

Admission and success for low SES university students

Report on a HEPPP 2018 National Priorities Pool Project

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Chapter 3

Changing models of higher education: enrolment and course delivery

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Two major transitions

The quantitative modelling phase of this project aims to model the impact of admission policies and practices on the success of low SES students and other students who might not have entered university before the substantial increase in enrolments and the diversification of the student body which followed the inception of the Demand Driven System. To do this it is necessary to hypothesise models which incorporate pertinent variables and constructs.

This chapter, therefore, commences with a discussion of the most significant changes as there has been a move from elite to mass higher education. The changing nature of the student body to a more diverse cohort clearly needs to be factored into the models. The greater diversity has necessitated changes to the way teaching and learning takes place, which is the other main concept which hypothesised models need to embrace.

A more diverse student body

The agenda for social equity was advanced because universities constituted an elite higher education system. The large majority of students conformed to ‘traditional’ characteristics (Trow, 1973, 2005). Entry to university was largely restricted to those who had performed well at high school. Most students entered university either directly from high school or soon after completion. The students were, therefore, mostly in their late teens or early 20s. Few had families to care for. As this was an elite system, the students tended to come from families with above average income who could afford to support the students while completing their degree. At this time, grants were more common than fees. In the UK, for example, there were no fees and means-tested grants were a right. The students’ parents were themselves commonly well educated, so the students usually came from backgrounds in which higher education was a reasonable expectation and known commodity.

Expanding the entry to higher education has necessitated admitting those with results from their school education which would not have permitted entry to an elite system. Alternate entry schemes giving credit for characteristics such as mature age and professional experience have become commonplace. Entry standards vary considerably between universities and between courses and programs within universities. There are, although, now opportunities for university entry for many who would not have been admitted in the past.

As entry directly from high school is no longer the standard entry path, the age range of students has widened considerably. Many have family responsibilities. A lot are in the workforce and many of these students cannot afford to give up work. In most countries, students are now required to pay tuition fees, even if there are loan or deferred payment schemes.

Adapted modes of teaching and learning

In the time of elite higher education, on-campus study was the norm. The large majority of students studied full-time. Most students spent term time living on campus, in nearby rented accommodation, or living in the family home.

Low SES typically involves multiple intersections of disadvantage that present complex barriers to living and working in a university environment. According to the Productivity Commission report (2019) low SES students in the expanded intake are more likely to: have been admitted through alternative entry modes; study remotely; study part-time; study online or through blended learning; have family and work commitments; be mature students; and are less likely to have parents educated at a tertiary level. For the more diverse student body many are unable to attend on-campus classes or prefer the greater flexibility of online or open forms of learning. Students from low SES backgrounds are often unable to commit to full-time study (Bowl & Bathmaker, 2016). Work, family, social and other commitments (House-Peters, Del Casino & Brooks, 2017), rurality and travel distances (Corbett, 2007; Halsey, 2018), access to financial aid (Qayyum et al, 2018), and opportunity costs (Guenther & Fogarty, 2018) present barriers to relocation on or near a university campus.

The alternative modes of study involve some variant of online or blended learning. Today, the predominant mode of distance study is some variant of online learning. Indeed, all tertiary study in advanced societies involves both a choice of modes of study (Bailey et al, 2018), as well as some blending of different modes of virtual and on-campus learning (Keengwe, 2018). This change toward more online and blended learning is not necessarily a good fit for students without family and friends nearby, ideally possessing higher education experience that enables “insider” advice (Devlin & McKay, 2018; Mills & Gale, 2008).

Many students now are unable to commit to full-time study. Mature entrants commonly have work and family commitments. Many school leavers need some level of employment to support themselves. Part-time study has, therefore, become common. Many students taking a full-time load now have some degree of part-time employment to make ends meet (Allen & Farber, 2018; Edwards & MacMillan, 2015), while some work full-time, taking as many units as they can manage (James, Krause & Jennings, 2010). Indeed, the dichotomous enrolment classification of full- and part-time students has become of questionable relevance.

Modelling admission and success

The process of quantitative modelling requires that models are hypothesised and then tested for goodness of fit against a set of suitable data. The design of the models for this project has been restricted to variables readily available in university student record systems. There are two main reasons for this.

Firstly, the aim has been to enable universities to make use of information which is readily available. Incorporating variables from student record systems, in a multivariate model, shows how student characteristics and mode of study interact together to influence outcomes. The models should enable universities to understand how policy decisions relating to student admissions and mode of teaching and learning will impact on the success of their students.

Secondly, building models which incorporate variables which more fully characterise the longitudinal process involved in the journey from enrolment to dropout or graduation is a major program of research, well beyond the scope of this one year project. There are longitudinal process models of attrition and success, but they were developed based on research on US four-year college students before the turn of the century (Bean, 1980, 1983; Spady, 1971; Tinto, 1975, 1987, 1993). These models, therefore, take into account neither the more diverse student intake nowadays nor the adaptations to modes of teaching and learning.

To develop more contemporary models would need initial qualitative studies to identify and characterise pertinent factors which impact on the diverse student body as they attempt to adapt to blended and online learning. From these qualitative understandings, quantitative instruments would need to be built to validly and reliably measure the identified factors. Data gathered from these instruments could then be tested in more refined models.

Such models should explain a lot more of the variance than models relying on student record data. It is important that this more sophisticated modelling track is pursued in the future, as it will provide a much better understanding of how to provide support to the diverse student body to adapt to blended and online learning to enhance their chances to succeed, rather than dropout.

For the present project, though, this is a step too far. The models based on information available in student record systems will help universities better understand the information they have to hand by showing how pertinent variables act in concert to influence success. They will show the impact of the student characteristics of the more diverse body and more flexible modes of study, particularly off-campus modes. They will be limited in terms of explaining how blended and online learning can best be configured to enable the diverse intake to cope with them. They may also provide limited help in suggesting how support can be provided to help students adapt to blended and online learning; a form of learning most will not be familiar with.

Three-phase model of contemporary higher education

The hypothesised model of contemporary higher education builds upon the two transitions to form a three-phase model. The first presage phase involves variables pertinent on entry. These are variables relating to student characteristics and to study mode options. The second intermediate phase contains variables which come into play as the study proceeds. The final phase consists of outcome variables.

The model starts with a set of presage variables relating to the characteristics of the more diverse intake and the alternative modes of study which are now available. Firstly, variables pertinent to entry characteristics are considered. An important rationale for the expanded intake has been social equity; it is, therefore, necessary to include SES. Entry qualifications and basis of admission are clearly of relevance, given the major

expansion of the intake. Remoteness is predominantly a student characteristic, but is also related to study mode, as many study off campus.

Proportion of full-time load is the first variable related to mode of study. Many students now study by modes other than on-campus teaching, such as online or blended learning; so mode of study is the other presage variable.

Arguments could be made for both remoteness and proportion of full-time load being relevant to both student characteristics and mode of study. There are also cross influences. For example, proportion of full-time load will be influenced by many student characteristics. These relationships and cross influences for the presage variables are shown in the model as intercorrelations.

There are then two intermediate variables. The age range of students has widened, so age or maturity is a relevant variable. Age or maturity has been shown to compensate, in some cases, for relatively poor entrance scores by enhanced motivation; more mature students are more likely to display a deep approach to study, which is consistent with academic achievement (Jelfs & Richardson, 2013; Ke & Xie, 2009; Richardson, 1994; Richardson, 2013; Richardson & King, 1998). Year of study will also be included in the model as attrition is more common early in the degree, which is why the first year experience has been seen as so important (James, Krause & Jennings, 2010).

The model then needs measures of outcome. As a significant proportion of students drop out, an outcome measure has to be of dropout. It also seems worthwhile including GPA, as a measure of both academic achievement and failure to complete courses. The third outcome variable is the proportion of subjects successfully completed.

The variables in the hypothesized model are listed below. They are arranged in three phases; presage, intermediate and outcomes.

Presage variables

SES

Basis of admission

Remoteness

Proportion of full-time load

Mode of study

Intermediate variables

Age

Year of study

Outcome variables

GPA

Drop-out

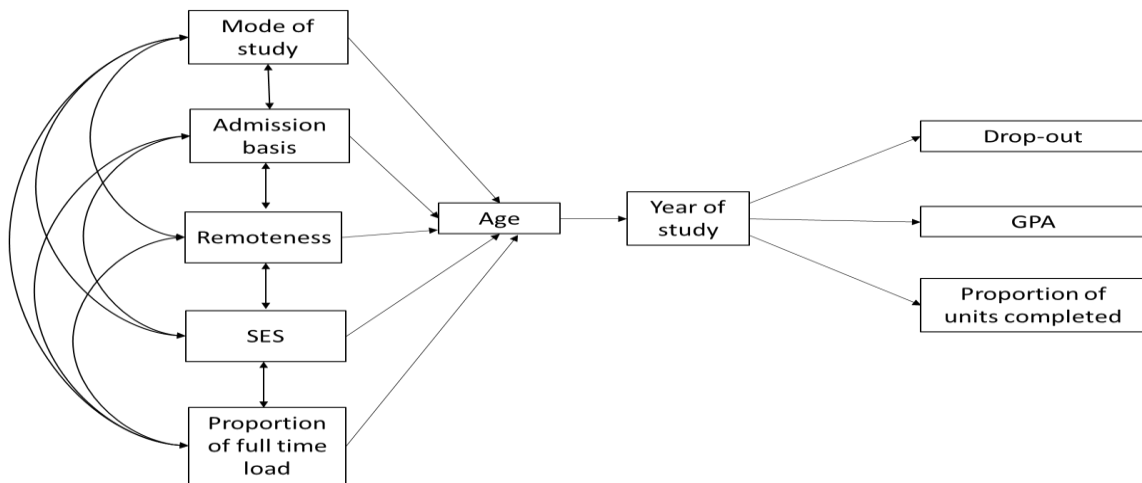
Proportion of subjects successfully completed

Explanations of how all of these variables are defined and measured are given in the next chapter.

Hypothesised model

As attrition is a complex multivariate phenomenon, the study aimed to form the variables into a model which could be tested by structural equation modelling (SEM). The hypothesised path model for contemporary higher education is shown below.

Figure 3.1: The base hypothesised model



Spectrum from traditional to contemporary enrolment and course delivery models of higher education

Formulating the hypothesised modelling as a spectrum with traditional and contemporary ends, provides a conceptual framework which underpins much of this study. The position of a university on the spectrum is a function of the modes of teaching and learning it offers. It relates to admission policies and practices, which are interconnected with degrees of flexibility and teaching and learning. The combination of degrees of flexibility in teaching and learning and admission policies and practices influences the ability to attract an enlarged and more diverse student body and contribute to equity agendas.

The traditional end of the spectrum is occupied by universities which have retained the most of the characteristics of an elite higher education system. Undergraduate degrees are offered largely in the on-campus mode, which implies that students need to reside near the campus during term time. Full-time study tends to be the norm. Admission policies and practices prioritise the recruitment of high performing students; so the bulk of students are admitted on the basis of secondary school performance. As a result, most students commence undergraduate degrees on finishing secondary school or soon after.

The universities closest to the traditional end of the spectrum are members of the Group of Eight. It is these which have the prestige and reputation which enables them to recruit the highest performing students. Quite rightly, such universities see it as their mission to be research intensive universities, with high rankings in world university ranking exercises.

The contemporary model and open learning

Movement towards the contemporary end of the spectrum can be considered in terms of the literature on the open learning movement. The comparison is instructive as open learning was envisaged as a path towards achieving equity goals.

The formation of the Open University in the UK is central to the birth of the open learning movement. The former prime minister, Sir Harold Wilson (Dorey, 2015), envisaged the Open University as providing an opening into higher education for those who had been unable to gain entry to what was, at the time, an elite system of higher education. In the parlance of the time it was seen as an opportunity for the working classes, which nowadays might be referred to as boosting participation of low SES students.

There is no succinct, universally agreed definition of open learning. The closest approximation to a definition consists of a listing of aspects of openness against which courses or programs can be assessed. The version which seems to be quoted or cited most often is by Lewis and Spencer (1986). They proposed that courses be assessed on a spectrum from closed to open for each of a number of facets including:

- open entry
- study anywhere
- start any time
- tutors on demand
- attendance at any time
- flexible sequence
- negotiated objectives and content
- negotiated learning method
- negotiated assessment.

The list or definition has been criticized (e.g. Kember & Murphy, 1990; Rumble, 1989) for including too many elements of openness, which were often not present in courses labelled as open learning. The listed elements of openness appear to be aspirational rather than realistic. The design of the Open University incorporated three elements of openness central to its mission: open entry; freedom to study at locations convenient to the student; and, a reasonable degree of flexibility over when study took place. It was recognised that, for reasons noted in the previous section, the type of students for which the Open University was envisaged would be unlikely to participate without these elements of openness.

It is particularly notable that the Open University is a distance education provider. It is significant that universities at the contemporary end of the spectrum have a substantial proportion of students studying online, which is a form of distance education.

The three key elements of the Open University model, which was radically different to that of conventional universities at the time, were: open entry; modes of teaching and learning which permitted study off-campus at locations which suited the student; and, asynchronous modes of study which permitted a degree of flexibility over when study took place. Though, it should be noted that there were restrictions on timeframes for study in the form of deadlines for assignments and some other activities.

Models of higher education at the contemporary end of the spectrum are consistent with the elements of openness introduced by the Open University. In a similar way, Australian universities which have adopted a model near the contemporary end of the spectrum have been able to admit a more diverse body of students.

Following the success of the Open University in the UK, several countries set up national open universities closely following the UK model. Australia chose not to follow this path. There is the Open Universities Australia, but this is a consortium of providers and not in itself a university. Australia, therefore, has no university

specifically founded for, and dedicated to, open learning principles. The open learning literature has, therefore, perhaps not been as widely cited and influential in Australia as elsewhere. It nevertheless provides a valid underpinning framework for the traditional to contemporary spectrum.

The contemporary end of the spectrum in Australia

Rather than founding a national open university, Australia devolved responsibility for catering for students who needed open learning provision to the existing universities. The extent to which universities have catered to those who need open learning is a function of how far they have shifted across the spectrum from the traditional end of enrolment and course delivery to the contemporary one. The degree to which Australian universities have moved towards the contemporary end of the spectrum can be envisaged in terms of the degree to which they have adopted the three key elements of openness.

Online learning and distance education provides flexibility over where study takes place, which is needed by those unable to study on-campus. This includes those with conflicting employment commitments, those with carer and family responsibilities and those who reside far from a campus and are unwilling or unable to relocate. There are also students who prefer the flexibility of online learning, even though they live close to a campus.

Those with commitments to employment and carer and family responsibilities also commonly need degrees of flexibility over when study takes place. Online learning provides flexibility in this respect in that it is a largely asynchronous form of learning. The other way of introducing flexibility over when study takes place is through offering part-time study.

Flexibility over when and where study takes place makes it possible for a wider range of potential students to feel confident that they will be able to manage to study. They might, therefore, be persuaded to apply for admission. Degrees of openness in entry then come into play, which includes admission categories other than secondary school performance.

Discussion of the spectrum of models

The position a university chooses to adopt on the traditional to contemporary model is related to its mission. Universities with similar missions tend to be classified in the same institutional typologies or groupings; so the ordering on the spectrum relates closely to these typologies. The example, given above, of the Group of Eight universities being grouped at the traditional end of the spectrum is an example of this.

Universities with missions to cater for more diverse equity groupings will position themselves closer to the contemporary end of the spectrum. Examples would be universities which cater for rural and regional communities and those with high proportions of low SES or indigenous students in their catchment areas.

The conceptual framework of the traditional to contemporary spectrum was derived in conjunction with the SEM analysis. It was a part of formulating the hypothesised models. The spectrum also played a role in interpreting the final models.

The models were formed from variables in the undergraduate student record databases. The data for the testing of the models came from these databases. The focus of the traditional to contemporary spectrum models is, therefore, on admission, retention and success and related variables, as reflected in student data. The descriptors may not be relevant to other aspects of the universities.

Something else which relates to the spectrum is the table of university performance in the HESP report (2017). Unfortunately, higher rates of attrition tend to be associated with positions nearer the contemporary end of the spectrum. In Chapters 9 and Part C we discuss this and conclude that models of student support (James, Krause & Jennings, 2010; Kuh, Cruce, Shoup, Kinzie & Gonyea, 2008; Tinto, 1975, 1987, 1993; Trowler, 2010) were derived for universities at the traditional end of the spectrum. In our concluding chapter (Chapter 13) we suggest alternative models more suited to the contemporary end and ways in which they could be implemented.

The next main section, examining the demographic characteristics of universities, provides both an illustration of the spectrum and evidence for its validity. It shows how the introduction of more flexibility in modes of teaching and learning bring with it the possibility of recruiting a more diverse student body.

Positions on the spectrum

The four universities in the study were selected because they have contrasting roles and missions and, therefore, can be placed at different positions on the spectrum. The models for each of the four universities are, therefore, likely to differ. The models for each of the four universities will, therefore, be tested separately.

UTAS is the only university in the State, and recruits the majority of its students from Tasmania. Compared to other states, Tasmania has a relatively small population, dispersed around the state, so there are a significant number of rural and regional students. Tasmania also has low participation rates for years 11 and 12 and university. UTAS has a mission to increase participation and, therefore, has a student body with a diverse characterisation. UTAS, therefore, should fit very well with the contemporary model.

Griffith also has a diverse intake and has significant proportions of students studying online, in mixed mode, and through blended learning. It should also, therefore, fit well to the contemporary model. The difference with UTAS is that Griffith is a metropolitan university, which is likely to mean that remoteness may be a less prominent feature in the model.

The University of Wollongong is a university with a mission to recruit a diverse intake. Its undergraduate teaching is entirely on-campus. The city of Wollongong itself has a population greater than Hobart. Besides the main Wollongong campus, the university has five additional regional campuses, plus two additional metropolitan campuses, one in the CBD, the other in Western Sydney. Its model is, therefore, likely to be at an intermediate point between the contemporary and traditional ends of the spectrum.

Melbourne is a research-intensive Group of Eight university and its undergraduate teaching largely retains a traditional model. Teaching is on-campus, with most students taking a full-time load. The large majority of undergraduate students are in the 19 to 24 year age range. Melbourne, therefore, will serve very well as a University on which to derive a traditional model.

Demographic characteristics of universities

To further explore the concept of a spectrum from a contemporary model of enrolment and course delivery to a traditional one, values for pertinent demographic variables in the quantitative model were extracted from the four samples taken from the student record systems.

The quantitative modelling is needed to enhance our understanding of the factors impacting on the admission, retention and success of low SES and other students admitted as a result of the expansion of the intake to higher education. The samples from the databases, therefore, needed to reflect this type of student. Accordingly, the sample for the models was of undergraduate students. Those in short courses, like professional honours, were excluded as they would have completed a prior undergraduate course. They would not, therefore, experience all the issues faced by new entrants. International students were excluded, as the study was of issues for Australian students.

For Griffith and Wollongong, the base sample, before exclusions, was the total undergraduate enrolment. For UTAS it was undergraduate students from arts, business, education, health sciences and science. For Melbourne the students were from the following Bachelors degrees: Agriculture, Arts, Health Science, Commerce, Environment, Fine Arts, Music and Science. Disciplines with graduate entry were excluded.

The samples for the modelling were from the total undergraduate enrolment for 2015. Data were also examined for 2016 to see whether the students should be classified as continuing, completed, or had dropped out.

SEM is more robust if cases with missing data are excluded. List deletion was, therefore, employed, meaning that any cases with even a single missing variable are deleted. Even with these various exclusions and deletions, the samples are still very large. For Griffith, N was 17,546, for Melbourne N= 17,025, for UTAS, N = 8911 and for Wollongong N = 15,785.

The figures in the demographic characteristics table mirror the characteristics of the undergraduate sample used for the modelling, which has been described in some detail above. The samples were all of domestic undergraduate students enrolled in 2017. The samples are, therefore, comparable. It is appropriate for the same samples to be used for the modelling and the table, as the table is for the purpose of aiding the interpretation of the four models and the trends between them. For the various reasons described above, though, there will be some difference between the figures in the table and official university statistics.

Values for the demographic variables are presented in the table below, with categories defined in such a way that a higher percentage indicates a greater departure from the traditional model.

Table 3.1: Demographic characteristics of the four universities

% of students	UTAS	Griffith	Wollongong	Melbourne
Not studying on-campus	71.3%	9.4%	0%	0%
Admitted on basis other than secondary results	71.0%	56.4%	29.9%	12.8%
Living in Outer Regional, Remote and Very Remote areas	39.7%	6.2%	2.6%	2.5%
Low SES	23.6%	14.5%	14.6%	6.4%
Studying less than 70% load	52%	14.0%	18.5%	19.4%
Age greater than 24	44.4%	23.6%	18.1%	3.9%
Attrition	28.54%	19.3%	10.2%	1.9%

Overall, the table illustrates very well the concept of the spectrum from contemporary to traditional models. For each variable UTAS has the highest percentage, indicating that it has taken the greatest steps towards the contemporary model. It has taken great strides towards widening access and moving towards more flexible modes of study. Melbourne has clearly departed little from the traditional model. It has the lowest percentage value for each variable. Griffith and Wollongong occupy intermediate positions.

Mode of study is the variable which shows the greatest disparity between the contemporary and traditional models. As the data were taken from the student record databases, mode of study is recorded as a dichotomous variable: either on-campus or online. The databases do not reflect any degree of blended learning in courses. Using this definition of mode of study, Melbourne and Wollongong have stuck to the traditional approach and teach all undergraduate students on-campus. UTAS has 71.3% of its students not studying on-campus. Of these 58.9% study online and 12.5% by mixed mode; some units are taken online and some on-campus.

UTAS also has a higher proportion of 71.0% of students admitted on a basis other than secondary school results. The other three universities also have appreciable proportions of students not admitted through secondary school results, with the proportion declining across the spectrum towards the traditional model. Other admission categories included other qualifications, principally TAFE ones and prior higher education experience, whether successful or not. There were also experiential categories, including mature age and professional experience. University admission policies cannot be succinctly defined, but there did seem to be a hierarchy of preferences for qualifications over experience.

The remoteness category allocated to students was derived from their term address. The rationale for this is that the modelling aimed to determine the impact of remoteness on the study process. The coding for these variables is discussed in detail in the next chapter. The impact of originating from a regional or remote background is to some extent reflected in the variable SES, which was derived from home addresses and would, therefore, be sensitive to regional or remote origins. The home addresses used to

derive the SES category were those in the student record databases, as supplied by the students on application. The proportions in the table reflect the limited range of the ARIA categories and the Australian population distributions. Most of the population of the eastern seaboard of the Australian mainland reside in areas classified as Major City or Inner Regional. For Griffith, Wollongong and Melbourne the proportions of students in the three more remote categories is, therefore, low.

Tasmania, by contrast, is characterised by a lower population density and a dispersed population. An appreciable proportion of students are, therefore, in the three more remote categories. The high proportion of UTAS students not studying on-campus indicates that those in more remote locations largely choose to study from home, rather than relocating to the proximity of a campus for on-campus study.

Melbourne admits the lowest percentage of low SES students. Griffith and Wollongong have an approximately equal percentage. UTAS has the highest proportion. This confirms the validity of the construct of the spectrum model, in terms of showing how the model of higher education needs to be changed to diversify the intakes of students to admit those in disadvantaged groups. The greater the shift from a traditional model to the more contemporary one, the more diverse the student body will become and the greater the proportion of low SES students. There is an extensive discussion of SES in the final chapter of the report.

UTAS has by far the greatest proportion of part-time students. In the chapters discussing the modelling, it is explained that this is, to a large extent, a consequence of student characteristics or study mode.

At UTAS, 44.4% of students were greater than 24 years old. This is a reflection of both admitting more mature students and of students taking longer to complete their degrees because of reduced loads. Griffith and Wollongong both have significant proportions of mature students. Melbourne, by contrast, has just 3.9% of undergraduate students over 24 years old. It still continues to recruit most of its students direct from secondary school.

Rates of attrition reflect the degree to which universities have adopted a contemporary model. The more open the door, the more it becomes a revolving door. The more access has been widened and the greater the degree of adaptation to the mode of teaching and learning, the higher the level of attrition.

Illustration with qualitative case studies

For UTAS, Griffith and Wollongong, the quantitative models are illustrated with qualitative case studies. The traditional model of undergraduate education is so well described and understood that it seems unnecessary to do this for Melbourne.

The case studies were derived from interviews with students at the three universities. These interviews take an open stance allowing participants to describe the broad range of issues which impact upon their study. The case studies, therefore, provide a graphic illustration of the complex array of factors which act in concert to impact on the outcomes of university study for contemporary students.