

Students in the TSIT sample were those studying the unit "Introduction to Accounting", a foundation unit of the Bachelor of Business degree. Of the 131 students, 82 were male and 49 female. The mean age of these students was 28 years; of these, 24 were aged 21 years or younger, while 11 were aged 40 year or more. The youngest students was 18 years and the oldest 50 years. Complete data on turn round time, feedback interval and additional contacts were available for the TSIT sample.

UNIVERSITY OF THE SOUTH PACIFIC (USP)

Since its establishment in 1968 (Interim Council 1967), USP has developed a sophisticated support system for its extension students scattered over more than one million square kilometers of the South Pacific Ocean. USP has well established extension centres in the following nine countries: Cook Islands, Fiji Islands, Kiribati, Niue, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa. The staff at each centre normally consists of a centre director, a lecturer, a secretary and a satellite operator. In Nauru, however, the Director of Education assists in administering extension study courses. The region served by USP has an estimated 60 cultures with about 300 languages. English, the language of instruction, is normally the second or even the third language for most of the students.

By using various means of communication, including printed study materials and audiotapes sent through the mail, and a radio satellite network for two-way communication between centres, USP has been able to bridge the gap between distance students and the institution. Regular written communication between the institution and many students is nevertheless logistically restricted by the great distances involved. Thus the submission of regular assignments cannot

constitute a major aspect of many courses, which must be primarily based on self-instructional principles. The range of courses offered is extensive, including introductory and foundation programmes, vocationally oriented programmes and degree programmes. The subjects in the USP sample were drawn from the Bachelor of Education programme, specifically from the unit: "Human Development". Due to obvious logistical problems, it was not possible to gather data on additional contact between students and the institution. Nor was it possible to collect data on the age and sex of the students. Further, the limited number of assignment submissions meant that the treatment of the feedback interval data was somewhat restricted.

COLLECTION AND TREATMENT OF DATA

As well as these important inter-institutional variations, attention must be drawn to the point that students do not experience equivalent distance education treatment even when enrolled in the same unit of study at a particular institution. Certainly, staff of most institutions would no doubt endorse a philosophy based on all students receiving equitable treatment. Nevertheless, due to the vagaries of mail systems, geographical locations and the demands made on academic staff marking large numbers of assignments, it is inevitable that students receive different treatments, especially in regard to turn-round time and feedback interval.

Furthermore, students will not make the same use of the system. For instance, some students will prefer to work independently without making additional demands for support on the institution, and will submit assignments and attend examinations without making further requests for assistance by letter or telephone. In this sense their distance education experience could be quite different from those of students who seek regular additional contacts with institutional personnel.

The extent to which students experience different distance education treatment in terms of turn-round time, feedback interval and additional contacts may or may not have a significant influence on the persistence of students. It seems reasonable to argue that there may be a number of highly motivated students with high need-achievement, who are likely to persevere with their studies irrespective of their treatment by the institution. Such students will be likely to complete the basic task requirements of a unit of

study. On the other hand it seems that turn-round time and feedback interval could well be significant aspects of the distance education experience for those students, who may not be so motivated or confident in their ability to succeed, as in the case of Rekkedal's (1973) study.

In summary, efforts were made to examine the relationships between persistence at the unit level and factors associated with social and academic integration (turn-round time, feedback interval and the number of additional contacts between student and institution beyond those demanded by the submission of assignments). The influence of the age and sex of students was also examined. Analysis of data from each separate institution was undertaken in an effort to investigate potential common trends emanating from each institution relative to a particular model of distance education and in a specific context. Should any common trend emerge across contexts, then it would seem likely that such a trend could be acknowledged as an empirically derived, generalizable principle upon which distance education could be based.

Following communication with the institutional project leaders, during the latter months of 1983, data were collected primarily during first semester of 1984. The two data collection formats for the project (Appendix A) were designed to focus on required contacts related to written assignments (Form A) and additional contacts (Form B) respectively. Form A focused on the dates of assignments receipt and despatch (institutional response time) and the typical mail service response time for students in various geographical locations, enabling computation of turn-round time, which was defined as the elapsed time (in days) from mailing an assignment to receiving the corrected assignment. This focus on the pattern of assignment receipt and despatch also allowed for computation of the feedback interval, which was defined as the elapsed time (in days) between the receipt of feedback on consecutive written assignments. Form B focused on additional contacts which simply described the number of contacts between the student and the institution (whether student initiated or institution initiated) which occurred in addition to those demanded by assessment requirements in a given period. Apart from these three aforementioned independent variables, the dependent variable under scrutiny was persistence, measured simply in terms of whether a student completed all the required assignments for the selected unit of study.

All participating institutions provided data on turn-round time and feedback interval respectively. As anticipated, two of the participating institutions (Open Learning Institute and University of the South Pacific) were unable to collect data on additional contacts due to their styles of operations. The standard data collection formats were returned to the project coordinators, who completed the data analysis phase of the project using the computing resources of the Darling Down Institute of Advanced Education. Using the SPSS software package (Nie et, al, 1975) descriptive statistics were computed for each of the four major variables. Relationships between these variables were investigated in terms of cross-tabulated data and an appropriate test of statistical significance (chi-square). An overview of descriptive statistics at the institutional level is presented prior to the presentation of results from a multi-institutional perspective.

Results

An overview of the major descriptive statistics for each of the five participating institutions is presented in Tables 1 to 5 respectively.

INSTITUTION: Allama Iqbal Open University (AIUO)	
COURSE: Bachelor of Arts	
UNIT OF STUDY: Pakistan Studies	
NUMBER OF STUDENTS: 674	COMPLETION RATE: 90.7%
NUMBER OF ASSIGNMENTS TO BE SUBMITTED: 4	
AVERAGE TURN-ROUND TIME: 7.9 days (8 days)	
AVERAGE FEEDBACK INTERVAL: 26.2 days (26 days)	
AVERAGE NUMBER OF ADDITIONAL CONTACTS: 5.6	

Table 1: Overview of descriptive statistics for the Allama Iqbal Open University

INSTITUTION: Darling Downs Institute of Advanced Education (DDIAE)	
COURSE: Bachelor of Business	
UNIT OF STUDY: Introduction to Law	
NUMBER OF STUDENTS: 241	COMPLETION RATE: 53.5%
NUMBER OF ASSIGNMENTS TO BE SUBMITTED: 10	
AVERAGE TURN-ROUND TIME: 13.7 days (14 days)	
AVERAGE FEEDBACK INTERVAL: 14.1 days (14 days)	
AVERAGE NUMBER OF ADDITIONAL CONTACTS: 8.8	

Table 2: Overview of descriptive statistics for the Darling Downs Institute of Advanced Education

INSTITUTION:	Open Learning Institute (OLI)		
COURSE:	Undergraduate Level		
UNIT OF STUDY:	Variety of Courses		
NUMBER OF STUDENTS:	202	COMPLETION RATE:	32.2%
NUMBER OF ASSIGNMENTS TO BE SUBMITTED:	5		
AVERAGE TURN-ROUND TIME:	13.0 days (13 days)		
AVERAGE FEEDBACK INTERVAL:	24.6 days (25 days)		
AVERAGE NUMBER OF ADDITIONAL CONTRACTS:	N/A		

Table 3: Overview of descriptive statistics for the Open Learning Institute

INSTITUTION:	Tasmanian State Institute of Technology (TSIT)		
COURSE:	Bachelor of Business		
UNIT OF STUDY:	Introduction to Accounting		
NUMBER OF STUDENTS:	131	COMPLETION RATE:	45.8%
NUMBER OF ASSIGNMENTS TO BE SUBMITTED:	5		
AVERAGE TURN-ROUND TIME:	25.4 days (25 days)		
AVERAGE FEEDBACK INTERVAL:	24.3 days (24 days)		
AVERAGE NUMBER OF ADDITIONAL CONTACTS:	11.8		

Table 4: Overview of descriptive statistics for the Tasmanian State Institute of Technology

INSTITUTION:	University of the South Pacific (USP)		
COURSE:	Bachelor of Education		
UNIT OF STUDY:	Human Development		
NUMBER OF STUDENTS:	144	COMPLETION RATE:	43.8%
NUMBER OF ASSIGNMENTS TO BE SUBMITTED:	2		
AVERAGE TURN-ROUND TIME:	24.1 days (24 days)		
AVERAGE FEEDBACK INTERVAL:	30.4 days (30 days)		
AVERAGE NUMBER OF ADDITIONAL CONTACTS:	N/A		

Table 5: Overview of descriptive statistics for the University of the South Pacific.

An overview of descriptive statistics from a multi-institutional perspective on each of the three major independent variables (turn-round time, feedback interval, additional contacts) and the dependent variable (persistence is presented in Tables 6, 7, 8 and 9 respectively.

INSTITUTION	NUMBER OF ASSIGNMENTS SET	AVERAGE TURN-ROUND TIME				
		MEAN	MODE	MEDIAN	STANDARD DEVIATION	RANGE
AIOU	4	7.9	1.0	7.3	6.1	35.0
DDIAE	10	13.7	20.0	12.2	7.6	21.4
OLI	5	13.0	11.0	12.4	4.4	28.5
TSIT	5	25.4	21.0	24.0	6.0	38.0
USP	2	24.1	22.0	23.0	7.6	37.0

Table 6: Average turn-round time from a multi-institutional perspective

INSTITUTION	NUMBER OF ASSIGNMENTS SET	AVERAGE FEEDBACK INTERVAL				
		MEAN	MODE	MEDIAN	STANDARD DEVIATION	RANGE
AIOU	4	26.2	27.3	26.4	6.0	57.0
DDIAE	10	14.1	8.2	8.2	11.2	45.0
OLI	5	24.6	19.5	20.9	13.4	77.0
TCAE	5	24.3	21.0	21.0	6.1	32.0
USP	2	30.4	14.0	33.2	18.0	51.0

Table 7: Average feedback interval from a multi-institutional perspective.

INSTITUTION	NUMBER OF ASSIGNMENTS SET	ADDITIONAL CONTACTS				
		MEAN	MODE	MEDIAN	STANDARD DEVIATION	RANGE
AIOU	4	5.6	0.0	4.3	5.7	27
DDIAE	10	8.8	7.0	7.3	2.8	15
OLI	5	NO DATA AVAILABLE				
TSIT	5	11.8	13.0	11.6	3.9	19
USP	2	NO DATA AVAILABLE				

Table 8: Average number of additional contacts from a multi-institutional perspective.

INSTITUTION	TOTAL STUDENTS	STUDENTS COMPLETE	STUDENTS INCOMPLETE	COMPLETION RATE
AIOU	674	611	63	90.7%
DDIAE	241	129	112	53.5%
OLI	202	65	137	32.2%
TSIT	131	60	71	45.8%
USP	144	63	81	43.8%

Table 9: Completion rate from a multi-institutional perspective.

Relationships between the dependent variable (persistence) and each of the three major independent variable (turn-round time, feedback interval and additional contacts) from a multi-institutional perspective is presented in Table 10, 11 and 12 respectively. The cross-tabulated data are presented in 2x2 tables with persistence represented in terms of incomplete student vis-a-vis complete students and the independent variables represented as high or low in terms of a median split. It should be noted that data were not available for all students on all variables, thus in certain circumstances the number of cases included in the following tables are somewhat less than the number of cases used to compute the descriptive statistics.

INSTITUTION	PERSISTENCE	AVERAGE TURN-ROUND TIME		χ^2	df	p
		Low	High			
AIOU		Low	High			
	Incomplete	34	28	0.47	1	0.492
	Complete	298	295			
DDIAE		Low	High			
	Incomplete	27	55	31.64	1	0.000
	Complete	81	29			
OLI		Low	High			
	Incomplete	72	57	2.93	1	0.087
	Complete	25	34			
TSIT		Low	High			
	Incomplete	26	44	2.27	1	0.132
	Complete	25	24			
USP		Low	High			
	Incomplete	42	39	0.21	1	0.646
	Complete	34	27			

Table 10: Relationship between persistence and turn-round time from a multi-institutional perspective.

INSTITUTION	PERSISTENCE	FEEDBACK INTERVAL		χ^2	df	p
		Low	High			
AIOU	Incomplete	39	21	4.94	1	0.026
	Complete	281	282			
DDIAE	Incomplete	26	59	53.83	1	0.000
	Complete	61	7			
OLI	Incomplete	73	59	1.50	1	0.221
	Complete	26	31			
TSIT	Incomplete	34	37	9.99	1	0.002
	Complete	45	15			
USP	Incomplete	Insufficient data for meaningful computation				
	Complete					

Table 11: Relationship between persistence and feedback interval from a multi-institutional perspective.

INSTITUTION	PERSISTENCE	ADDITIONAL CONTACTS		χ^2	df	p
		Low	High			
AIOU	Incomplete	43	20	7.96	1	0.005
	Complete	303	308			
DDIAE	Incomplete	68	19	11.38	1	0.001
	Complete	72	57			
OLI	Incomplete	NO DATA				
	Complete					
TSIT	Incomplete	47	24	5.07	1	0.024
	Complete	28	32			
USP	Incomplete	NO DATA				
	Complete					

Table 12: Relationship between persistence and additional contacts from a multi-institutional perspective.

Discussion

The results relevant to the examination of the relationship between turn-round time and persistence (Table 10) demons-

trate no consistent trend even though the DDIAE data are consistent with Rekkedal's (1973) conclusion that low turn-round time is likely to increase persistence ($\chi^2 = 31.64$ df = 1. $p = 0.000$). Of the 82 students who failed to complete requirements, 55 of these experienced high turn-round time whereas of the 110 students who succeeded in completing requirements only 29 experienced a high turn-round, while 81 students had low turn-round time. This pattern of results could be reasonably interpreted as pointing to the potential efficacy of turn-round time in influencing persistence. In the other four institutional contexts, however, there is no such indication of a significant statistical relationship, although the data for TSIT were tending to be compatible with those of DDIAE, with 44 of the 70 students who failed to complete requirements experiencing high turn-round time, which could well have had a deleterious effect on student persistence. In the three other institutional contexts, however, no such patterns emerged: rather, the results could be reasonably interpreted as being indicative of no salient relationship between turn-round time and persistence.

A similar pattern of inter-institutional contextual variations was evident in the consideration of the relationship between persistence and feedback interval (Table 11). The DDIAE data are consonant with Tinto's (1975) model which would tend to support the notion that regular feedback is likely to enhance persistence ($\chi^2 = 53.83$. df = 1. $p = 0.000$). Of the 85 students who failed to complete requirements, 59 experienced relatively delayed feedback (high feedback intervals) whereas of the 68 students who fulfilled requirements only 7 experienced delayed feedback while 61 experienced relatively rapid feedback. A similar pattern of results was evident in the TSIT data ($\chi^2 = 9.99$. df = 1. $p = .002$) with 45 of the 60 successful students experiencing relatively rapid feedback. The pattern of results for the remaining two institutions for which sufficient data were available, AIOU and OLI respectively, was not generally supportive of any significant relationship between persistence and feedback interval. Thus, results from the latter two institutions were not compatible with Tinto's (1975) rationale.

The data available on the relationship between persistence and number of additional contacts need to be interpreted with some caution, since students who do not complete requirements may drop-out sufficiently early in the semester

to limit contacts with the institution compared to those students who remain active throughout the total period of the course. The fact that results for all institutions (Table 12) appear to be consistent with Tinto's (1975) rationale (that increased contacts would likely enhance integration and subsequent persistence) should therefore be treated with some caution. The aforementioned body of students who might be expected to persist largely irrespective of additional contacts with the institution (other than those demanded) could also complicate the interpretation of these results. In the case of AIOU and DDIAE, the relatively small number of high contact students, who eventually failed to persist, however, is generally supportive of Tinto's perspective. Further analysis of data revealed no clear pattern with regard to whether these contacts were student initiated or institution-initiated. The actual number of contacts was apparently more important than the source of initiation.

Conclusion

The most obvious conclusion that can be drawn from the project is that one should be extremely cautious in generalizing the results of research studies across institutional contexts. There was enough variation outcome to suggest that the specific institutional contacts in which a study is undertaken has a major influence on relationships between the variables under investigation. While some results were consistent with the conclusions drawn from Rekkedal's (1973) early experimental study on turn-round time and while some results were consonant with inferences drawn from the extrapolation of Tinto's (1975) model to the distance education arena there was certainly no consistent empirical evidence that could suggest a generalizable principle upon which distance education systems could be based.

The importance of the immediate institutional context in action-research projects is not surprising, however, since each institution inevitably responds to a variety of local influences and comes up with a practical operational system, dependent on its own unique circumstances. More often than not, certain over-riding practical, economic, social or political factors tend to determine to a significant extent the basic features of the model of distance education used by a particular institution. The use of pre-active meta-analysis (Taylor and White, 1983) to generate cross-institutional comparisons, however, has the advantage of highlight-

ing such contextual influences, and while no consistent pattern of results emerged, some practical issues, apparently worthy of consideration, did emerge from the project.

With regard to the relationship between turn-round time and persistence, the support for Rekkedal's (1973) findings in the DDIAE context suggested that some students may have been disadvantaged by relatively tardy return of assignments. A component of this difference in turn-round time among students is the geographical location of students, with mail-service response times varying between 2 and 6 days in the case of DDIAE students. This range is no doubt greater in the case of institutions like USP, where students are spread over a vast geographical area. Despite this inequitable distance education experience of students, there does not appear to be any effort to sort assignments by geographical region so that turn-round time might be optimised for students disadvantaged by living long distances from the institution. Some form of colour coding of assignment covers, could minimize the need for additional resources to support this initiative, were it to be pursued in the interests of providing equitable distance education experiences for all students.

An alternative approach would be for institutions to provide markers in regional centres so that turn-round time could be minimized for all students. If a component of this marking could be handled by micro-computers in regional study centres (as in the case of DDIAE) such minimisation of turn-round time could be facilitated with potentially positive results for all students. The use of micro-computers in this way is obviously somewhat dependent on the type of subject - matter and the instructional objectives of the unit of study. Further, the use of such technology also has major resource implications, and is ultimately dependent on the feasibility of the support systems available in particular contexts.

The DDIAE experience of using micro-computer based, computer managed learning initiatives to increase contacts with students and to provide students with performance - related feedback was no doubt important in generating the support for Tinto's (1975) model, which highlighted the likely significance of generating regular interaction to enhance the integration of students with the institution. The TSIT data were supportive of this trend also and in this context such interaction was entirely interpersonal. The DDIAE experience,

however, suggests that integration of students could well be supported by machine-mediated (computer-based) interaction as well as by interpersonal contacts. It should be noted that rational use of a computer-managed learning system can provide for relatively personal, diagnostic-prescriptive feedback, which can amplify productive student institution contacts without being too dependent on the availability of teaching staff. Once again, the feasibility of such initiatives has major resource implications, which will be relative to particular contextual constraints. The apparent importance of the interval between contacts related to assignment submission and return appears to be worthy of further investigation. As mentioned previously, however, such research should try to incorporate measures of the quality, as well as the quantity, of feedback.

Such a consideration is also relevant to the examination of the relationship between persistence of students and additional contacts over and above those demanded to meet the requirements associated with completing a unit of study. While some caution is required in drawing conclusions from the results of this aspect of the project, one obvious practical consideration is whether institutions should monitor the number of additional contacts with students, and subsequently make an effort to contact those students who are not seeking additional advice in case they are in danger of dropping out. Overall, though, this approach may not make the best use of available resources, since it was evident from the data that a significant proportion of students managed to meet requirements without seeking much additional contact with the institution. Such an outcome highlights the need for an approach to research based on considerations of aptitude-treatment-interaction.

While the present project, largely for logistical reasons, concentrated on variables that were manipulable by the institution, and tended to regard students as relatively fixed inputs, there is potentially more value in endeavouring to classify students in some way and to subsequently evaluate their reaction to a particular distance education treatment. This type of research, commonly referred to as aptitude-treatment-interaction (Cronbach and Snow, 1977), is based on the persuasive rationale that instructional treatments are differentially effective due to variations in learner aptitude. It seems likely, however, that such an approach would be more likely to be productive at the level of a single institution rather than in a cross-cultural multi-institu-

tional setting, since aptitude-treatment-interaction findings tend to be problematic in that they are difficult to measure and relatively unstable (Sherman, 1985).

In retrospect, it seems reasonable to argue that a variety of approaches to research in distance education is desirable. There is clearly some value in conducting cross-cultural multi-institutional studies, if only to highlight the caution required in generalizing the results of research studies across institutional contexts. Such studies, however, tend to be somewhat determined by the practical constraints imposed by conducting research across widely different systems and settings - especially when such research is conducted at a distance. It appears that more control over empirical investigations could obviously be engendered by allocating limited resources to the conduct of research at the level of a single institution. Such research seems likely to provide information that is primarily useful to the institution concerned, rather than to be readily generalizable across settings. Nevertheless, both types of research appear to be capable of crystallising practical issues which confront decision makers working in distance education settings. Both types of research, however, must be conducted within the complex context of ongoing distance education systems, usually operating under significant resource constraints. From this perspective, it seems unlikely that decisions about distance education will have the benefit of a clearly established empirical rationale for some years to come. Decision makers will have to continue to allocate resources on the basis of less than complete information. There is no doubt, however, that benefits can accrue from contacts among distance education institutions facing similar problems under different contextual constraints. Indeed, although the logistics of conducting a cross-cultural multi-institutional research project at a distance tended to somewhat limit the potential value of the outcomes, there can be no doubting the value of increased inter-institutional contact and associated insights into the complexity of the distance education arenas that emanated from the project. Such outcomes are entirely consistent with the objectives of the International Council for Distance Education.

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