AUSSE 2007 development and methodology

Introduction

This document provides an overview of the development and validation that underpinned the 2007 Australasian Survey of Student Engagement (AUSSE). It is a summary intended to highlight key aspects of the development.

To document provides information on:

- the Student Engagement Questionnaire (SEQ)
- sampling and fieldwork
- survey engagement
- survey materials
- survey administration
- reporting and research process
- future directions.

Student Engagement Questionnaire (SEQ)

The AUSSE survey instrument is called the Student Engagement Questionnaire (SEQ). The SEQ is based on the College Student Report, the instrument used in the USA National Survey of Student Engagement). The College Student Report has been administered at over 1,200 higher education institutions in the United States and Canada. Links between the two instruments provide a basis for international benchmarking.

The SEQ is designed for administration to undergraduate students in under 15 minutes in online or paper form. A copy of the 2007 survey instrument is provided at www.acer.edu.au/ausse/seq.html. The same SEQ form is used with all students. The instrument contains items that tap a range of key educational phenomena. A selection of these items group together to measure the six summary scales, referred to in the National Survey of Student Engagement as benchmarks of educational effectiveness. These scales are summarised in Table 1.

Table 1 AUSSE scale descriptions

Scale	Description
Academic Challenge	Extent to which expectations and assessments challenge students to learn
Active Learning	Students' efforts to actively construct their knowledge
Student and Staff Interactions	Level and nature of students' contact with teaching staff
Enriching Educational Experiences	Participation in broadening educational activities
Supportive Learning Environment	Feelings of legitimation within the university community
Work Integrated Learning	Integration of employment-focused work experiences into study

ACER further developed and validated the College Student Report before deploying it in Australia and New Zealand as the Student Engagement Questionnaire. A range of new and redesigned items were included. Validation included focus groups, cognitive interviews, pilot testing and expert review. A range of psychometric and conceptual analyses were conducted. This work builds on the extensive validation in the USA of the College Student Report.

A critical feature of the SEQ is its foundation in empirically based theories of student learning. Items in the SEQ are based on findings from decades of research on the activities and conditions linked with high-quality learning. This foundation helps assure the educational importance of the phenomena measured by the instrument.

Early consultations

Instrument development began with a series of consultations. Staff at NSSE provided a wealth of insight and resources on development, validation and use of The College Student Report. In addition, a range of people were consulted within participating Australasian institutions, including people working in planning, quality and statistics offices, in institutional research and development units, in education faculties and development areas, and senior executives and institutional managers. Feedback on the instrument was sought from people in national and cross-institutional agencies. The team consulted with independent technical and language experts, and people with expertise in student learning and development.

Feedback was provided on many aspects of the instrument. Suggestions were made for rephrasing proposed items, and on the appropriateness of particular items for the Australasian context. New items were also suggested, including items focused on attendance characteristics, individual intentions for changes to course or institution, on competing work or family commitments, and on work-related learning. Open-ended questions were added to the instrument, with these being designed to enable analysis using the CEQuery software.

The ACER team consolidated the feedback that was provided by around 100 people, and used it to refine the items and instrument. An effort was made to reword items in ways that would retain their existing measurement properties so as to facilitate comparison with

the NSSE. Several items were deleted, only one of these deleted items contributed to the engagement scales, while others were added. The response and handling characteristics of the paper and online instruments were reviewed. Draft instruments were then designed.

Qualitative testing

A round of qualitative tests was conducted with the draft instruments. Three focus groups were conducted by ACER at three institutions in Australia. A focus group was also conducted by the New Zealand Council for Educational Research (NZCER) in New Zealand. These sessions facilitated focused conversations with students from the target population and helped to examine semantic issues and the response characteristics of the instrument.

ACER also conducted three individual cognitive interviews. A 'verbal probing' method was used to facilitate focused analysis of item interpretation by potential respondents. This method helps identify areas of potential ambiguity or confusion, and in which clarification would enhance the validity, reliability and efficiency of responses. Participants indicated that questions were well understood, that the response categories were appropriate, and that they understood the purpose of the instrument.

Pilot testing

Following incorporation of feedback from the qualitative testing of the draft instrument, a small-scale pilot test was conducted at two institutions. The pilot test facilitated investigation of the online survey system developed for the AUSSE, which was not tested via the qualitative sessions, and captured data to help examine item behaviour, scale validity and develop analysis processes. Exploratory and confirmatory psychometric analyses (item response modelling and congeneric measurement modelling) were conducted using the pilot test data.

Further modifications were made to the instruments, items and scales as a result of evidence secured through the pilot. The online system was developed to support a range of additional functions and a more parsimonious online design scheme was implemented. Testing of individual survey tokens, in which each respondent entered the online survey using an individualised url or web address, exposed difficulties, and a decision was made to use an anonymous process. Descriptive analysis of the data assisted with review and refinement of specific items and response scales. As anticipated given earlier validation activities, particularly those undertaken in the USA, the items performed well, with responses spreading across the range of response options and small levels of missing data being identified at the item level.

Instrument production

A series of final adjustments and revisions were made to the online and paper survey instruments, which were then prepared for the main, cross-institutional collection. The paper form of the SEQ instrument was designed to allow for optical scanning. The design scheme developed for the NSSE was used to align instrument properties and capitalise on the extensive validation undertaken in the USA.

Looking forward

Like the phenomenon of student engagement itself, the SEQ will grow with further development of the AUSSE. Evolution of the instrument will be based on evidence of the kinds of engagement that are linked with high-quality learning outcomes. The format of the instrument will also continue to change to produce more reliable and efficient estimates. Based on further analysis and consultation, items that contribute relatively little additional information may be deleted to reduce response burden.

Sampling and fieldwork

Overview

The large proportion of institutions taking part in the inaugural 2007 administration necessitated development of an efficient and robust survey methodology. This offered a unique opportunity to build a sophisticated large-scale survey process incorporating a range of techniques not hitherto deployed in Australasian higher education.

The centralised but collaborative nature of the survey process is a defining characteristic of the AUSSE. The survey is managed by ACER, with institutions assisting with survey engagement activities, sampling and the distribution of materials.

The AUSSE survey process was designed to produce reliable and valid results for first-year and later-year students at each participating higher education institution. Technical procedures were used to ensure the integrity of survey processes and hence the quality of survey outcomes.

Approvals

The AUSSE was conducted within the ethical guidelines laid out in the 1999 Australian National Statement on Ethical Guidelines in Research Involving Humans and the Australian Council for Educational Research Code of Ethics.[1] ACER routinely collects sensitive test, evaluation and other data and has well established and tested procedures for protecting sensitive materials.

Participating institutions were responsible for securing any human research ethics or other approvals which may have been required for the AUSSE. ACER provided generic information to assist institutions in the preparation of ethics applications.

Participating institutions

All public Australasian universities were invited to take part in the first administration of the AUSSE. In total, 25 higher education institutions participated in the 2007 AUSSE – more than half of the universities in Australia and New Zealand. Two further institutions assisted with a pilot test but did not take part in the cross-institutional administration. The

[1] National Health and Medical Research Council, Australian Research Council, Australian Vice-Chancellors' Committee (NHMRC, ARC, AVCC) (2007). *National Statement on Ethical Conduct in Human Research*. Canberra: Australian Government.

25 Australian and New Zealand institutions that participated in the cross-institutional administration are listed in **Error! Reference source not found.**,.

Table 2 AUSSE 2007 institutions

Australian institutions	New Zealand institutions
Australian Catholic University	Auckland University of Technology
Australian National University	Massey University
Central Queensland University	UNITEC New Zealand
Charles Sturt University	University of Canterbury
Curtin University of Technology	Victoria University of Wellington
Griffith University	
James Cook University	
La Trobe University	
Macquarie University	
Murdoch University	
Southern Cross University	
University of Ballarat	
University of Canberra	
University of Melbourne	
University of New England	
University of Newcastle	
University of Queensland	
University of South Australia	
University of the Sunshine Coast	
Victoria University	

Selecting the student sample

The AUSSE involved a complex sampling strategy that helped maximise the validity and efficiency of survey processes and outcomes. A stratified systematic sampling strategy was deployed to produce powerful, generalisable and representative estimates of first-year and later-year student engagement. Such sampling strategies, which are essential for ensuring data validity, have rarely been used in Australasian higher education research.

The process set out below was part of a cross-institutional sampling strategy that was designed so that inferences of population characteristics derived from the survey can be accompanied with accurate and defensible estimates of precision.

Each institution's target student population comprised two groups: those in their first year of university study; and those in a later (ideally third) year of university study. The first-year cohort included students who had not enrolled in a higher education qualification prior to their current course. Later-year students included those who had completed around five full-time equivalent semesters of an undergraduate degree. As it is difficult for many institutions to precisely identify third-year students, the SEQ included questions to help confirm each respondent's year level.

The 2007 AUSSE sample size was calculated by taking account of institutional contexts, educational and technical considerations, analysis and reporting processes, and estimated

survey response rates. It sought to secure responses from around 350 first-year and 350 third-year students, totalling approximately 700 responses at each participating university.

A response rate of around 25 per cent was assumed and a systematic random sample of 1,300 first-year and 1,300 third-year students was drawn for each institution. Variations to this occurred when institutions choose to oversample, or where a student population smaller than the anticipated sample size resulted in a census for a particular year level. In 2007, an email with a link to the online SEQ was distributed to the entire AUSSE sample. In addition, 800 of the sampled students at each institution (400 first-year and 400 third-year students) were sent a paper SEQ.

As ACER was unable to access identified student records, it was necessary for institutions to assist ACER with the sampling process. The sampling process comprised several steps. Each institution supplied ACER with a de-identified list of students in the target population. ACER validated these lists, drew the sample, and returned the sampled lists to institutions. Each institution re-attached student contact details to their list and prepared it for survey distribution. The sample verification process is a major form of quality assurance in the survey design and fieldwork. In 2007 it prevented serious errors in student identification and selection at around half of all participating institutions.

Survey engagement

Survey engagement is critical. The quality of survey responses influences the quality of survey results, which in turn influence important decisions about educational quality and provision. Research has shown that there is great value in taking active steps to enhance students' participation in survey processes.[2]

Staff at participating institutions were encouraged to use a range of approaches to engage students in the AUSSE, including:

- informing potential respondents about the AUSSE during general teaching activities;
- affirming the importance of the survey and student feedback during the collection period; and
- disseminating feedback about the survey to all relevant stakeholders.

The scope of the AUSSE is institution-wide, and much value is derived from providing institutional stakeholders other than students with an overview of the survey. Such stakeholders include senior staff, teaching staff, interested researchers, support staff, and relevant committees.

At a minimum, it was suggested that these stakeholders should be provided with basic information about the AUSSE (see: www.acer.edu.au/ausse). The potential value of stimulating more substantive interactions with stakeholders should not be underestimated, however, as it is likely that they will play a critical role in enhancing discussions about student engagement.

[2] Coates, H., Tilbrook, C., Guthrie, B. & Bryant, G. (2006). *Enhancing the GCA National Surveys: An examination of critical factors leading to enhancements in the instrument, methodology and process.* Canberra: Department of Education, Science and Training.

Survey materials

Cover notes

Research into survey response processes has shown that cover notes play an important role in introducing the survey to respondents and encouraging participation. The paper and electronic cover letters that accompany the AUSSE thus play an important role in ensuring the quality and level of response.

ACER prepared four standard cover notes for each of the four SEQ distributions. These included, in order of delivery, a first email cover note, a paper cover note, a second email cover note, and a final email cover note. In addition to these cover notes, brief introductory messages were also included on the top of the paper form and front page of the online form of the survey.

It is desirable that cover notes are as consistent across institutions as possible. Institutions were asked to use the text of the standard cover note, but to have the note signed by the Vice Chancellor or Deputy Vice Chancellor.

Packaged survey materials

All survey materials were packaged in a standard format and distributed to institutions. It was suggested that institutions provide university envelopes for packaging of the survey materials, and some institutions took this opportunity to further identify the survey as being of official standing and importance to the institution. Each parcel consisted of a single ACER or institution cover note, SEQ survey form, and ACER/NZCER reply-paid envelope.

The reply-paid address for paper forms was to ACER for Australian institutions and to NZCER for New Zealand institutions. NZCER acted as a clearinghouse for the New Zealand AUSSE returns, and sent responses directly to ACER in batches for processing.

Institutions affixed address labels onto each of the survey parcels. These address details were taken from the sample contact file and merged onto address labels. Survey parcels were readied for distribution by mid August.

Survey administration

Distribution strategy

A standard multimodal distribution strategy that aligned with key semester dates was designed to maximise the momentum of the response process. The approach reduced the oversampling required and, essentially, the number of students necessary to contact. The strategy made use of the advantages and complementarities offered by online and paper surveying. Variations, where required, were managed in liaison with ACER.

The 2007 AUSSE distribution included three emails and one postal mail. Specifically, institutions sent the:

- first email to all sampled students in the second last week of August
- mail out to core sample in the last week of August
- second email to all sampled students in the first week of September and

- third email to all sampled students in the second week of September.

All completed survey forms were sent directly to ACER for processing (via NZCER for New Zealand institutions). As this occurred, ACER logged and collated returns, and monitored and tracked response rates.

Coding and data preparation

Responses were coded by a single team of coders so as to maximise the reliability of coding. The SEQ was designed to keep subjective coding to a minimum, and hence assure the validity of the data.

ACER prepared the data files as responses were received from students. Data file preparation involved data entry, cleaning and validation, and file merging and organisation.

Weighting

Post-stratification weighting was employed to ensure that responses represented the target population. In summary, this kind of sample weighting involves calculating the number of individuals in the target population that are represented by each individual in the secured response sample and weighting the sample to enhance the representativeness of statistical estimates.

Where possible, given the available information, these weights account for year level, attendance type, and respondent sex. To date, weighting has been used very sparingly in large-scale higher education data collections in Australasia. The consequence of this is that it is not possible in many instances to be sure that sample results reflect the characteristics of the target population.

Reporting and research process

Interpreting, analysing and acting on survey results is a significant component of the AUSSE. As with all data collections, it is important that the AUSSE results are used in technically and educationally appropriate ways. The AUSSE is intended to provide a source of evidence for each institution's strategies to address engagement. The information is also intended for use by prospective students, academic advisors and researchers wanting to learn more about the experiences of students at different universities.

In November 2007, participating institutions were provided with individualised versions of the AUSSE Institution Reports, along with a file of each institution's own survey data. The same file format was used for all institutions, and institutions can share and compile cross-institutional files at their own discretion. The file format mirrors that used by a large number of USA and Canadian institutions, enabling benchmarking across these jurisdictions.

Future directions of the AUSSE

The 2007 development and validation of the AUSSE and SEQ was the major means of enhancing conversations about student engagement in Australasian higher education. The AUSSE methodology incorporates a continuous improvement process aimed at further

enhancing the quality and efficiency of the survey process. Development of the AUSSE is ongoing.

The AUSSE was initiated in 2007, stemming from conversations about student engagement in late 2006. ACER has developed and validated the AUSSE in 2007 in collaboration with participating institutions, and managed a large-scale cross-national administration. A formative review of the AUSSE was conducted in late 2007.

ACER will continue to work with higher education institutions to develop and enhance the following resources:

- Student Engagement Questionnaire
- AUSSE Institution Administration Manual
- AUSSE Institution Report
- Enhancement resources and meetings
- Staff Survey of Student Engagement (based on the FSSE, the Faculty Survey of Student Engagement, used in the USA and Canada)
- A possible 'Subject Student Engagement Questionnaire', in which the focus for respondents would be at the level of individual subjects, rather than the higher 'whole-of-experience' level of the SEQ.