

Reliability of the Irish Survey of Student Engagement – 2014

Prepared by

Jonathan Drennan¹

Professor of Healthcare Research

University of Southampton

Introduction

The National Survey of Student Engagement (NSSE), on which both the Australasian Survey of Student Engagement (AUSSE) and Irish Survey of Student Engagement (ISSE) are based, was developed from research on student engagement and student learning. The fundamental outcomes from this research was that student engagement with college life was associated with high level learning, persistence, academic, leadership, moral development, academic performance and critical thinking. This paper outlines reliability of the indices used in the 2014 ISSE. A number of approaches were used to test the instrument including internal consistency measures inter-item correlations and corrected item total correlations.

Irish Survey of Student Engagement

The ISSE is predominantly based on items from the NSSE and is informed by developments undertaken in Australia with the development of the AUSSE. The ISSE focuses on the teaching and learning activities and the extent to which students interact with these activities. The fundamental thesis underlying the measure of student engagement is:

When students read more, write more, and interact more in positive ways with their teachers and peers, they gain more in terms of essential skills and competencies, such as critical thinking, problem solving, effective communication, and responsible citizenship (NSSE 2000: 2).

The ISSE focuses on student engagement, that is the educational processes that students engage in that impact on outcomes (NSSE 2000). The results from the ISSE can be used by institutions to improve the quality of the experience of undergraduate and postgraduate students in the higher education sector in Ireland.

The ISSE was designed to collect results from students at two points of time in their educational programme: at the end of first year and final year. The rationale for measuring these two points is that first year is recognised as a pivotal point in students engaging with their higher education; the final year is the point at which students can look back and evaluate their overall experience of higher education (NSSE 2000). In addition, the ISSE measured the institutional experience of taught postgraduate students; this built on the work done in the Australasian higher education sector with the development of the Postgraduate Survey of Student Engagement (POSSE).

The ISSE is comprised of six engagement scales or indices. Five of these are based on the instruments developed in the US (NSSE) and the Australasian (AUSSE, POSSE) higher education systems. These indices are: academic challenge, active learning, student-staff interactions, enriching educational experiences, and supportive learning environment. In addition, the AUSSE contains an extra index; work integrated learning, which was also

¹ Jonathan Drennan acted as Chair of the Survey Design Group during the 2013 pilot and undertook similar testing of 2013 data in that role.

included in the ISSE. The ISSE also consists of five outcome indices which were specifically developed for the AUSSE. These include: higher order thinking, general learning outcomes, general development outcomes, career readiness and overall satisfaction.

Reliability of the ISSE - 2014

Engagement Indices Correlations

Table 1 outlines the correlations between the ISSE engagement indices (academic challenge, active learning, student-staff interactions, enriching educational experiences, supportive learning environment and work integrated learning) for undergraduate students overall. Correlations were low to moderate; this demonstrates that the indices can be individually interpreted and that they are measuring separate domains of student engagement. The highest correlation was between active learning and student-staff interactions (.51) with the lowest between supportive learning environment and work integrated learning (.24). The correlations between indices are similar to those found in the testing of the ISSE in 2013.

Table 1 Correlations of the ISSE Engagement Indices (Undergraduate Overall)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.38	1				
3. Student-staff interactions	.38	.51	1			
4. Enriching educational experiences	.35	.39	.36	1		
5. Supportive learning environment	.28	.27	.32	.28	1	
6. Work integrated learning	.36	.41	.35	.37	.24	1

The correlations between the ISSE indices for undergraduates in each of the sub-sectors (institutes of technology, universities and 'other' institutions of higher education) are outlined in tables 2 to 4. Correlations between each of the indices for each of the sub-sectors were identified to be similar.

Table 2 Correlations of the ISSE Engagement Indices (Undergraduate - Institutes of Technology)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.42	1				
3. Student-staff interactions	.40	.50	1			
4. Enriching educational experiences	.35	.42	.38	1		
5. Supportive learning environment	.30	.28	.35	.31	1	
6. Work integrated learning	.40	.38	.36	.39	.26	1

Table 3 Correlations of the ISSE Engagement Indices (Undergraduate - Universities)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.41	1				
3. Student-staff interactions	.40	.49	1			
4. Enriching educational experiences	.33	.43	.39	1		
5. Supportive learning environment	.25	.26	.29	.25	1	
6. Work integrated learning	.34	.42	.36	.42	.24	1

Table 4 Correlations of the ISSE Engagement Indices (Undergraduate Others)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.44	1				
3. Student-staff interactions	.40	.49	1			
4. Enriching educational experiences	.34	.39	.39	1		
5. Supportive learning environment	.30	.26	.32	.28	1	
6. Work integrated learning	.42	.39	.27	.35	.14	1

Table 5 outlines the correlations between the ISSE engagement indices for postgraduate students. Correlations, overall, were similar to those identified for the undergraduate cohort suggesting again that the indices can be individually interpreted and that they are measuring separate domains of student engagement. The highest correlation and lowest correlations was between active learning and student-staff interactions and supportive learning environment and work integrated learning respectively.

Table 5 Correlations of the ISSE Engagement Indices (Postgraduate Only)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.44	1				
3. Student-staff interactions	.39	.47	1			
4. Enriching educational experiences	.34	.40	.38	1		
5. Supportive learning environment	.36	.27	.43	.29	1	
6. Work integrated learning	.32	.31	.26	.28	.28	1

The correlations between the ISSE engagement indices for postgraduates in each of the sub-sectors (institutes of technology, universities and 'other' institutions of higher education) are outlined in tables 6 to 8. Again, results are similar to those identified for postgraduates overall.

Table 6 Correlations of the ISSE Engagement Indices (Postgraduate - Institutes of Technology)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.49	1				
3. Student-staff interactions	.47	.52	1			
4. Enriching educational experiences	.40	.38	.43	1		
5. Supportive learning environment	.43	.32	.46	.31	1	
6. Work integrated learning	.46	.37	.43	.40	.40	1

Table 7 Correlations of the ISSE Engagement Indices (Postgraduate - University)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.45	1				
3. Student-staff interactions	.37	.48	1			
4. Enriching educational experiences	.35	.41	.38	1		
5. Supportive learning environment	.34	.29	.43	.30	1	
6. Work integrated learning	.28	.32	.24	.27	.25	1

Table 8 Correlations of the ISSE Engagement Indices (Postgraduate – Other Higher Education Institutions)

<i>Index</i>	1	2	3	4	5	6
1. Academic challenge	1					
2. Active learning	.32	1				
3. Student-staff interactions	.37	.41	1			
4. Enriching educational experiences	.24	.34	.35	1		
5. Supportive learning environment	.41	.20	.42	.26	1	
6. Work integrated learning	.43	.29	.23	.39	.29	1

Outcome Indices Correlations

Table 9 outlines the correlations between the ISSE outcome indices (higher order thinking, general learning outcomes, general development outcomes, career readiness, overall satisfaction) for undergraduate students overall. Correlations, overall, were generally low to moderate; this demonstrates that the indices can be individually interpreted and that they are measuring separate domains of student engagement. The highest correlation, as would be expected due to the relative similarities between the indices, was between general learning outcomes and general development outcomes (.62) with the lowest between career readiness and overall satisfaction (.09).

Table 9 Correlations of the ISSE Outcome Indices (Undergraduate Overall)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.49	1			
3. General Development Outcomes	.39	.62	1		
4. Career Readiness	.22	.36	.33	1	
5. Overall Satisfaction	.27	.43	.33	.09	1

The correlations between the ISSE outcomes indices for undergraduates in each of the sub-sectors (institutes of technology, universities and ‘other’ institutions of higher education) are outlined in tables 10 to 12. Correlations for each of the indices for each sub-sector were similar to those for undergraduates overall. In addition, each sub-sector reported similar correlations amongst the indices.

Table 10 Correlations of the ISSE Outcome Indices (Undergraduate - Institutes of Technology)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.50	1			
3. General Development Outcomes	.39	.62	1		
4. Career Readiness	.25	.36	.35	1	
5. Overall Satisfaction	.26	.44	.31	.12	1

Table 11 Correlations of the ISSE Outcome Indices (Undergraduate - Universities)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.48	1			
3. General Development Outcomes	.37	.61	1		
4. Career Readiness	.21	.35	.32	1	
5. Overall Satisfaction	.26	.44	.33	.08	1

Table 12 Correlations of the ISSE Outcome Indices (Undergraduate - Other Institutions)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.51	1			
3. General Development Outcomes	.44	.67	1		
4. Career Readiness	.22	.35	.30	1	
5. Overall Satisfaction	.30	.43	.38	.10	1

Table 13 outlines the correlations between the ISSE outcome indices for postgraduate students. Correlations, overall, were similar to those identified for the undergraduate cohort suggesting again that the indices can be individually interpreted and that they are measuring separate domains of student engagement. The highest correlation and lowest correlations, as in the undergraduate measures, was between general learning outcomes and general development outcomes with the lowest between career readiness and overall satisfaction respectively.

Table 13 Correlations of the ISSE Outcome Indices (Postgraduate Overall)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.49	1			
3. General Development Outcomes	.39	.62	1		
4. Career Readiness	.22	.36	.33	1	
5. Overall Satisfaction	.27	.43	.33	.09	1

The correlations between the ISSE outcomes indices for postgraduates in each of the sub-sectors (institutes of technology, universities and 'other' institutions of higher education) are outlined in tables 14 to 16. Correlations for each of the indices for each sub-sector were similar to those for postgraduates overall. In addition, each sub-sector reported similar correlations amongst the indices.

Table 14 Correlations of the ISSE Outcome Indices (Postgraduate - Institutes of Technology)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.55	1			
3. General Development Outcomes	.40	.65	1		
4. Career Readiness	.22	.35	.43	1	
5. Overall Satisfaction	.39	.57	.40	.17	1

Table 15 Correlations of the ISSE Outcome Indices (Postgraduate - University)

<i>Index</i>	1	2	3	4	5
1. Higher Order Thinking	1				
2. General Learning Outcomes	.48	1			
3. General Development Outcomes	.40	.66	1		
4. Career Readiness	.24	.34	.35	1	
5. Overall Satisfaction	.32	.49	.37	.15	1

Table 16 Correlations of the ISSE Outcome Indices (Postgraduate – Other Higher Education Institutions)

<i>Index</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
1. Higher Order Thinking	1				
2. General Learning Outcomes	.49	1			
3. General Development Outcomes	.38	.69	1		
4. Career Readiness	.14	.29	.24	1	
5. Overall Satisfaction	.35	.39	.35	.12	1

Internal Consistency Measures

Table 17 outlines the internal consistency measures of both the engagement and outcome indices for the ISSE (first year and final undergraduates and postgraduates). The engagement indices are also compared with the internal consistency measures of the 2013 ISSE. Overall the internal consistency measures on the academic challenge, active learning, student-staff interactions and enriching educational experiences indices were below the recommended value of 0.70. However, the Cronbach’s alpha measure for postgraduates on the index ‘enriching educational experiences’ was .70. Overall, the internal consistency measures on the indices of ISSE were relatively close the recommended value of .70; in particular, the internal consistency measures for first year, later year and postgraduate students on the indices supportive learning environment and work integrated learning were above the recommended value of .70 and these were comparable to values reported on the 2013 ISSE. All outcome indices on the ISSE showed acceptable levels of reliability with Cronbach’s alpha values for first year, final and postgraduate students above the recommended value of 0.70.

Table 17 Reliability Estimates (Internal Consistency Measures) of the ISSE 2014 Compared to the ISSE 2013 - Engagement and Outcome Indices (First Year and Final Undergraduates and Postgraduates)

<i>Scale Name</i>	<i>ISSE (2013) First Year</i>	<i>ISSE (2013) Final Year</i>	<i>ISSE (2013) Postgraduates</i>	<i>ISSE (2014) First Year</i>	<i>ISSE (2014) Final Year</i>	<i>ISSE (2014) Postgraduates</i>
Engagement Indices						
Academic Challenge	.68	.65	.67	.65	.67	.63
Active Learning	.58	.63	.61	.62	.64	.63
Student-staff interactions	.62	.66	.66	.62	.66	.66
Enriching educational experiences	.65	.67	.68	.66	.67	.70
Supportive learning environment	.78	.76	.77	.73	.73	.73
Work integrated learning	.69	.72	.70	.69	.73	.70
Outcome Indices						
Higher order thinking	.76	.77	.80	.77	.81	.82
General learning outcomes	.84	.86	.86	.81	.84	.85
General development outcomes	.84	.85	.84	.82	.84	.85
Career Readiness	.84	.87	.88	.84	.86	.89
Overall satisfaction	.77	.81	.83	.75	.81	.83

Appendix I outlines details on the reliability estimates for the engagement and outcome indices at sub-sector level (university, institute of technology and other higher education institutions). In addition, appendix I also provides information on the inter-item correlations and corrected item Total Correlations for both the engagement and outcome indices.

Appendix I

Reliability of the Irish Survey of Student Engagement

Reliability Tables

Reliability of the Engagement Indices by Sub-Sectoral Level

Table 1 Reliability Analysis of the Engagement Indices Overall and by Sub-Sectoral Level for Undergraduates

<i>Index Name</i>	<i>ISSE (2014) Overall</i>	<i>ISSE (2014) Universities</i>	<i>ISSE (2014) Institutes of Technology</i>	<i>ISSE (2014) Other Institutions</i>
Academic Challenge	.67	.66	.69	.61
Active Learning	.65	.62	.63	.62
Student-staff interactions	.65	.64	.66	.65
Enriching educational experiences	.66	.63	.67	.68
Supportive learning environment	.73	.72	.74	.73
Work integrated learning	.72	.73	.69	.72

Table 2 Reliability Analysis of Engagement Indices Overall and by Sub-Sectoral Level for Postgraduates

<i>Index Name</i>	<i>ISSE (2014) Overall</i>	<i>ISSE (2014) Universities</i>	<i>ISSE (2014) Institutes of Technology</i>	<i>ISSE (2014) Other Institutions</i>
Academic Challenge	.63	.63	.64	.56
Active Learning	.63	.62	.68	.61
Student-staff interactions	.66	.66	.71	.60
Enriching educational experiences	.70	.68	.73	.72
Supportive learning environment	.73	.73	.73	.72
Work integrated learning	.70	.71	.65	.70

Reliability of the Outcome Indices by Sub-Sectoral Level

Table 3 Reliability Analysis of the Outcome Indices Overall and by Sub-Sectoral Level for Undergraduates

<i>Index Name</i>	<i>ISSE (2014) Overall</i>	<i>ISSE (2014) Universities</i>	<i>ISSE (2014) Institutes of Technology</i>	<i>ISSE (2014) Other Institutions</i>
Higher order thinking	.79	.76	.80	.82
General learning outcomes	.83	.81	.84	.84
General development outcomes	.83	.82	.83	.83
Career Readiness	.85	.85	.85	.86
Overall satisfaction	.79	.77	.80	.81

Table 4 Reliability Analysis of the Outcome Indices Overall and by Sub-Sectoral Level for Postgraduates

<i>Index Name</i>	<i>ISSE (2014) Overall</i>	<i>ISSE (2014) Universities</i>	<i>ISSE (2014) Institutes of Technology</i>	<i>ISSE (2014) Colleges of Education</i>
Higher order thinking	.82	.81	.86	.85
General learning outcomes	.85	.84	.87	.85
General development outcomes	.85	.84	.86	.84

Career Readiness	.89	.89	.87	.89
Overall satisfaction	.83	.82	.87	.82

Measurement Indices, Component Items and Intercorrelation Tables – ISSE 2014 data

Inter-Item Correlations and Corrected Item Total Correlation – Engagement Indices (Undergraduates Only)

Table 5 Inter-item Correlations and Corrected Item Total Correlation – Academic Challenge

	1	2	3	4	5	6	7	8	9	10	11	Corrected Item-Total Correlation
1. Worked harder than you thought you could to meet a teacher’s standards or expectations	1											.34
2. Analysing the basic elements of an idea, experience or theory	.18	1										.46
3. Organising ideas, information or experiences	.23	.52	1									.48
4. Making judgements about value of information, arguments or methods	.20	.47	.54	1								.48
5. Applying theories or concepts to practical problems or in new situations	.18	.45	.44	.45	1							.37
6. Number of assigned textbooks, books or book-length packs of subject readings	.17	.18	.19	.23	.09	1						.36
7. Number of written assignments of fewer than 1,000 words	.02	.04	.04	.02	.03	.03	1					.07
8. Number of written assignments of between	.15	.06	.10	.13	.03	.31	.12	1				.27

9.	1,000 and 5,000 words Number of written assignments of more than 5,000 words	.14	.03	.07	.08	.05	.12	.08	.37	1			.21
10.	Preparing for class	.23	.16	.15	.14	.10	.26	.04	.09	.24	1		.31
11.	Spending significant amounts of time on studying and on academic work	.19	.27	.23	.21	.21	.20	.03	.06	.05	.24	1	.34

Table 6 Inter-item Correlations and Corrected Item Total Correlation – Active Learning

	1	2	3	4	5	6	7	<i>Corrected Item-Total Correlation</i>
1. Asked questions or contributed to discussions in class or online	1							.30
2. Made a class or online presentation	.24	1						.40
3. Worked with other students on projects during class	.16	.32	1					.44
4. Worked with other students outside class to prepare assignments	.12	.27	.50	1				.42
5. Tutored or taught other university students (paid or voluntary)	.16	.13	.17	.18	1			.30
6. Participated in a community-based project (e.g. volunteering) as part of your study	.10	.15	.11	.12	.19	1		.24
7. Discussed ideas from your readings or classes with others outside class	.29	.23	.20	.20	.23	.23	1	.39

Table 7 Inter-item Correlations and Corrected Item Total Correlation – Student-staff Interactions

	1	2	3	4	5	6	<i>Corrected Item-Total Correlation</i>
1. Discussed your grades or assignments with teaching staff	1						.49
2. Talked about your career plans with teaching staff or advisors	.43	1					.52
3. Discussed ideas from your readings or classes with teaching staff outside class	.19	.16	1				.57
4. Received prompt written or oral feedback from teachers on academic performance	.35	.26	.18	1			.34
5. Worked with teaching staff on activities other than coursework	.26	.34	.16	.18	1		.40
6. Work on a research project with a staff member outside of coursework requirements	.09	.16	.05	.04	.17	1	.18

Table 8 Inter-item Correlations and Corrected Item Total Correlation – Enriching Educational Experiences

	1	2	3	4	5	6	7	8	9	10	11	12	Corrected Item-Total Correlation
1. Used an online learning system to discuss or complete an assignment	1												.12
2. Had conversations with students of a different ethnicity/background than your own	.10	1											.35
3. Had conversations with students who are very different in terms of religious beliefs, political opinions or personal values	.10	.69	1										.35
4. Internship, fieldwork or clinical placement	.06	.12	.11	1									.34
5. Study group or learning community	.07	.12	.13	.28	1								.38
6. Study a foreign language	.03	.14	.11	.14	.18	1							.33
7. Study abroad or student exchange	.01	.12	.09	.19	.16	.41	1						.34
8. Culminating final-year experience	.04	.06	.08	.19	.20	.16	.23	1					.31
9. Independent study or self-designed major	.02	.12	.13	.17	.25	.20	.19	.29	1				.34
10. Participating in extracurricular activities	.04	.06	.07	.09	.09	.07	.08	.07	.06	1			.15
11. Encouraging contact among students from different economic, social and ethnic backgrounds	.12	.27	.26	.13	.13	.07	.07	.03	.06	.08	1		.22
12. Community service or volunteer work	.06	.09	.18	.28	.27	.18	.17	.18	.20	.11	.07	1	.35

Table 9 Inter-item Correlations and Corrected Item Total Correlation – Supportive Learning Environment

	1	2	3	4	5	6		<i>Corrected Item-Total Correlation</i>
1. Relationships with other students	1							.40
2. Relationships with teaching staff	.40	1						.59
3. Relationships with administrative personnel and services	.28	.56	1					.49
4. Relationships with support services	.15	.12	.07	1				.16
5. Providing support to succeed academically	.23	.43	.33	.11	1			.51
6. Helping cope with non-academic responsibilities	.18	.29	.26	.12	.44	1		.46
7. Providing support to socialise	.23	.21	.21	.10	.38	.55	1	.41

Table 10 Inter-item Correlations and Corrected Item Total Correlation – Work Integrated Learning

		1	2	3	4	5		<i>Corrected Item-Total Correlation</i>
1. Blended academic learning with workplace experience		1						.50
2. Improved knowledge and skills that will contribute to employability		.28	1					.47
3. Explored how to apply learning in the workforce		.48	.54	1				.61
4. Industry placement or work experience		.30	.17	.26	1			.34
5. Acquiring job-related or work-related knowledge and skills		.37	.42	.47	.27	1		.52

Inter-Item Correlations and Corrected Item Total Correlation – Outcome Indices (Undergraduate Only)

Table 11 Inter-item Correlations and Corrected Item Total Correlation – Higher Order Thinking

	1	2	3	4	Corrected Item-Total Correlation
1. Analysing the basic elements of an idea, experience or theory	1				.60
2. Organising and synthesising ideas, information or experiences	.52	1			.63
3. Making judgements about value of information, arguments or methods	.48	.54	1		.61
4. Applying theories or concepts to practical problems or in new situations	.46	.45	.45	1	.55

Table 12 Inter-item Correlations and Corrected Item Total Correlation – General Learning Outcomes

	1	2	3	4	5	6	7	8	Corrected Item-Total Correlation
1. Acquiring job-related or work-related knowledge and skills	1								.44
2. Writing clearly and effectively	.36	1							.63
3. Speaking clearly and effectively	.39	.61	1						.68
4. Thinking critically and analytically	.33	.50	.50	1					.69
5. Analysing quantitative problems	.30	.36	.38	.59	1				.57
6. Using computing and information technology	.26	.27	.30	.32	.40	1			.50
7. Working effectively with others	.38	.34	.47	.38	.34	.42	1		.59
8. Learning effectively on your own	.26	.40	.38	.43	.34	.28	.35	1	.58

Table 13 Inter-item Correlations and Corrected Item Total Correlation – General Development Outcomes

	1	2	3	4	5	6	<i>Corrected Item-Total Correlation</i>
1. Voting in local, state or national elections	1						.41
2. Understanding yourself	.29	1					.61
3. Understanding people of other racial and ethnic backgrounds	.33	.55	1				.65
4. Solving complex real-world problems	.26	.41	.45	1			.56
5. Developing a personal code of values and ethics	.34	.57	.58	.53	1		.73
6. Contributing to the welfare of your community	.39	.48	.48	.43	.60	1	.63

Table 14 Inter-item Correlations and Corrected Item Total Correlation – Career Readiness

	1	2	3	4	5	<i>Corrected Item-Total Correlation</i>
1. Spent time keeping CV up-to-date	1					.61
2. Thought about how to present yourself to potential employers	.56	1				.69
3. Explored where to look for jobs relevant to your interests	.52	.65	1			.75
4. Used networking to source information on job opportunities	.50	.53	.65	1		.69
5. Set career development and plans	.41	.49	.55	.55	1	.61

Table 15 Inter-item Correlations and Corrected Item Total Correlation – Overall Satisfaction

	1	2	3	<i>Corrected Item-Total Correlation</i>
1. Quality of the academic advice received	1			.61
2. Entire educational experience	.64	1		.72
3. Attend same institution if starting over	.44	.58	1	.56