



English Language Support Initiative

Smarthinking Pilot Evaluation Report

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Smarthinking Pilot Summary

Implementation Method

- Smarthinking was piloted across Term 2 and Term 3 in 2019
- Two strategies were implemented:
 - 1) Embedding into courses (as a hurdle task or additional learning resource; contextualised)
 - 2) Open access through Student Academic and Career Success (SACS)

Faculty	Course Implementation		Distinct Students	Smarthinking Sessions		
	Hurdle Task	Additional Resource		Asynchronous Sessions	Synchronous Sessions	Total Sessions
Art & Design	-	2	7	12	0	12
Arts & Social Sciences	2	3	547	838	5	843
Built Environment	2	2	145	302	1	303
Business	-	2	17	21	0	21
Engineering	2	4	290	450	2	452
Law	1	-	44	91	0	91
Science	1	4	426	512	15	527
Open Access	-	1	245	386	36	422
Total	8	18	1712*	2612	59	2671

* The total may differ slightly from the sum of individual courses as there are overlaps between courses and Open Access.

Quality Assurance

- 295 random sessions (11%) have been inspected
- 18 cases of major issues identified and escalated to Pearson
 - 3 cases of content help
 - 4 cases of inaccurate comments on grammar
 - 11 cases of imposing American grammar on students
- 40 cases of minor issues identified relating to the use of American terminology when (e.g. 'period' instead of 'full stop') and suggestion of American grammar rules

Findings

- Smarthinking Specific
 - A survey is used where students are prompted to complete a survey after each Smarthinking session.
 - 19% response rate (504 / 2671 sessions)
 - 97% gave Smarthinking tutor feedback a positive rating (491 / 504)
 - 95% indicated they would recommend Smarthinking to a friend (477 / 504)

- Project Specific
 - A survey with open and close-ended questions were asked.
 - Quantitative
 - Qualtrics surveys were created and disseminated to students in T2 and T3 to gain further insight into their experience with Smarthinking
 - T3 survey contains new questions and, as such, the totals of the question items may differ.
 - 4% response rate (74) across both surveys
 - 82% found feedback from Smarthinking useful (53 / 65)
 - 83% felt supported by the availability of Smarthinking (54 / 65)
 - 69% felt confident about what they needed to do next in their assignment (45 / 65)
 - 50% applied Smarthinking feedback to the assignments of other courses (13 / 26)

- Qualitative

Students

- The majority of the feedback received was positive with students appreciating the availability of Smarthinking and understanding the value of feedback on their writing.
- Students also responded positively to their personalised feedback.
 - *“The feedback was given extremely quickly and was in depth. Smarthinking is a useful tool that I would like to use for all assignments going forward.”*
 - *“...the feedback was useful and not just generic and standard responses. The examples provided helped massively to explain what the points meant that you were making.”*
 - *“I really like that tutor gave me a logical structure and clear summary at the end. this tutor told me how to improve my essay and how to do better.”*
 - *“It was specific and constructive which allowed me to truly learn how to improve my writing that normal feedback from a tutor in a course would not.”*
- Negative feedback was received primarily in regard to the use of Smarthinking as a hurdle task, which was perceived as unnecessary work.
 - *“Sometimes the smarthinking markers do not have the certain knowledge about the course and so may give unhelpful and irrelevant advice/critique.”*
 - *“Largely not useful at all, and the addition of compulsory smarthinking assignment draft submissions was pointless and caused unnecessary stress.”*
 - *“This was a complete waste of time and made the course far more confusing than it had to be. This further frustrated me because submission in smarthinking was made mandatory. If this is ever done again, please make it non-mandatory.”*
 - *“This tool would probably be good for people who have trouble with structuring essays and writing. I don't have those issues and I didn't find the feedback useful at all, especially considering we had to submit our writing before the essays were actually finished. I only used it because it was compulsory to do so to pass my*

course. I wouldn't use it otherwise as it was just extra admin and a distraction for me.”

Teaching Staff

- *Generally good/useful feedback*
- *Smarthinking tutors were engaging, positive and personalised the feedback*
- *Enthusiastic/excited about Smarthinking next year*
- *Interested in using Smarthinking again*
- *Some feedback was redundant regarding comma splices*
- *Hurdle task process needs to be made easier*
- *Some students misunderstood their feedback*

Statistical Analysis

- Analyses were conducted to determine whether the use of Smarthinking has a statistically significant effect on the academic performance of students.
- However, changes to course content in response to UNSW3+ and issues with selection bias restricted the analysis to 2 courses only: CVEN9888 and CLIM1001.
- Once the approval of a Data Sharing Agreement with DVCA is obtained, other statistical analysis methods will be explored.
- Modelling a linear regression to control for selection bias will be included in future analyses.

CVEN9888	
Implementation Method	Hurdle task
Treatment Group	T2 2019 cohort – students who used Smarthinking (294)
Control Group	S1 2018 cohort – students who did not use Smarthinking (224)
Test	Mann-Whitney U-Test
Null Hypothesis	There is no statistically significant difference between the two groups
Conclusion	The p-value ($p < 0.001$) is less than the significant value of 0.05 and leads us to reject the null hypothesis that there is no difference between the distribution of the two treatments.

CLIM1001	
Implementation Method	Hurdle task
Treatment Group	T3 2019 cohort – students who used Smarthinking (303)
Control Group	T2 2018 cohort – students who did not use Smarthinking (195)
Test	Mann-Whitney U-Test
Null Hypothesis	There is no statistically significant difference between the two groups
Conclusion	The p-value ($p = 0.06$) is greater than the significant value of 0.05 and does not lead us to reject the null hypothesis.

1. Introduction

1.1. Report Purpose

The aim of this report is to evaluate the two Smarthinking pilots carried out in 2019. This will enable the English Language Support Initiative (ELSI) project team to identify strengths and weaknesses in strategies and approaches in implementing Smarthinking at UNSW. As a result, recommendations can be made to make improvements to the full implementation of Smarthinking.

1.2. Background

Smarthinking provides access to external online “tutoring” as part of the ELSI. It is a Pearson service and it offers online tutoring in over 150 subject areas; however, the project is using the writing subject only. Students can engage with a Smarthinking tutor to review their writing and receive personalised feedback on all aspects of writing mechanics including main ideas, the development of ideas, organisation and structure. Smarthinking tutors are instructed not to comment on content.

Smarthinking provides writing assistance that complements the academic language and learning support services currently available at UNSW. The main features and benefits of Smarthinking include:

- UNSW’s official online writing support
- 24/7 availability
- 90% of Smarthinking tutors have PhD or Master’s qualifications
- Offline ‘asynchronous’ feedback within 24 hours
- Online ‘synchronous’ one-on-one support
- Guidance and summary of next steps to take

Students can engage with a Smarthinking tutor either asynchronously or synchronously and there are a range of writing support options, each having a different focus. These are outlined in Table 1 below.

Session Type	Writing Type	Description
Asynchronous	Essay Centre	Comprehensive check of writing with 2 focus areas (e.g. idea development, organisation)
Asynchronous	Essay Centre (Extended)	Similar to Essay Centre but for submissions greater than 20 pages.
Asynchronous	Grammar & Documentation	Review covering all things related to grammar, mechanics and referencing.
Asynchronous	Paragraph Review	Review of submissions under 200 words.
Asynchronous	Ask a Question	Ask any question about writing.
Synchronous	Live Essay w/ Audio & Video	Real-time, one-on-one comprehensive check of a student's writing submission.
Synchronous	Writing (All Subjects) [incl. w/ Audio & Video]	Real-time, one-on-one assistance with any writing assessment or writing question from grammatical skills to brainstorming to citation.
Synchronous	Reading [incl. Audio & Video]	Real-time, one-on-one assistance for improving reading comprehension and reading skills.
Synchronous	Research and Documentation	Real-time, one-on-one assistance with finding information.

Table 1. Smarthinking writing types

The objectives of introducing Smarthinking to UNSW fall within the ELSI's goals to provide additional (supplementary) writing assistance to students. It targets students in first-year undergraduate and postgraduate courses across UNSW, as well as HDR students.

1.3. Outreach and Marketing Strategy

The marketing strategy for both pilots was implemented on a modest scale by advertising Smarthinking in the following media outlets:

- PVC(E) e-bulletin
- EF bulletin
- Yammer

In addition, the student-facing staff members of the former Learning Centre were also informed about Smarthinking and asked to disseminate this information to students. This was especially made known to and encouraged amongst those students who were on the waiting list to get access to face-to-face consultations with ALL facilitators.

2. Implementation Strategies

Smarthinking was piloted for the first time at UNSW in Term 2, 2019. It was made available through two implementation approaches:

- 1) Embedding in courses as either:
 - A hurdle task, or
 - An additional resource; and
- 2) Open access through the Student Academic and Career Success Unit (SACS) (formerly the Learning Centre).

2.1. Embedding Approach

To embed Smarthinking into individual courses, the ELSI team worked closely with academics in the following ways:

- identifying assessment tasks within individual courses that can benefit from Smarthinking feedback
- identifying key writing areas of the relevant assessments
- discussing common writing challenges faced by previous cohorts
- mapping how Smarthinking could help students achieve course learning outcomes.

A 'how-to' instructions PDF document for each course was created and made available to all students in the course on the Moodle course page. Teaching staff then decided whether to implement Smarthinking as a **hurdle task** or as an **optional resource**.

2.1.1. Hurdle Task

The use of Smarthinking as a hurdle task required students to submit their assessment drafts to Smarthinking and upload their feedback to Moodle before they could access the option to make their final submission in Turnitin. This was a non-graded task and the hurdle was set up using Moodle's in-built restriction functions with a soft deadline set to one week prior to the assessment due date.

2.1.2. Optional Resource

The optional resource implementation involved a more passive approach. Smarthinking was made available to students through their course but as an optional resource only.

Smarthinking was initially piloted in Term 2 in 9 select courses and continued in Term 3 with 16 different courses. Table 2 below lists the pilot courses and the associated implementation.

#	Term	Faculty	Course Code	Course Name	Implementation
1	Term 2	Arts & Social Sciences	ARTS2050/ ARTS5503	Academic Writing for the Humanities	Optional Resource
2	Term 2	Arts & Social Sciences	EDST1108	Indigenous Perspectives in Education	Optional Resource
3	Term 2	Built Environment	ARCH7220	Architecture and Urbanism in Asia	Hurdle Task
4	Term 2	Built Environment	ARCH7304	Architecture and the City	Optional Resource
5	Term 2	Built Environment	BLDG1023	Construction Project Management Theory	Optional Resource
6	Term 2	Business	ECON1203	Business and Economic Statistics	Optional Resource
7	Term 2	Business	INFS1602	Digital Transformation in Business	Optional Resource
8	Term 2	Engineering	CVEN9888	Environmental Management (incl. Distance)	Hurdle Task
9	Term 2	Science	BABS1202	Applied Biomolecular Sciences	Optional Resource
10	Term 3	Art & Design	DART1301/ SAHT9204	Histories of Contemporary Art: Part 2	Optional Resource
11	Term 3	Art & Design	SAHT9310	Exhibiting Cultures	Optional Resource
12	Term 3	Arts & Social Sciences	ARTS1091	Media, Society, Politics	Hurdle Task
13	Term 3	Arts & Social Sciences	MDIA5022	Corporate and Interpersonal Communication	Hurdle Task
14	Term 3	Arts & Social Sciences	HUMS1005/ ARTS5505	Personalised English Language Enhancement	Optional Resource
15	Term 3	Built Environment	ARCH7216	Designing Diversity: Architecture and Urbanism in a Multicultural Context	Hurdle Task
16	Term 3	Engineering	CEIC4951/ CEIC9951	Research Thesis A	Hurdle Task
17	Term 3	Engineering	CEIC4952/ CEIC9952	Research Thesis B	Optional Resource
18	Term 3	Engineering	CEIC4953/ CEIC9953	Research Thesis C	Optional Resource
19	Term 3	Engineering	ENGG1000	Engineering Design	Optional Resource
20	Term 3	Engineering	GSOE9010	Engineering Postgraduate Coursework Research Skills	Optional Resource
21	Term 3	Law	JURD7829	Legal Writing in Context	Hurdle Task
22	Term 3	Science	CLIM1001	Introduction to Climate Change	Hurdle Task
23	Term 3	Science	PSYC1022	Psychology of Addiction	Optional Resource
24	Term 3	Science	PSYC1027	Forensic Psychology: Crimes, Courts and Corrections	Optional Resource
25	Term 3	Science	PSYC1111	Measuring Mind and Behaviour	Optional Resource

Table 2: List of all the courses that participated in Pilots 1 and 2 and how they implemented Smarthinking

2.2. Open Access

Smarthinking was also made available via the Smarthinking Moodle page for SACS. This was set up for students who did not have access to Smarthinking via a course, particularly higher degree research students.

A [dedicated webpage](#) on the Current Students website has been set up to house general information about Smarthinking and the link to the Moodle page. Students self-enrol into the Moodle course using a provided key and are prompted to complete a general survey about their degree, first language and other general questions about their study. Once the survey is completed, they will be automatically granted access to Smarthinking.

Students were given three hours of Smarthinking per term as part of the open access. This was to reflect the amount of time students received if they were to have consultations with the Academic Language and Learning (ALL) Facilitators. As the three hours are linked to the Moodle page ID, a new Moodle page has to be set up every term so that the number of Smarthinking hours available is reset.

3. Quality Assurance Mechanisms

Both the ELSI team and Pearson have quality assurance mechanisms in place. This is to ensure that the quality of Smarthinking tutors and their feedback are maintained, consistent and do not breach the standards guaranteed by Pearson and required by the ELSI team.

Details of the quality assurance mechanisms can be found in the appended 'Quality Assurance – Mechanisms' document. The findings of these checks are summarised in the following section.

3.1. ELSI Random Quality Assurance Inspection Findings

Random quality assurance inspections (RQAI) of tutor feedback were conducted throughout the pilot phase. Following an evaluation of Term 2, the percentage of sessions to inspect was reviewed and reduced from 15% to 10% in response to an increasingly unmanageable number of sessions to check.

Table 9 below lists the number of Smarthinking sessions that were checked per term and the number of issues identified. Specific details about each RQAI can be found in [Appendix C](#).

Term	Total Smarthinking Sessions	RQI: Sessions Checked	Major Issues	Minor Issues
Term 2	738	122	9	15
Term 3	1565	29	9	25
	2303	295	18	40

Table 9. Quality assurance inspections data

3.1.1. Issues

The RQAI conducted across the pilot phase has inspected a total of 295 sessions and identified 58 issues of which 40 are minor issues and 18 are major issues. These are preliminary figures as the final two RQI for Term 3, 2019 have not been completed due to a Smarthinking system upgrade that had unknowingly removed the project team’s authorisation to view Smarthinking tutor feedback.

Minor issues are those that affect the quality of the feedback to a small degree but do not breach the quality standards set by Pearson or UNSW. The 40 minor issues identified in the pilot phases relate to the use of American terminology when referring to punctuation (e.g. ‘period’ vs. ‘full stop’) and the recommendation of American grammar rules (e.g. Oxford comma).

On the other hand, major issues are any breaches of quality standards. The major issues identified in the pilot phase include 11 impositions of American grammar rules, 1 inaccurate suggestion about tenses for reporting verbs, 3 inaccurate comments on the reflection text type, and 3 cases of Smarthinking tutors providing content help. One tutor provided too much help by writing out an abstract for the students with gapped words, while another two modelled sample sentences on the same topic. Further spot checks performed by UNSW tutors in ARCH7220 outside of the RQAI revealed feedback that gave help defining the assignment keyword, ‘urbanism’. This was deemed to be ‘content help’ by the course lecturer and subsequently flagged as a major issue.

All issues have been escalated to Pearson and their Smarthinking Head of Writing & Humanities. Pearson is committed to quality assurance and this has been reflected in the reduction in the number of sessions flagged as an issue in the RQAI as well as the termination of employment, pending further training, of a Smarthinking tutor who had written an abstract with gapped words.

The complete log of issues can be found in [Appendix D](#).

3.2. Pearson Statement of Evaluation

It was agreed between Pearson's UNSW account manager and the ELSI team that an official statement summarising the results of their quality control check be made available to the project team at the completion of each quarterly evaluation (April, July and December).

The statements will include:

- High level results of the evaluation;
- Number of tutors who were evaluated;
- Number of tutors who did not achieve satisfactory evaluations;
- Areas for which tutors did not achieve satisfactory evaluations (e.g. poor feedback, customer service, content help);
- Remedial action required of tutors to address non-satisfactory evaluations; and
- Timeframe for when the identified tutors are re-evaluated or spot checked.

Evaluations are conducted across all Smarthinking tutors and cannot be limited to the tutors who interact with UNSW students only.

The quarterly Statement of Evaluation detailing the internal quality control reviews performed by Pearson was received for the summer and autumn quarters.

The summer quarter reviewed 502 sessions and 17 tutors were identified as requiring specific feedback regarding quality. Professional development in the form of 3-6 hours of re-training was further required of 11 of the 17 tutors. The autumn quarter reviewed 534 sessions and identified 0 tutors requiring specific feedback. Professional development was provided to 23 tutors of which 10 were new staff.

4. Findings

4.1. Purpose of the Pilots

Two Smarthinking pilots were conducted in Term 2 and Term 3 2019. The purpose of both pilots was not only to test the service, but also to test the strategies for and approaches to its implementation at UNSW. Through the pilot phases, the ELSI has had the opportunity to gain insights into best practice implementation approaches with regard to using Smarthinking, as well as identify the strengths and weaknesses of the initial strategies. These are outlined in section 6 of this report.

4.2. User Profile

4.2.1. Open Access Users

The profile of a typical student who accesses Smarthinking through the open access option is:

- Studying a Bachelor or Master's by coursework degree;
- An international student;
- In their first year at UNSW; and
- Found out about Smarthinking through the UNSW website or through their lecturer/tutor.

The responses are similar between Term 2 and Term 3 with the only notable difference being how students heard about Smarthinking. A significantly larger number of students have received a recommendation to use Smarthinking from academics, rather than from ALL facilitators. This may be driven by the increased awareness of Smarthinking among faculties with each passing term.

The results are detailed in the heatmap Table 3 below.

	2019 Term 2	%	2019 Term 3	%	Pilot Total	%
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Students	79	16%	419	84%	498	100%
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Degree						
Diploma	2	3%	5	1%	7	1%
Bachelor	42	53%	195	47%	237	48%
Postgraduate Diploma	5	6%	25	6%	30	6%
Masters by Coursework	16	20%	138	33%	154	31%
Masters by Research	0		7	2%	7	1%
Doctorate	0		6	1%	6	1%
PhD	14	18%	43	10%	57	11%
Total	79		419		498	

Residency						
International	48	61%	293	70%	341	68%
Non-International	31	39%	126	30%	157	32%
Total	79		419		498	

Program Stage						
1st Year	41	52%	231	55%	272	55%
2nd Year	18	23%	99	24%	117	23%
3rd Year	13	16%	65	16%	78	16%
4th Year	6	8%	21	5%	27	5%

5th Year	1	1%	3	1%	4	1%
Total	79		419		498	

How did you hear about Smarthinking?						
I came across it on the UNSW website	23	30%	139	33%	162	33%
Through The Learning Centre	24	31%	48	11%	72	14%
Through my lecturer/tutor	18	23%	120	29%	138	28%
Through a friend	7	9%	38	9%	45	9%
Other	5	6%	74	18%	79	16%
Total	77		419		496	

Table 3. Smarthinking user profile

4.2.2. Embedded Course Users

The entire pilot phase saw a total of 1709 distinct students engage in 2664 Smarthinking sessions of which 2605 were asynchronous ‘offline’ sessions and 59 were synchronous ‘online’ sessions.

In Term 2 alone, 426 students engaged in 726 asynchronous and 12 synchronous sessions. UNSW Engineering contributed the highest number of sessions with 237 sessions (32%) followed by UNSW Built Environment with 234 (32%). This was within expectation as CVEN9888 and ARCH7126 were the only courses that embedded Smarthinking as hurdle tasks in Term 2.

In Term 3, 1300 students engaged in 1879 asynchronous and 47 synchronous sessions. The Faculty of Arts & Social Sciences had the highest number of sessions with 775 (40%) followed by Science with 402 (21%). The high volume and disparity between the faculty engagement was driven by the high number of students in ARTS1091 (482 students), and both ARTS1091 and MDIA5022 embedding Smarthinking as hurdle tasks.

The usage statistics are detailed in the heatmap Table 4 below. “UNSW Smarthinking” refers to the open access implementation.

Faculty	Courses	Asynchronous Sessions	Synchronous Sessions	Total Sessions	Distinct Students
Term 2					
Art & Design	0	0	0	0	0
Arts & Social Sciences	2	63	2	65	38
Built Environment	3	233	1	234	106
Business	2	18	0	18	14
Engineering	1	237	0	237	128
Law	0	0	0	0	0

Science	1	120	5	125	102
UNSW Smarthinking	1	55	4	59	38
Sub Total	9	726	12	738	426
Term 3					
Art & Design	2	12	0	12	7
Arts & Social Sciences	3	775	3	778	510
Built Environment	1	69	0	69	47
Business	0	3	0	3	3
Engineering	5	213	2	215	166
Law	1	91	0	91	44
Science	4	392	10	402	326
UNSW Smarthinking	1	324	32	356	204
Sub Total	17	1879	47	1926	1307
Pilot Total	26	2605	59	2664	1719*
* The total may differ slightly from the sum of individual courses as there are overlaps between courses and Open Access.					

Table 4. Smarthinking session types and numbers across UNSW

4.3. Writing Type Profile

The Essay Centre writing type provides the most comprehensive review and had the highest engagement with 1828 sessions. This was followed by Grammar & Documentation Review with 373 sessions and Paragraph Submission with 308 sessions. The large disparity in the engagement levels of the different writing types is expected and can be attributed to the strategic decision to list the Essay Centre as the recommended writing type when customising the use of Smarthinking to courses. Table 5 below lists the writing types and the respective sessions.

Session Type	Writing Type	Term 2	Term 3	Total Sessions
Asynchronous	Essay Centre	590	1237	1827
Asynchronous	Grammar & Documentation	81	292	373
Asynchronous	Paragraph Submission	36	272	308
Asynchronous	Essay Centre (Extended)		82	82
Synchronous	Writing (All Subjects)	11	23	34
Synchronous	Writing (All Subjects) w/ Audio & Video	1	16	17
Asynchronous	Ask a Question	5	9	14
Synchronous	Live Essay w/ Audio & Video		7	7
Synchronous	Reading w/ Audio & Video		1	1
Asynchronous	Research and Documentation		1	1

Table 5. Smarthinking sessions by writing type

4.4. Usage Profile

Students engaged with Smarthinking predominantly on weekdays with 2169 sessions (81%) occurring between Monday to Friday and 495 sessions (19%) occurring on the weekend (see Table 6 below).

Albeit comparatively low, the engagement on the weekend reveals that students are seeking support services outside of university office hours.

Day	Asynchronous Sessions	Synchronous Sessions	Total
Monday	375	13	388
Tuesday	407	7	414
Wednesday	383	6	389
Thursday	465	23	488
Friday	486	4	490
Saturday	247	2	249
Sunday	242	4	246

Table 6. Smarthinking usage by days in the week

The 24/7 availability of Smarthinking and its capacity to deliver support to students outside of university hours is reinforced when the engagement is analysed at the hourly level. As the graph below illustrates (Figure 1), there were 1400 sessions (59%) outside of office hours between 6pm-9am as opposed to 1094 sessions (41%) during office hours 9-6pm.

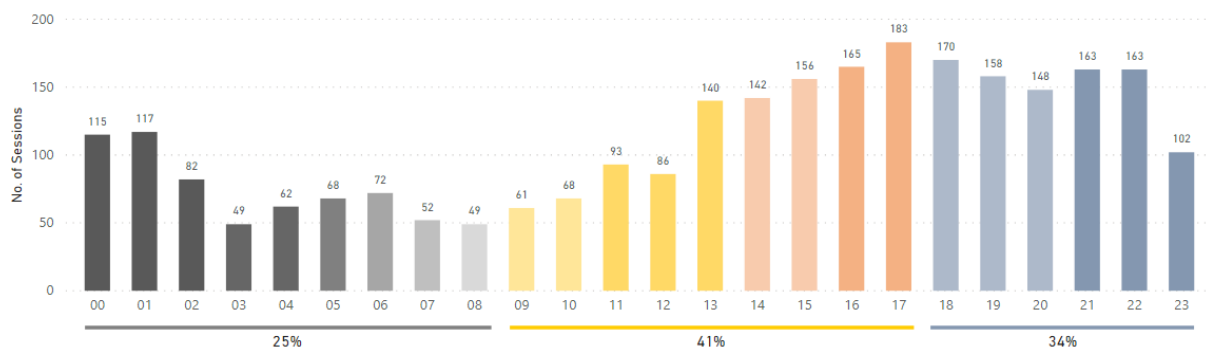


Figure 1. Smarthinking usage by hours in the day

4.5. Experience with Smarthinking

Two types of surveys were used to collect data on students' experience with using Smarthinking. One of them is Smarthinking specific and the other one is a Project specific survey. The Smarthinking specific survey is part of Smarthinking itself, whereas the other one was created by the ELSI team and distributed to both students and academics at the end of each pilot.

4.5.1. Smarthinking Specific

This survey is part of Smarthinking and is inbuilt within the platform. Students are asked to respond to a voluntary four-question survey about their experience with Smarthinking at the conclusion of each session.

The questions are:

- 1) Rate the feedback you received from your tutor. (1-5 Scale, 5 is the best)
- 2) Rate the technology (5 is the best)
- 3) Would you recommend Smarthinking to a friend?
- 4) Any other comments about your experience?

The survey responses indicate that students had an overwhelmingly positive experience with Smarthinking in the pilot phase. A total of 504 survey responses were recorded with 491 responses (97%) rating their tutor feedback positively and 477 responses (95%) indicating that they would recommend Smarthinking to a friend. Students were also given the opportunity to provide qualitative feedback on their experience which would shape the way Smarthinking is used in future terms (see Figure 2 below). The complete list of positive and negative qualitative feedback and the associated ratings are listed in [Appendix A](#).

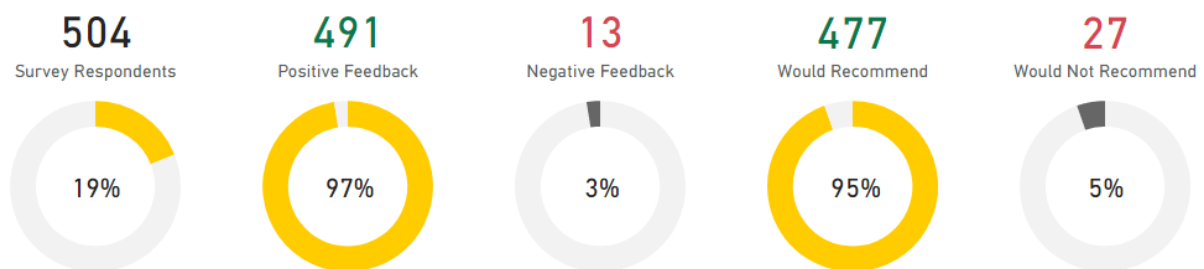


Figure 2. Overall feedback data

4.5.2. Project Specific

In addition to the four survey questions built into Smarthinking, the ELSI team created a survey to capture students' experiences of Smarthinking in greater detail and to relate this aspect of Smarthinking implementation to the project KPIs.

The survey was created in Qualtrics, which allowed the creation of logic paths to capture students who used Smarthinking in either select courses or through open access in a single survey. There were 15 question items and students rated statements about Smarthinking on the five-point Likert scale, with 1-2 being negative, 3 being neutral, and 4-5 being positive. The surveys were made available to students as an announcement on the Moodle pages of courses that had access to Smarthinking.

In Term 2, a total of 54 student responses were recorded. However, only 44 were completed to the end. 39 responses indicated they used Smarthinking of which 36 were through their course and 3 were through The Learning Centre. 5 students did not use Smarthinking.

In Term 3, the Qualtrics survey introduced two additional questions centred around the transfer of writing skills learnt from Smarthinking feedback.

- 1) *I applied Smarthinking feedback to other areas of this course.*
- 2) *I applied the feedback from Smarthinking in the assignments of my other courses.*

A term total of 43 student responses (4%) were recorded of which only 30 were completed to the end. 26 responses indicated they used Smarthinking through their course with the remaining 4 indicating that they did not use Smarthinking.

4.5.2.1. Quantitative results

Students

Across the pilot phase, there was a strong positive reaction to Smarthinking with most survey responses indicating a positive experience with Smarthinking (see Table 7 below):

- 82% students found the feedback from Smarthinking useful (53)
- 80% students found the feedback helped their assignments (52)
- 83% students felt supported by the availability of Smarthinking (54)
- 82% students would consider using Smarthinking next term (53)
- 50% students applied their Smarthinking feedback to other areas of the course (13)
- 50% students applied their Smarthinking feedback to assignments of their other courses (13)

The 5 students who indicated they did not use Smarthinking were prompted to provide reason as to why they did not use Smarthinking. Students could provide more than one reason.

- 1) "I forgot about it." (4)
- 2) "It did not seem useful." (2)
- 3) "I did not have time." (3)
- 4) "I did not know how to use it." (1)

The list of question items and corresponding term responses categorised by negative and positive can be found in [Appendix B.1.](#)

Question Item	Pilot Total		
	Negative	Neutral	Positive
The Smarthinking tutor understood my questions & concerns.	6 (9%)	12 (18%)	47 (72%)
The Smarthinking feedback was useful.	7 (11%)	5 (8%)	53 (82%)
I felt supported by the availability of Smarthinking.	5 (8%)	2 (3%)	54 (83%)
I felt confident about what I needed to do next in my assignment.	5 (8%)	5 (8%)	45 (69%)
I felt the amount of Smarthinking time was adequate.	12 (18%)	9 (14%)	39 (60%)
I would recommend Smarthinking to my friends. (Yes/No)	7 (11%)		47 (72%)
Would you consider using Smarthinking next term? (Yes/No)	10 (15%)		53 (82%)
If given the option, would you like to see Smarthinking be used in your courses?	2 (8%)	22 (85%)	22 (85%)
Smarthinking helped me in my assignments.	11 (17%)	5 (8%)	52 (80%)
Smarthinking helped me in my interaction with my peers.	16 (25%)	27 (42%)	23 (35%)
Smarthinking helped me in my interaction with my course lecturers/tutors.	12 (18%)	23 (35%)	30 (46%)
I applied Smarthinking feedback to other areas of this course.	6 (23%)	6 (9%)	13 (50%)
I applied the feedback from Smarthinking in the assignments of my other courses.	0 (0%)	7 (11%)	13 (50%)


 Grey refers to question items that were introduced in the Term 3 survey.

Table 7. Response type percentage by question item (students)

Academics

A similar survey was sent to academics of courses that implemented Smarthinking; however, there was low uptake and only 7 survey responses were completed. The list of question items and corresponding term are detailed in Table 8 below.

The list of question items and corresponding term responses categorised by negative and positive can be found in [Appendix B.2.](#)

Question Item	Pilot Total		
	Negative	Neutral	Positive
My students found the feedback from Smarthinking helpful.	1 (14%)	1 (14%)	0 (72%)
My students feel supported by the availability of Smarthinking.	1 (14%)	3 (43%)	3 (43%)
My students felt confident in their writing.	0 (0%)	1 (14%)	1 (14%)
Overall, my students had a positive experience with Smarthinking.	1 (14%)	1 (14%)	0 (0%)
Would you consider using Smarthinking next term? / I would use Smarthinking in my course again. (Yes/Unsure/No)	1 (14%)	2 (29%)	4 (57%)
I would recommend Smarthinking to my colleagues. (Yes/Unsure/No)	1 (14%)	2 (29%)	4 (57%)
Smarthinking has benefited my students' assignments.	0 (0%)	2 (29%)	3 (43%)
Smarthinking has benefited my students in their interaction with their peers.	1 (14%)	3 (43%)	0 (0%)
Smarthinking has benefited my students in their interaction with myself and my colleagues.	0 (0%)	3 (43%)	2 (29%)
There was an improvement in the writing of the students between the beginning of the course and the end of the course.	1 (14%)	0 (0%)	1 (14%)
There was an improvement in the writing of the students this term compared to previous cohorts.	1 (14%)	1 (14%)	0 (0%)

Grey refers to question items that were introduced in the Term 3 survey.

Table 8. Response type percentage by question item (academics)

4.5.2.2. Qualitative results

Students

The majority of the feedback received was positive with students appreciating the availability of Smarthinking and understanding the value of feedback on their writing. Students also responded positively to their personalised feedback:

- *"The feedback was given extremely quickly and was in depth. Smarthinking is a useful tool that I would like to use for all assignments going forward."*
- *"...the feedback was useful and not just generic and standard responses. The examples provided helped massively to explain what the points meant that you were making."*
- *"I really like that tutor gave me a logical structure and clear summary at the end. this tutor told me how to improve my essay and how to do better."*

- *“It was specific and constructive which allowed me to truly learn how to improve my writing that normal feedback from a tutor in a course would not.”*

Negative feedback was received primarily in regard to the use of Smarthinking as a hurdle task, which was perceived as unnecessary work:

- *“Sometimes the smarthinking markers do not have the certain knowledge about the course and so may give unhelpful and irrelevant advice/critique.”*
- *“Largely not useful at all, and the addition of compulsory smarthinking assignment draft submissions was pointless and caused unnecessary stress.”*
- *“This was a complete waste of time and made the course far more confusing than it had to be. This further frustrated me because submission in smartthinking was made mandatory. If this is ever done again, please make it non-mandatory.”*
- *“This tool would probably be good for people who have trouble with structuring essays and writing. I don't have those issues and I didn't find the feedback useful at all, especially considering we had to submit our writing before the essays were actually finished. I only used it because it was compulsory to do so to pass my course. I wouldn't use it otherwise as it was just extra admin and a distraction for me.”*

Academics

There was a low survey response rate from academics; however, there were anecdotal observations from academics during end-of-term touch-base meetings. These attested to the positive benefits of Smarthinking to students and commenting on the pitfalls of Smarthinking in relation to their course. The observations have been summarised below.

- + Generally good/ useful feedback
- + Students received good advice particularly on concluding sentences
- + The feedback was personalised to the student
- + Enthusiastic/excited about Smarthinking next year
- + Interested in using Smarthinking again
- + Smarthinking tutors were engaging, positive and personalised the feedback
- Some feedback was redundant regarding comma splices
- Hurdle task process needs to be made easier
- It would be great if the amount of text on Moodle was reduced
- Some students misunderstood their feedback

- Some academics were cynical about the service

The feedback has been taken into account in the 2020 implementation, particularly in regard to how students interact with Smarthinking.

4.6. Impact Assessment

4.6.1. Method

Statistical analysis through the Mann-Whitney U-Test and Student's t-Test were used as a method to assess the impact of Smarthinking on student academic performance by comparing the assessment marks of those who used Smarthinking against those who did not use Smarthinking. A significant difference would lead us to accept the hypothesis that using Smarthinking has an impact on student academic performance for assessments. The assessment mark was chosen over the final course grade as Smarthinking was customised to specific assessments in course. The assessment mark provides a more accurate indication of the impact of using Smarthinking.

A linear regression model was used to accommodate selection bias and create a clearer picture on the impact of Smarthinking, while taking into account student demographical factors (domestic/international status, gender).

4.6.2. Courses

Smarthinking is integrated with Moodle via learning tools interoperability which transfers student and course identifiers (zID and course code) from Moodle to the Smarthinking platform. This allows the project team to track Smarthinking engagement by student and categorise each student into either the treatment group (used Smarthinking) or control group (did not use Smarthinking).

The statistical analysis for each course will be dependent on the implementation method of Smarthinking. For courses that embedded Smarthinking as a hurdle task, the current cohort will be categorised as the treatment group and compared against the previous cohort, the control group. However, the transition to UNSW 3+ has introduced changes to course content and assessment requirements in response to shorter teaching periods and only courses that have not changed significantly between the semester and the trimester versions will be included in the analysis.

Courses that used Smarthinking as an additional resource can result in self-selection bias where students who used Smarthinking are already high-performing students and more likely to access learning support resources. As such, a linear regression will be run to control self-selection bias and measure the extent of Smarthinking usage on assessment marks while taking into account the student's prior performance. Unfortunately, a Data Sharing Agreement was not drawn up in time for Term 3 and the regression will be run on students from Term 1, 2020 onwards. The regression model will be:

$$y = B_0 + B_1x_1 + B_2x_2 + e$$

where y = assessment mark

x_1 = WAM up until the current term

x_2 = Smarthinking usage (binary)

The courses that have been included in the analysis are CVEN9888, CLIM1001, MDIA5022 and ARCH7216. Although there is selection bias, BABS1202 has also been included as the lecturer has anecdotally reported an increase in the number of students achieving an overall HD course mark.

4.6.3. CVEN9888 Environmental Management

Sample Description

CVEN9888 is a Civil Engineering postgraduate course that was offered through face-to-face and distance learning in Term 2, 2019 and previously in Semester 1, 2018. In Term 2, 213 students were enrolled into the face-to-face stream with 81 students in the distance delivery stream. Smarthinking was embedded as a hurdle task in Term 2 and students were required to submit a draft of their Ecological Footprint assignment to Smarthinking before they could access the final submission option via Turnitin.

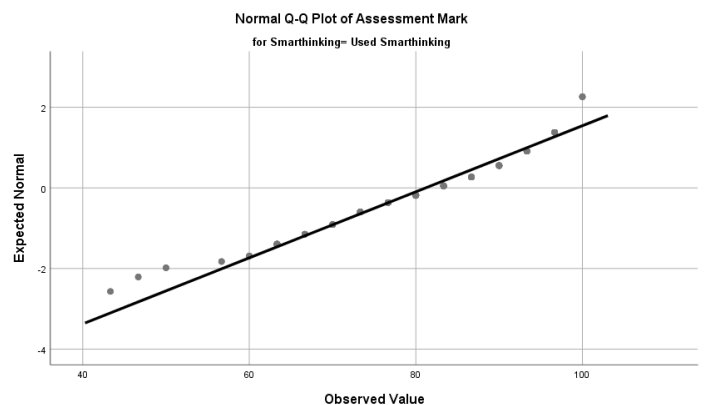
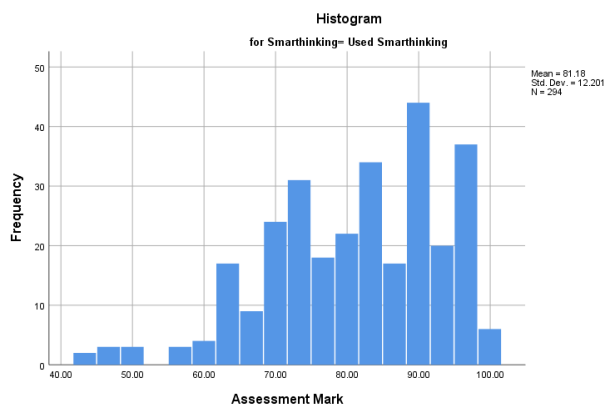
The trimester and semester versions of the course were compared. They are similar in course content, assessment and course requirements, marking criteria and rubrics, and teaching. As a result, they were included in the analysis. Students enrolled in Term 2, 2019 are categorised as the treatment group ($n = 294$) while students enrolled in the Semester 1, 2018 version are the control group ($n = 224$).

Descriptive Statistics

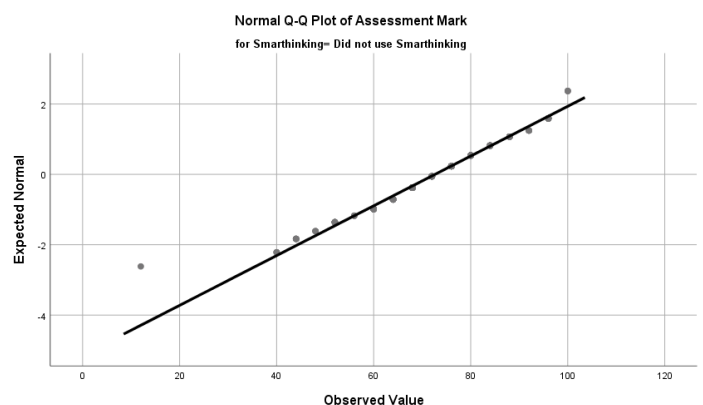
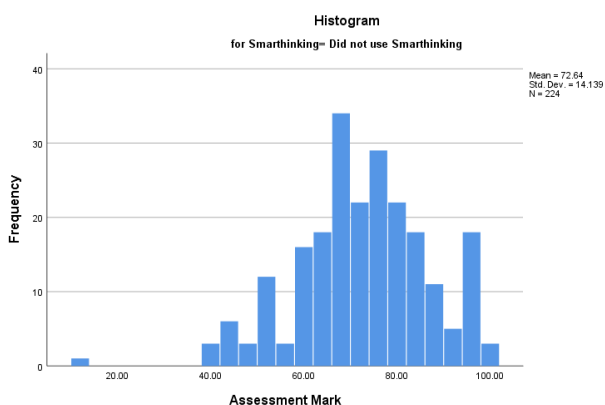
CVEN9888	n	Mean	Median	Standard Deviation
Used Smarthinking	294	81.179	83.330	12.201
Did not use Smarthinking	224	72.643	72.000	14.139

The assessment marks were standardised to 100 and a Shapiro-Wilk's test was run to test for normality. The test revealed that the assessment marks of both groups are not normally distributed ($p < 0.001$) and violated the assumption of normality.

The descriptive statistics and histogram of the treatment group (skewness = -0.629, SE = 0.142, Z-Score = -4.429) corroborates the violation and highlights a negatively skewed distribution. However, the Q-Q plot shows a distribution that is clustered along the straight line and suggests that the sample data is normally distributed.



The descriptives of the control group (skewness = -0.443, SE = 0.163, Z-Score = -2.718) and histogram depict an approximately normal distribution. The Q-Q plot for the control group reinforces this with a distribution clustered along the straight line.



More details about the descriptive statistics can be found under [Appendix E](#).

Statistical Tests

As the sample distribution for the treatment group was found to be not normal, a nonparametric test using the Mann-Whitney U-Test was run on the two groups. The hypotheses were:

H_0 : There is no statistically significant difference between the two groups.

H_a : There is a statistically significant difference between the two groups.

Test Statistics^a

	Assessment Mark
Mann-Whitney U	20952.000
Wilcoxon W	46152.000
Z	-7.107
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Smarthinking

The p-value ($p < 0.001$) is less than the significant value of 0.05 and leads us to reject the null hypothesis that there is no difference between the distribution of the two treatments. This shows that the assessment marks of students who used Smarthinking are statistically significantly greater than students who did not.

As the histograms and Q-Q plots indicate an approximate normal distribution, an independent samples Student's t-Test was also run. It rejected the null hypothesis that there is no difference in the means between the two groups ($p < 0.001$).

		t-test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Assessment Mark	Equal variances assumed	-7.362	516	.000	-8.53609	1.15949	-10.81400	-6.25818
	Equal variances not assumed	-7.217	440.024	.000	-8.53609	1.18270	-10.86054	-6.21164

For CVEN9888, we conclude that there is a difference between students who used and those who did not use Smarthinking.

4.6.4. CLIM1001 Introduction to Climate Change

Sample Description

CLIM1001 is a Biological, Earth and Environmental Sciences general education course offered in Term 2 and Term 3 in 2019. Smarthinking was embedded as a hurdle task in Term 3 and students were required to submit their draft of their Individual Peer Review Reflection Piece assessment to Smarthinking before they could access the final submission option via Turnitin.

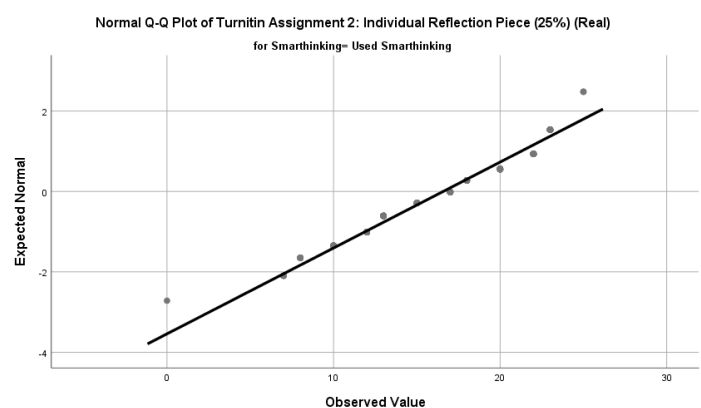
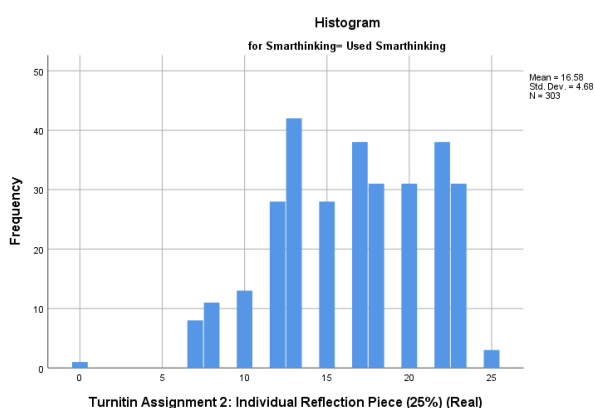
Students enrolled in Term 3 are categorised as the treatment group (n = 303) while students in Term 2 are the control group (n = 195).

Descriptive Statistics

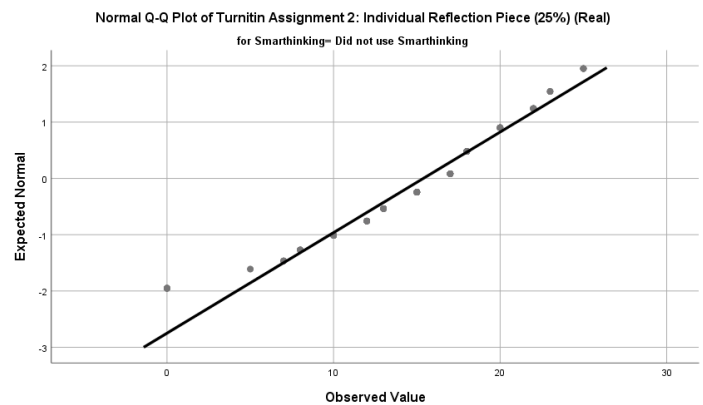
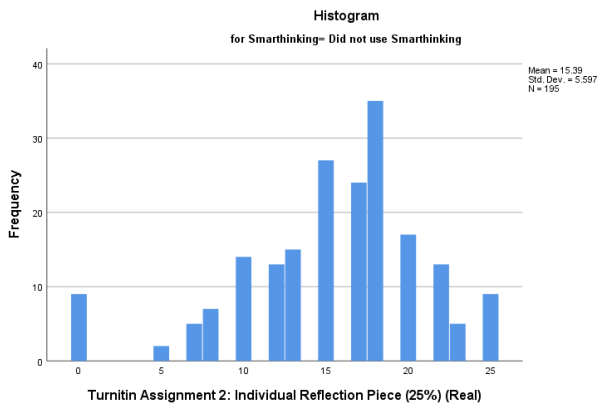
CLIM1001	n	Mean	Median	Standard Deviation
Used Smarthinking	303	16.580	17.000	4.680
Did not use Smarthinking	195	15.390	17.000	5.597

Similar to CVEN9888, a Shapiro-Wilk's test was run to test for normality and revealed that the assessment marks of both groups were not normally distributed ($p < 0.001$) and violated the assumption of normality.

The descriptive statistics of the treatment group (skewness = -0.312, SE = 0.140, Z-Score = -2.229) corroborates the violation and highlights a negatively skewed distribution. However, the histogram shows a relatively normal distribution and the Q-Q plot shows data points that are clustered along the straight line, suggesting that the sample data is normally distributed.



The descriptives of the control group (skewness = -0.814, SE = 0.174, Z-Score = -4.678) and histogram also depict an approximately normal distribution. The Q-Q plot reinforces this with a distribution clustered along the straight line.



More details about the descriptive statistics can be found under [Appendix F](#).

Statistical Tests

A nonparametric test using the Mann-Whitney U-Test was also run on the two groups in CLIM1001 under the same hypotheses.

H_0 : There is no statistically significant difference between the two groups.

H_a : There is a statistically significant difference between the two groups.

Test Statistics^a

	Assessment Mark
Mann-Whitney U	26611.000
Wilcoxon W	45721.000
Z	-1.880
Asymp. Sig. (2-tailed)	0.060

a. Grouping Variable: Smarthinking

The p-value ($p = 0.06$) is greater than the significant value of 0.05 and does not lead us to reject the null hypothesis.

As the histograms and Q-Q plots indicate an approximate normal distribution, an independent samples Student's t-Test was also run. It rejected the null hypothesis that there is no difference in the means between the two groups ($p = 0.014$).

		t-test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Assessment Mark	Equal variances assumed	-2.565	496	.011	-1.191	.464	-2.104	-.279
	Equal variances not assumed	-2.468	360.923	.014	-1.191	.483	-2.140	-.242

With the data we currently have for CLIM1001, we cannot conclude that there is a difference between students who used and did not use Smarthinking.

4.6.4. MDIA5022 Corporate Interpersonal Communication

Sample Description

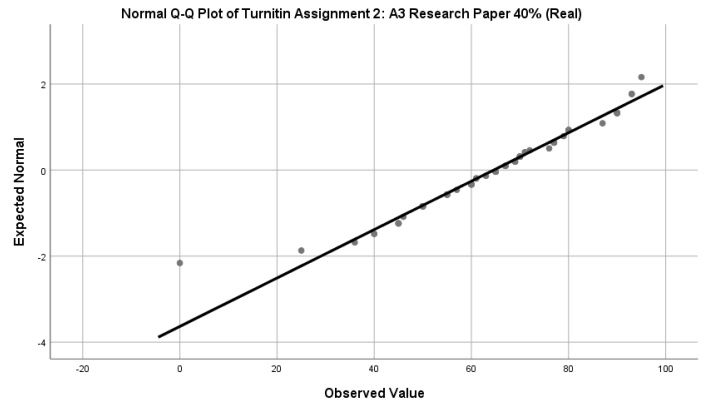
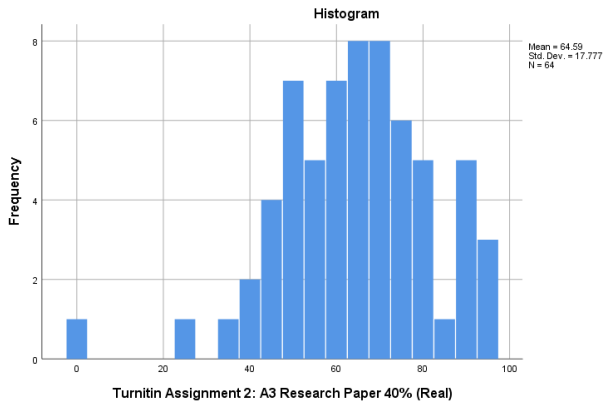
MDIA5022 is a School of Arts & Media postgraduate course offered in Term 3, 2019 and previously in Semester 2, 2018. Smarthinking was embedded as a hurdle task in Term 3 for the Annotated Bibliography assessment and Research Paper assessment. However, the Annotated Bibliography was one part of a larger group project and its individual mark is not available. Therefore, the Annotated Bibliography has not been taken into consideration in the statistical analysis. Only the Research Paper assessment was considered for this analysis.

Students who took MDIA5022 in Term 3 are categorised as the treatment group (n = 64) and students in Semester 2 as the control group (n = 142).

Descriptive Statistics

MDIA5022	n	Mean	Median	Standard Deviation
Used Smarthinking	64	64.590	65.000	17.777
Did not use Smarthinking	142	-	-	-

A Shapiro-Wilks test was run and reveals that the treatment group is not normally distributed (p = 0.027). The skewness ((skewness = -0.708, SE = 0.299, Z-Score = -2.368) corroborates this; however, the Q-Q plot results and histogram show an approximately normal distribution.



The assessment marks for Semester 2 have not been received and hence further analysis cannot be performed.

More details about the descriptive statistics can be found under [Appendix G](#).

4.6.5. ARCH7216 Designing Diversity

Sample Description

ARCH7216 is an Architecture postgraduate course offered in Term 3, 2019 and previously in Semester 1, 2018. Smarthinking was embedded as a hurdle task in Term 3 for two assessments: Individual Submission: Maps-Text-Representation and Group Submission: Maps-Text-Representation assessments.

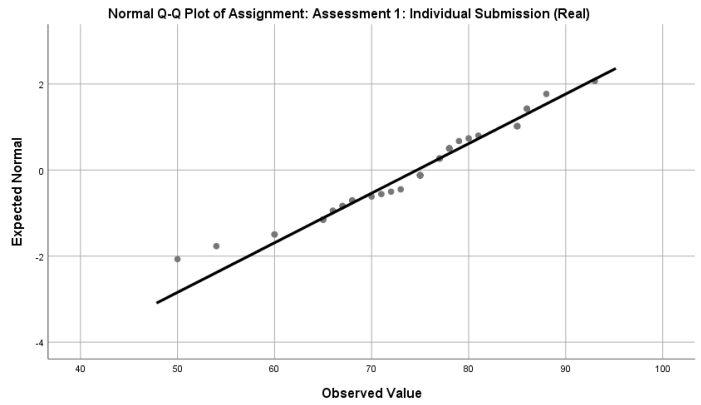
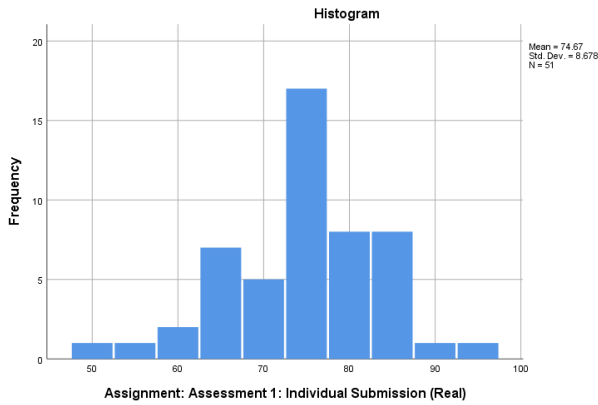
Students enrolled in Term 3 are the treatment group (n = 55) while students in Semester 1 are the control group (n = 29).

Descriptive Statistics

This statistical analysis refers to the Individual Submission: Maps-Text-Representation assessment.

ARCH7216 (Individual)	n	Mean	Median	Standard Deviation
Used Smarthinking	55	74.670	75.000	8.678
Did not use Smarthinking	29	-	-	-

A Shapiro-Wilks test was run and reveals that the treatment group is normally distributed ($p = 0.077$). This is reinforced by the Q-Q plot results, histogram and absence of skewness (skewness = -0.540, SE = 0.333, Z-Score = -1.622).



The assessment marks for Semester 1 have not been received and hence further analysis cannot be performed.

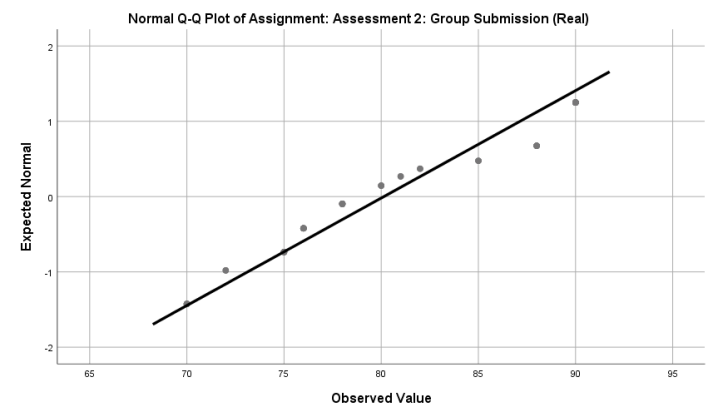
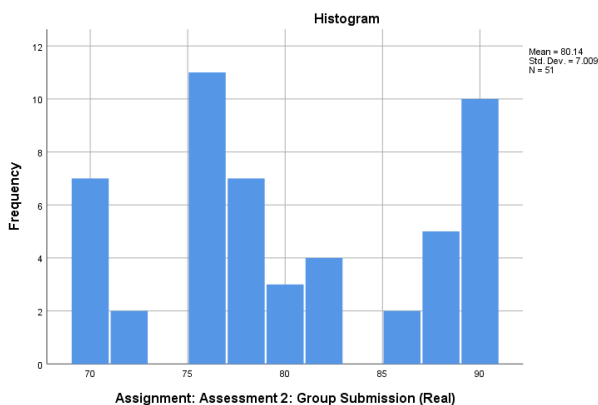
More details about the descriptive statistics can be found under [Appendix H](#).

Descriptive Statistics

This statistical analysis refers to the Group Submission: Maps-Text-Representation assessment.

ARCH7216 (Group)	n	Mean	Median	Standard Deviation
Used Smarthinking	55	80.140	78.000	7.009
Did not use Smarthinking	29	-	-	-

A Shapiro-Wilks test was run and reveals that the treatment group is not normally distributed ($p < 0.000$). This is reinforced by the histogram and Q-Q plot results.



The assessment marks for Semester 1 have not been received and hence further analysis cannot be performed.

More details about the descriptive statistics can be found under [Appendix I](#).

4.6.6. BABS1202 Applied Biomolecular Sciences

Sample Description

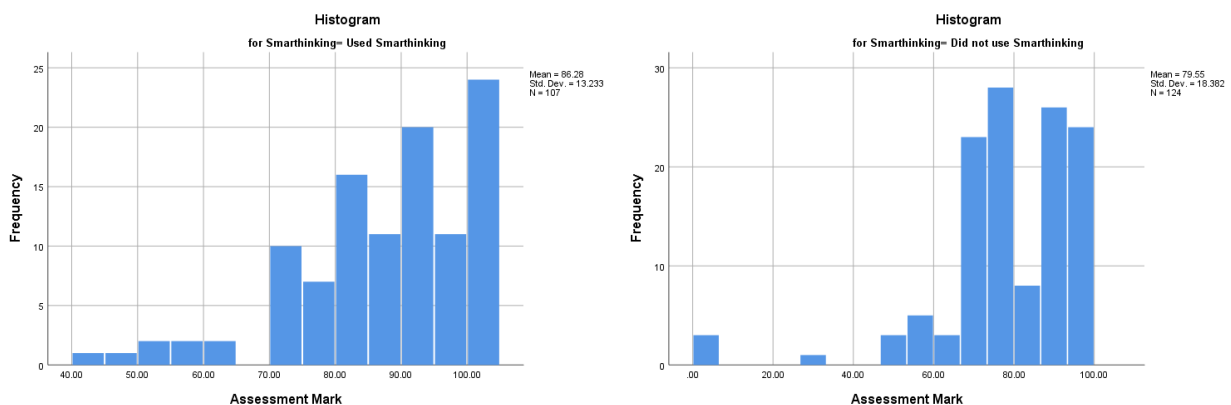
BABS1202 is a Biotechnology and Biomolecular Sciences first-year undergraduate course that was offered through face-to-face and distance learning in Term 2, 2019. A total of 209 students were enrolled into the face-to-face stream with 24 students in the distance delivery stream. Smarthinking was embedded as an additional resource; however, the lecturer highly encouraged students to use Smarthinking and indirectly incentivised students by attributing a bonus 1% towards the final grades of students who wrote a short reflection piece about their use/non-use of Smarthinking. This method resulted in approximately half the cohort using Smarthinking (n = 107) and half not using Smarthinking (n = 124).

The lecturer has anecdotally reported an increase in the number of students achieving an overall HD course mark and as such BABS1202 has been included in the analysis despite the existing selection bias.

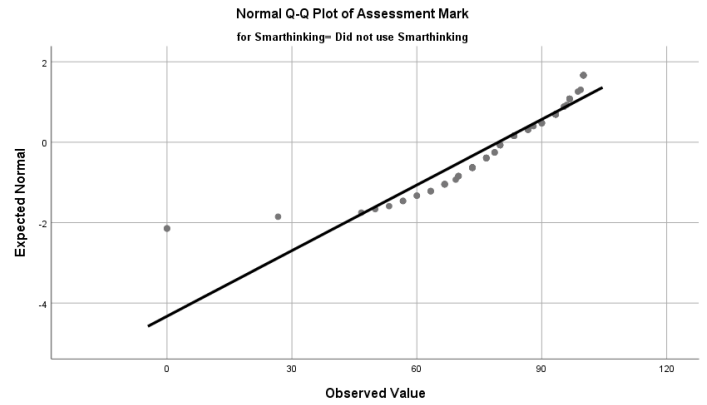
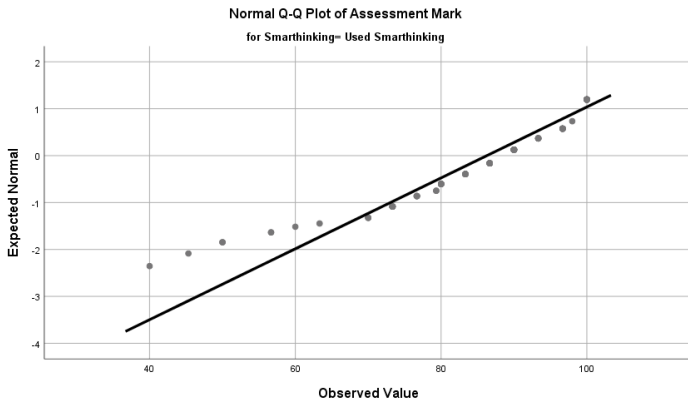
Descriptive Statistics

BABS1202	n	Mean	Median	Standard Deviation
Used Smarthinking	107	86.281	90.000	13.233
Did not use Smarthinking	124	79.554	80.000	18.382

A Shapiro-Wilk's test on the assessment mark of both groups reveals, the samples are not normally distributed ($p < 0.001$). The descriptive statistics of the treatment group (skewness = -1.258, SE = 0.234, Z-Score = -5.376) and the control group (skewness = -2.155, SE = 0.217, Z-Score = -9.931) and their respective histograms highlight the negative skewed distributions.



The Q-Q plot also highlights a distribution that is not tightly clustered along the straight line.



More details about the descriptive statistics can be found under [Appendix J](#).

Statistical Tests

As the sample distributions for both groups are not normal, the statistical analysis has been conducted using the Mann-Whitney U-Test for nonparametric data. The hypotheses are:

H_0 : There is no difference between the distribution of the two treatments.

H_a : There is a difference between the distribution of the two treatments.

Test Statistics^a

	Assessment Mark
Mann-Whitney U	4930.000
Wilcoxon W	12680.000
Z	-3.377
Asymp. Sig. (2-tailed)	.001

a. Grouping Variable: Smarthinking

The p-value ($p = 0.001$) is less than the significant value of 0.05 and leads us to reject the null hypothesis, despite the incentives.

5. Implications

This section outlines the strengths and areas for improvement of the pilot.

5.1. Strengths

A number of strengths in the implementation strategies and approaches have been identified over the two pilots:

5.1.1. Implementation Method

Embedding into courses made it possible to customise the use of Smarthinking to course learning outcomes and assessment requirements and thus improve the students' experience in streamlining and maximising the benefits of the writing service. Incidentally, this type of approach has not been taken by any other Australian university to date.

Open Access was beneficial as supplementary writing support for students who:

- a) Do not have Smarthinking available as part of their courses;
- b) Are enrolled in HDR degrees without any coursework; and
- c) Are unable to get a consultation with an ALL facilitator.

The hurdle task approach has both strengths and weaknesses. The strengths consist of the following:

- It guarantees engagement and uptake by all students in a course. From an educator's perspective, this is beneficial as this approach acts as a form of diagnostic, identifying students in need of writing support as well as ensuring all students benefit from the service.
- It alleviates the workload of the teaching staff in terms of providing guidance and feedback on academic writing skills.
- It significantly reduces or eliminates the necessity for staff to provide additional formative feedback on students' draft papers.

The areas for improvement for hurdle tasks are outlined in sub-section 5.2.1.

5.1.2. Variety of Writing Types

Although the Essay Centre writing type was used the most, the other writing types have their appropriate role in other assessment contexts. For example, the Paragraph Submission type is the most appropriate for single paragraphs (common in forum discussions), sections of annotated bibliographies and single introductions and/or conclusions.

The Essay Centre was the most frequently recommended writing type due to the nature of assessments in the selected pilot courses. Thus, the strength lies in customising the use of Smarthinking writing types to the requirements of course assessments.

5.1.3. Quality Assurance Inspections

These are a strength to the overseeing mechanism of Smarthinking implementation because they provide regular insight into the quality of Smarthinking feedback. Through inspecting the quality of Smarthinking tutors' feedback, the project team ensures that no UNSW academic standards are breached and that students receive commensurate and good quality feedback.

5.1.4. Implementation Strategy for Courses

The selection process targeted first-year courses in both undergraduate and postgraduate levels of study, which was in keeping with the project scope. This provided purposeful targeting of first-contact students¹ at UNSW, in order to offer writing support for both their coursework and related assessments.

Many of the students in these courses are of non-English speaking background and may require additional writing support. Furthermore, most first-contact students, particularly if they are new to the Australian higher education context and academic writing culture, can benefit from the formative and developmental nature of Smarthinking writing support.

¹ First-contact students refers to those students who are new to UNSW, notwithstanding their study level.

5.1.6. Outreach

In terms of outreach, the positive aspect was reaching out to both the academic and the student community via several channels (various e-bulletins and Yammer). This helped the ELSI team market and promote Smarthinking where relevant.

5.2. Areas for Improvement

In addition to the strengths outlined above, the pilots have also identified some areas for improvement:

5.2.1. Hurdle Task Implementation

The hurdle task has the following weaknesses:

- It diminishes the student experience because it forces students to use the service.
- Students feel pressured as Smarthinking poses another obligatory task for them to accomplish.
- Some students of English-speaking background (ESB) feel that they do not require the use of Smarthinking.
- Students struggle with following the hurdle task instructions, which they found confusing and complicated. Thus, from the students' perspective, the hurdle task was received mostly negatively, which was reflected in their survey responses.

Recommendations for hurdle task implementations in future iterations are listed in 5.3.2.

5.2.2. Optional Resource Implementation

Although the optional use of Smarthinking in courses was beneficial to students, there was a generally low uptake among students in those courses. This runs counter to the aim of the ELSI to provide writing support to UNSW students and to increase the uptake rates, especially by students in need of such support. The reality is that only highly motivated and self-aware students use Smarthinking when the service is optional.

Recommendations for implementing Smarthinking as an additional resource in future iterations are listed in 5.3.3.

5.2.3. Low response rate

There was low uptake of surveys by both students and academics. This is an area for improvement as the feedback from both students and academics on their experience with trialling Smarthinking is largely missing. This kind of feedback is essential to evaluate the satisfaction with the service, the manner of implementation and its benefits.

Recommendations for survey uptake in future iterations are listed in 5.3.4.

5.2.4. Outreach

In terms of outreach, there was some resistance by some academics, as well as the necessity to dispel some misconceptions about Smarthinking. With regard to the marketing campaign, the shortcoming was that it ran on a small scale and did not reach all UNSW stakeholders. Nevertheless, the marketing strategy for the pilots was to start small.

Recommendations for survey uptake in future iterations are listed in 5.3.5.

5.2.5. Interpreting Smarthinking Feedback

Anecdotally, through the team's interactions with the academics who embedded Smarthinking in the pilot phase(s), the issue of understanding and interpreting Smarthinking feedback by students was reported.

Recommendations for survey uptake in future iterations are listed in 5.3.6.

5.3. Recommendations for Future Implementation

5.3.1. Implementation Strategy for Courses

In targeting courses, the recommendation is to largely keep the same requirements, but to specifically focus on the following course profile:

- Core courses;
- Courses with larger student cohorts;
- Courses with a considerable number of NESB students;
- Courses with a higher fail rate.

These criteria are essential for the full-launch stage, where Smarthinking is supposed to be offered on a much larger scale, i.e. across all schools and faculties.

5.3.2. Hurdle Task Implementation

With regard to the hurdle task, the following steps will be taken:

- Stress to students that clear written communication is a skill that requires continuous effort and practice even for ESB students. This could be done by the ELSI team in an opening lecture or prior to the compulsory use of Smarthinking. If this is not possible due to time constraints, a video or announcement could be posted on the Moodle course page.
- Stress to students the benefits of formative feedback and the role Smarthinking can play in improving written communication and overall academic performance. Again, this could be done in person or via the Moodle course page as explained above.
- Simplify written instructions as much as possible.
- Short instructional videos can be placed on Moodle to help students follow the steps to complete the hurdle task process. In fact, the making of such videos, as well as general Smarthinking videos, is currently underway.
- Encourage teaching staff to remind students of the benefits of using Smarthinking.

5.3.3. Optional Resource Implementation

In response to the low uptake of Smarthinking as an optional resource, the following recommendations are made:

- Encourage teaching staff to regularly remind students of the benefits of using Smarthinking.
- Stress to students the benefits of formative feedback and the role Smarthinking can play in improving written communication and overall academic performance (through drop-ins into lectures by the ELSI team or announcements on Moodle course page).
- Post student testimonials of the benefits of Smarthinking. It is probable that those voluntarily accessing Smarthinking are highly motivated and high achieving students. Testimonials from these students may motivate others.

5.3.4. Response Rate of Project Specific Survey

To increase the response rate of the project specific survey, the following will be implemented:

- For students, set a particular time for everyone to do the online survey and incentivise participation with prizes. This means that a certain time slot will be dedicated for taking the survey and students will be notified about it in advance. The exact logistics and details of this incentive will be additionally developed.
- For academics, ask the survey questions orally during touch-base meetings at the end of term and make a record of their answers.

5.3.5. Outreach

In terms of outreach and marketing strategies:

- upscale the outreach;
- advertise Smarthinking in the largest UNSW media channels for both students and academics;
- directly reach out to Associate Deans of Education in all faculties and schools;
- directly reach out to convenors of suitable courses for Smarthinking embedding;
- use other means of advertising, such as posters, brochures and digital screens.

5.3.6. Interpreting Smarthinking Feedback

In response to the feedback interpretation issue, the project team makes recommendations to:

- Expand the use of Smarthinking writing types to follow up on students' writing with a particular focus on interpreting feedback. For example, after receiving Smarthinking feedback via an Essay Centre type submission, students can have a one-on-one, real-time session with a Smarthinking tutor to help them interpret their feedback. This recommendation also increases the use of Smarthinking's synchronous writing type, which has been somewhat neglected thus far.
- Organise feedback interpretation sessions for students (either face-to-face or online).
- Organise drop-in sessions in lectures and/or tutorials to address the issue of feedback and how to interpret it.
- Create PDF documents and other types of reference resources related to feedback and place them in the Smarthinking section on Moodle.

6. Appendices

Appendix A – Smarthinking Survey

Tutor Feedback	Process Rating	Would Recommend	Qualitative Feedback
5	5	Yes	Good experience. Thanks Michael. My tutor Joseph gave me really helpful advice. The process of sending and receiving feedback is much more streamlined than I thought, and I got my feedback quite soon after I sent in my work!
5	5	Yes	Great!
5	5	Yes	I wish UNSW provide more hours This particular experience was good on the tutors part but the format of the website used made it difficult to discuss essays as there was not enough room paste entire essay and it was a little slow.
4	2	Yes	Copy&paste is wired on whiteboard. Ann is really nice! :)
5	1	Yes	The page was frozen at first and I refreshed it then it worked. The feedbacks are really good and clear, especially with examples so that I know which part of my essay should improve. It will be great if the feedbacks could release earlier because I've been waiting for the whole day.
5	2	Yes	fantastic! proud of UNSW So it seems I have no grammar errors other than incorrect and missing commas? Based on my experience I doubt it, which means I will need someone else to review in regard to grammar. Thanks,
3	5	No	Igor
5	5	Yes	Thanks for the assistance!
5	5	Yes	the tutor was very professional and helpful. plz continue to keep this tutor. thanks. It's a great concept and should be made freely available for students in essay heavy degrees (i.e. Arts, History etc)
5	5	Yes	The feedback arrived in the time-frame that was strived for, the tutor Jay offered a solid amount of feedback with examples on how to improve my writing in the future. Overall, I found it very helpful and would use it again and recommend it if the opportunity becomes available.
5	5	Yes	Thanks for the advice Katrina! sometimes, I still need more suggestions aimed at my essay. which aspect should I need to focus on? grammar? thesis? or structure? if the tutor can give me these suggestions, it should be the best!
5	5	Yes	My marker pointed out a few issues that I would have passed on without help, thanks!
5	3	Yes	Website is just a bit slow in Australia.
5	5	Yes	no I have asked for grammar review besides the content development. I got back feedback on two mistakes I have made.
2	4	No	In my understanding, a gramma review should have highlighted all the grammar

			mistakes I have made. Otherwise, why do I need the review, to remind myself that I need to fix the mistakes?
5	5	Yes	surprisingly useful
5	5	Yes	definitely exceeded my expectations
			it would be better if instead of saying that at peak times it may take a bit longer to return your essay- mention the actual time frame- e.g. 36 hours instead of the regular
4	4	Yes	24- that would help with planning timelines for submissions for students.
4	4	Yes	no
			Thanks very much, the feedback was useful and not just generic and standard responses. The examples provided helped massively to explain what the points meant that you were making.
4	3	Yes	
5	5	Yes	Thanks for the helpful feedback April.
2	3	Yes	Can you please be more specific?
			I think this tool is fantastic and should be more well-known to students to help improve their assignments. Very very valuable!
5	5	Yes	I really like that tutor gave me a logical structure and clear summary at the end. this tutor told me how to improve my essay and how to do better. thank you.
5	5	Yes	Surprisingly fast and smooth process to get review. The comments are really professional and easy to understand.
5	5	Yes	Its really nice to have an expert in writing to review my work. Thank you! :)
			The comments were extremely helpful and were structured in a way that was easy to follow.
5	5	Yes	For a start, it was really helpful.\nThanks to the tutor.
			This is my second time using Smarthinking. The first time I used it I received very helpful feedback, however, this time the feedback was not helpful and half of it didn't even make sense. I am disappointed.
1	4	No	
5	5	Yes	super helpful, thanks so much Chris!
5	5	Yes	Really helpful and thoughtful feedback, Elliot! Appreciate it
			this is the best essay supporting service I have used so far, thanks for the correcting so that I have noticed many shortages of my writing.
5	5	Yes	This tutor only review 1/3 of my essay (1800 words from 6000 words) and took 50 minutes of reading & correcting. He/she consume too much time on giving less of the response.
3	3	Yes	
5	5	Yes	Thank u Christia C1742
			??????? I am so unbelievably surprised at how good this is. I really hope I can use this more often in the future with all my courses...
			I am not sure how to get in personal contact with Abigail... but PLEASE thank her for me.. her effort is greatly appreciated and you highlighted mistakes I wasn't
5	5	Yes	Patrice was very helpful by providing examples and concisely pointing out specific flaws in my submission. It was also returned very quickly. Thanks a lot!
5	5	Yes	hi, I have received tutor's feedback, but after I downloaded, I could not open it. it says
1	1	Yes	there is some error with the document
5	3	Yes	I couldn\'t upload a word document.
5	5	Yes	Thank you Mariz E very helpful I will use this again for my upcoming essays :)
5	5	Yes	Thanks Salve.
5	5	Yes	Thanks Manna.
5	5	Yes	Thanks Karen.

5	5	Yes	Once again, this was awesome! Thank you for such detailed, constructive and useful feedback. Why not rewrite those sentences which have the grammatical error? It can make feedback more clear.
2	5	Yes	I've never used SMARTTHINKING before and this was truly amazing. It was specific and constructive which allowed me to truly learn how to improve my writing that normal feedback from a tutor in a course would not. I am very thankful for this resource.
5	5	Yes	Thank you! The questions I asked in the additional text box when submitting this essay were completely ignored. In terms of feedback received, the two pieces were very minor and not relevant to the flow/idea development that I requested help with.
1	4	No	There was no real effort in the comments within the essay eith Thank you Cherisse for the feedback and comments. It is really helpful. Now I can work on these and I can see the logic as well. The comments are helpful for my future writings as well.
5	5	Yes	Thanks to Kristie S. for her comments about paragraphing and comma usage. These are the issues that I have never noticed before. I will definitely use the Smarthinking service again.
5	5	Yes	Good
5	5	No	I really appreciate receiving feedback that addresses my concerns and pin-points exactly where I could improve my work. Thank you so much.
4	4	Yes	Great feedback, really useful and productive things I could action! Thank you!!!
5	5	Yes	The advice is helpful. But I did not find any advice or comments on the second half of my essay.
5	5	Yes	very useful comments on my weak points that I can improve later.
5	5	Yes	It is great! Such a fast service with good feedback. I sincerely hope this service keeps being offered because I will use it again. Jessica provided good structural advice and points of critique.
5	5	Yes	N/A
5	5	Yes	Pasting content is annoying as hidden code was pasted too - making text invisible and making the page filled with code
5	2	Yes	Very effective and helpful!
5	5	Yes	I found the comments very helpful and easy to follow that will definitely improve my essay.
5	5	No	Thank you very much. I would probably introduce an approximate waiting time for the review (by the system), so who submits the essay knows what to expect, particularly if it is the first time using it. However, it is a great service and it was a great job. Very helpful.
5	4	Yes	very useful comments.
5	4	Yes	Did not feel the assistant was able to connect with the assessment. Very little takeaway on this submission.
1	4	Yes	Dilli Thank you Christina for clearly explaining what I need to finesse in my assessment. What a great idea to have online tutor assistance.
5	5	Yes	Regards, Dilli
4	4	Yes	very useful comments. Highly recommend and to extend this service.
5	5	Yes	I'm so pleased with the feedback I got, it was exactly what I was looking for.

			This is the second time I have used Smartthinking and I was quite disappointed because it took longer than 24 hours to get feedback. However, the feedback was very helpful and well done, so I was quite pleased. But for future reference, it would be much appreciated if the feedback was sent with in 2
4	2	Yes	
5	5	Yes	Good feedback. :)
4	2	No	It took 30 hours to get back - even though it advertised 24 hours and there was only three comments on it
5	5	Yes	Very helpful and feedback is easy to understand.
5	3	Yes	It really depends on the tutor this tutor is so much better than the best please raise the salary of this tutor!!!
5	5	Yes	J.D.' s comments were excellent!! I am delighted with the feedback. He helps me so much on how it is best to structure my paragraphs internally and the use of cites supportively.
5	5	Yes	This is the best thing that can be offered for university students or anyone attempting to write. Will definitely recommend to a friend.
5	5	Yes	I like how the advice was specific. It helped me develop my PPD further.
5	5	Yes	Thank you, Denice.
5	5	Yes	I really appreciate your support. Thank you for being there to help us.
5	4	Yes	Dana was very nice and she is a good tutor :) haahah
5	5	Yes	Good
5	5	Yes	Feedback was extensive and clear, and really helpful in addressing any issues or questions I had
3	3	No	The Feedback was received in a .txt format which was not easy to read
4	2	Yes	I hope I can retrieve my essay faster next time.
5	5	Yes	Jeanette was super helpful! Thank you!
5	5	Yes	good
4	3	Yes	A little clunky to figure out how it worked at first. But then became easier to use as I figured it out.
5	5	Yes	The experience was very efficient and helpful
2	3	No	Much of the feedback revolved around typos which should have been identified as such.
5	5	Yes	Thank you for your hard work
4	4	Yes	Good and useful
5	5	Yes	It was a lot easier than I expected it to be to use, and I definitely appreciate the prompt response! The comments given were very clear and easily understood.
5	5	Yes	The comments from my tutor help me to have a better understanding of my writing problems. Very specific and precise. Thanks.
5	5	Yes	Great advice! Thank you!
5	5	Yes	I was expected more general feedback from the tutor; however, I received very comprehensive feedback. In fact, the response form is categorised by Writing Strength, Sentence Structure, Word Choice, Grammar & Mechanics, Summary of Next Steps which allow me to think the different writing perspectives
5	5	Yes	N/A
5	5	Yes	The feedback is really referential.
5	5	Yes	I'm enabled to find many problems that commonly present in my writings.
4	3	Yes	All the advices are highly valuable and I truly appreciate your and the tutor's , Karen's, help.
4	3	Yes	Good comments

5	4	Yes	. a bit hard to recognise which part is good or not at a glance. took some time to process.
4	5	Yes	if tutors can give score (eg. 6 out of 10), then it will be easier for me to get a general idea of how I wrote.
5	5	Yes	The feedback is really helpful.
4	5	Yes	the tutor is being clear, positive and useful in the comments, I appreciate his effort in giving the feedback It would be good to highlight how much time was used in completing the review as I understand it's limited to 2 hours / term. I suspect I'll figure out how to check that right after I click the submit button..
5	4	Yes	voice chat would be much better..typing wasting lot of time
5	3	Yes	Tutor gave good pointers! Always nice to have a set of fresh eyes to review an essay .
5	5	Yes	Feedback also came quicker than expected! Thank you (:
5	5	Yes	unexpected quick turn around. feedback was thorough!
5	4	Yes	I wish the writing would more like face book, where there is side bar where you can chat only.
4	3	Yes	internet disconnected, couldn\'t refresh and I could tell the tutor.
5	5	Yes	Excellent experience. Thank you all very much!
5	5	Yes	Good and clear feedback, I like that my tutor prompted me on how to addresses issues rather than simply identifying them.
5	5	No	Service was good, but you must understand that people don't just walk around recommending essay-reviewing services to friends.
5	4	Yes	The most helpful thing ever. The tutor actually provides constructive feedback on where AND HOW to improve! More specifically, I would recommend a friend to use Smarthinking if it was free as part of being at a university, but I wouldn't recommend a friend go out of their way to pay for this service. It's a good service, but they could alternatively email their university professors for free. I don't have
5	5	No	
5	4	Yes	Very helpful in giving feedback for the essay This has been a fast efficient process and am highly impressed with the experience.
5	5	Yes	The feedback is thorough and clearly explained, I am extremely pleased with the time and quality of the feedback. Thank you for the help.
5	4	Yes	This tutor is so much better than the first one so much patience and everything. I think it is better to sort the user into different types, for instance, uni student, high school or even pre-school. So that the tutor knows best in the field of what the student is asking. I think the tutor is not proficient in the field of lit review which cannot give me enough advise on what I
4	4	Yes	
5	5	Yes	Love the idea, efficient and easy to use
5	5	Yes	Tutor (Judith) was extremely helpful and informative! She gave me alot of detailed feedback that made it easy to understand and change.
5	5	Yes	The feedback was almost immediate and very detailed. It really helped me work on sentece structure and how to structure a reference list.
5	5	Yes	Fast response and good, clear explanations followed by examples! Thanks, Kathleen! The marking was excellent. The tutor identified my weaknesses in my writing and focused on them. Had I not been exposed to these issues in my writing, I would not have changed them.
5	5	Yes	
1	4	No	This feedback did nothing whatsoever to incorporate the word limit. I was already over the word limit and *all* of the feedback suggested adding more in depth content.
3	4	No	My issue is with incorrect grammatical recommendations being made. I was told to put a comma before and in a list, which is not necessarily correct. It isn't incorrect either,

but was suggested as though necessary when in fact it is *entirely* grammatically optional.

5	5	Yes	Additionally, when I asked for It was good. I even learnt something about referencing I didn't previously know with regard to using "et al." Dear Smarthinking,
5	5	Yes	Thanks to my writing tutor, Cheryl Sâ€™ work for my writing work. The quality and usefulness of these feedbacks are quite beyond my expectation! I think those recommendations are pretty helpful for my future study life and further research work, and this help also breaks my curre Hey! Pat T
5	5	Yes	Thanks for your help since the last essay and I have learned a lot from your comment.
4	5	Yes	That was pretty quick feedback, really helpful
5	5	Yes	very quickly feedback, thank you so much. you can read the article first and then judging others' work. On the other hand, [Why does it mention that no country could perform well in both biophysical and social indicators? Give reasons to clarify the statement.]
3	5	No	"In fact, it cannot be considered as a universal sample because of its continge
5	2	No	Dana did a great job.
1	1	No	I can't download the repsonse - says the format is not supported on my computer (was it done on a mac?) i really only needed help with referencing but that wasn't an option in the boxes i could tick so i didn't find this very useful and it was an unnessecary and inconvenient hurdle in my university submissions
5	2	No	Thank you Dan M. for the quick response and thorough feedback.
5	5	Yes	Experience: I'm really glad the university has decided to help students improve their writing through this online platform. I wish I had this when I was doing my thesis paper 3 years ago. It's really straightforward and simple to use.

Appendix B.1. – Project Specific Question Items and Responses (Students)

Pilot Phase (Term 2 & Term 3, 2019)										
Responses	97									
Completed Responses	74									
Question Item	Students	%								
Did not use Smarthinking	9	12%								
Used Smarthinking	65	88%								
Question Item	Students	%								
Through my course	62	95%								
Through The Learning Centre	3	5%								
Question Item (Perception)	Strongly Disagree	%	Disagree	%	Neither Agree nor Disagree	%	Agree	%	Strongly Agree	%
The Smarthinking tutor understood my questions & concerns.	1	2%	5	8%	12	18%	31	48%	16	25%
The Smarthinking feedback was useful.	2	3%	5	8%	5	8%	30	46%	23	35%
I felt supported by the availability of Smarthinking.	1	2%	4	6%	2	3%	16	25%	38	58%
I felt confident about what I needed to do next in my assignment.	0	0%	5	8%	5	8%	10	15%	35	54%
I felt the amount of Smarthinking time was adequate.	1	2%	11	17%	9	14%	10	15%	29	45%
I would recommend Smarthinking to my friends.	1	2%	6	9%	3	5%	15	23%	32	49%
Question Item (Perception)	No		Yes							
Would you consider using Smarthinking next term?	6	20%	24	80%						
If given the option, would you like to see Smarthinking be used in your courses?	2	7%	22	73%						
Question Item (Extent)	Strongly Disagree	%	Disagree	%	Neither Agree nor Disagree	%	Agree	%	Strongly Agree	%
Smarthinking helped me in my assignments.	2	3%	6	9%	5	8%	29	45%	23	35%
Smarthinking helped me in my interaction with my peers.	8	12%	7	11%	27	42%	11	17%	12	18%
Smarthinking helped me in my interaction with my course lecturers/tutors.	4	6%	8	12%	23	35%	21	32%	9	14%
I applied Smarthinking feedback to other areas of this course.	1	2%	6	9%	6	9%	8	12%	5	8%
I applied the feedback from Smarthinking in the assignments of my other courses.	1	2%	5	8%	7	11%	9	14%	4	6%

Appendix B.2. – Project Specific Question Items and Responses (Academics)

Pilot Phase (Term 2 & Term 3, 2019)										
Responses	9									
Completed Responses	7									
Question Item (Perception)	Strongly Disagree	%	Disagree	%	Neither Agree nor Disagree	%	Agree	%	Strongly Agree	%
My students found the feedback from Smarthinking helpful.	1	14%	0	0%	1	14%	0	0%	0	0%
My students feel supported by the availability of Smarthinking.	0	0%	1	14%	3	43%	2	29%	1	14%
My students felt confident in their writing.	0	0%	0	0%	1	14%	1	14%	0	0%
Overall, my students had a positive experience with Smarthinking.	0	0%	1	14%	1	14%	0	0%	0	0%
Question Item (Perception)	No		Unsure		Yes					
Would you consider using Smarthinking next term? / I would use Smarthinking in my course again.	1	14%	2	29%	4	57%				
I would recommend Smarthinking to my colleagues.	1	14%	2	29%	4	57%				
Question Item (Extent)	Strongly Disagree	%	Disagree	%	Neither Agree nor Disagree	%	Agree	%	Strongly Agree	%
Smarthinking has benefited my students' assignments.	0	0%	0	0%	2	29%	1	14%	2	29%
Smarthinking has benefited my students in their interaction with their peers.	0	0%	1	14%	3	43%	0	0%	0	0%
Smarthinking has benefited my students in their interaction with myself and my colleagues.	0	0%	0	0%	3	43%	2	29%	0	0%
There was an improvement in the writing of the students between the beginning of the course and the end of the course.	0	0%	1	14%	0	0%	1	14%	0	0%
There was an improvement in the writing of the students this term compared to previous cohorts.	0	0%	1	14%	1	14%	0	0%	0	0%

Appendix C – Random Quality Assurance Inspections

Term	RQI	Week	RQI %	Total Sessions	RQI Sessions	Major Issues	Minor Issues
2	1	Week 3	20%	1	1	-	-
2	2	Week 5	20%	137	29	-	-
2	3	Week 7	15%	258	42	-	6
2	4	Week 9	15%	147	17	4	2
2	5	Study Week	15%	125	21	4	1
2	6	Exam Week 2	15%	60	12	3	-
2	8	Term Break 1	20%	-	-	-	-
3	1	Week 3	15%	77	16	-	2
3	2	Week 5	10%	561	58	5	6
3	3	Week 7	10%	266	29	-	6
3	4	Week 10	10%	237	26	4	4
3	5	Study Week	10%	424	44	-	7
3	6	Exam Week 2					
3	8	Term Break 1					
Total				2293	295	18	40

Appendix D – Random Quality Assurance Inspection (Issues Identified)

Term	RQI	Issue	Session ID	Type	Description
2	3	1	N/A	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	3	2	N/A	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	3	3	N/A	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	3	4	N/A	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	3	5	6073520	Major	Use and imposition of American grammar rules: using compulsory commas before 'and' in compound sentences
2	3	6	6073679	Major	Use and imposition of American grammar rules: using compulsory commas before 'and' in compound sentences
2	3	7	6071577	Major	Use and imposition of American grammar rules: using compulsory commas before 'and' in compound sentences
2	3	8	6073668	Major	Use and imposition of American grammar rules: using compulsory commas before 'and' in compound sentences
2	3	9	6073622	Major	Use and imposition of American grammar rules: using compulsory commas before 'and' in lists (for phrases)
2	3	10	6080936	Major	Inaccurate suggestion about using tenses for reporting verbs
2	4	1	6092704	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	4	2	6092438	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	4	3	6085873	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	4	4	6092874	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	4	5	6092874	Major	Use and imposition of American grammar rules: using a comma with a coordinating conjunction in a list
2	4	6	6085842	Major	Use and imposition of American grammar rules: using a comma with a coordinating conjunction in a list
2	5	1	6110044	Major	The tutor has provided too much help by writing out an abstract for the student with only a few gapped words

2	5	2	6105052	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	5	3	6110453	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	5	4	6110455	Minor	Use of American grammar rules as an option provided: using commas before 'and' in compound sentences
2	5	5	6109448	Minor	Use of American grammar rules as an option provided: using commas before 'and' in compound sentences
2	6	1	6116462	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	6	2	6116108	Minor	American terminology use for punctuation (e.g. period for full-stop)
2	6	3	6115728	Minor	Use of American grammar rules as an option provided: using commas before 'and' in compound sentences
3	1	1	6190393	Minor	Suggestion about using tenses for reporting verbs
3	1	2	6170274	Minor	Suggestion for a model topic sentence with some gaps on the same topic
3	2	1	6215049	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	2	6217869	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	3	6216444	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	4	6212340	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	5	6203530	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	6	6212518	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	2	7	6209888	Major	Too much assistance in the form of modelling sentences on the same topic
3	2	8	6212279	Major	Too much assistance in the form of modelling sentences on the same topic
3	2	9	6206010	Major	Inaccurate comments on use of personal pronouns and formality for the particular subject and type of assignment, which had elements of reflection
3	2	10	6211647	Major	Inaccurate comments on use of personal pronouns and formality for the particular subject and type of assignment, which had elements of reflection
3	2	11	6212258	Major	Offering misguided advice on the essay prompt due to misunderstanding of the assignment context, which is provided by student
3	3	1	6226536	Minor	Advice on using commas before coordinating conjunctions (and) in independent clauses
3	3	2	6253090	Minor	Advice on using commas before coordinating conjunctions (and) in independent clauses
3	3	3	6240573	Minor	Advice on using commas before coordinating conjunctions (and) in independent clauses
3	3	4	6228805	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	3	5	6252849	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	3	6	6238500	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	4	1	6271868	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	4	2	6271507	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	4	3	6271589	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	4	4	6276399	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	4	5	6271233	Major	Insistence on using commas before the coordinating conjunction 'and' in compound sentences
3	4	6	6267337	Major	Insistence on using commas before the coordinating conjunction 'and' in compound sentences
3	4	7	6271233	Major	Insistence on using the Oxford comma in lists
3	4	8	6267337	Major	Insistence on using the Oxford comma in lists
3	5	1	6316481	Minor	The tutor exclusively lists American dictionaries as reference books
3	5	2	6317860	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	5	3	6319138	Minor	American terminology use for punctuation (e.g. period for full-stop)
3	5	4	6295089	Minor	The tutor recommends the use of the serial (Oxford) comma, which is a strictly American grammar rule
3	5	5	6293467	Minor	The tutor recommends the use of the serial (Oxford) comma, which is a strictly American grammar rule
3	5	6	6311200	Minor	The tutor recommends the use of the serial (Oxford) comma, which is a strictly American grammar rule

Appendix E – Statistics (CVEN9888)

		Descriptives			
	Smarterthinking		Statistic	Std. Error	
Assessment Mark	Did not use Smarterthinking	Mean	72.6429	.94469	
		95% Confidence Interval for Mean	Lower Bound	70.7812	
			Upper Bound	74.5045	
	5% Trimmed Mean		73.0714		
	Median		72.0000		
	Variance		199.908		
	Std. Deviation		14.13887		
	Minimum		12.00		
	Maximum		100.00		
	Range		88.00		
	Interquartile Range		16.00		
	Skewness		-.443	.163	
	Kurtosis		.847	.324	
	Used Smarterthinking	Mean		81.1789	.71158
			95% Confidence Interval for Mean	Lower Bound	79.7785
			Upper Bound	82.5794	
	5% Trimmed Mean		81.8477		
	Median		83.3300		
	Variance		148.865		
	Std. Deviation		12.20101		
	Minimum		43.33		
	Maximum		100.00		
	Range		56.67		
	Interquartile Range		16.67		
Skewness		-.629	.142		
Kurtosis		.004	.283		

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Smarterthinking	Statistic	df	Sig.	Statistic	df	Sig.
Assessment Mark	Did not use Smarterthinking	.095	224	.000	.970	224	.000
	Used Smarterthinking	.129	294	.000	.947	294	.000

a. Lilliefors Significance Correction

Appendix F – Statistics (CLIM1001)

		Descriptives		Statistic	Std. Error	
	Smarthinking					
Turnitin Assignment 2: Individual Reflection Piece (25%) (Real)	Did not use Smarthinking	Mean		15.39	.401	
		95% Confidence Interval for	Lower Bound	14.60		
	Used Smarthinking	Mean	Upper Bound	16.18		
			5% Trimmed Mean	15.70		
		Median	17.00			
		Variance	31.332			
		Std. Deviation	5.597			
		Minimum	0			
		Maximum	25			
		Range	25			
		Interquartile Range	6			
		Skewness	-.814	.174		
		Kurtosis	.829	.346		
		Used Smarthinking	Mean	Upper Bound	16.58	.269
				95% Confidence Interval for	Lower Bound	16.05
			Mean	Upper Bound	17.11	
				5% Trimmed Mean	16.74	
			Median	17.00		
			Variance	21.907		
			Std. Deviation	4.680		
Minimum	0					
Maximum	25					
Range	25					
Interquartile Range	7					
Skewness	-.312		.140			
Kurtosis	-.558		.279			

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
Smarthinking		Statistic	df	Sig.	Statistic	df	Sig.
Turnitin Assignment 2:	Did not use Smarthinking	.141	195	.000	.937	195	.000
Individual Reflection Piece (25%) (Real)	Used Smarthinking	.118	303	.000	.952	303	.000

a. Lilliefors Significance Correction

Appendix G – Statistics (MDIA5022)

Descriptives

		Statistic	Std. Error	
Turnitin Assignment 2: A3 Research Paper 40% (Real)	Mean	64.59	2.222	
	95% Confidence Interval for Mean	Lower Bound	60.15	
		Upper Bound	69.03	
	5% Trimmed Mean	65.38		
	Median	65.00		
	Variance	316.023		
	Std. Deviation	17.777		
	Minimum	0		
	Maximum	95		
	Range	95		
	Interquartile Range	26		
	Skewness	-.708	.299	
	Kurtosis	1.588	.590	

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Turnitin Assignment 2: A3 Research Paper 40% (Real)	.070	64	.200*	.957	64	.027

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix H – Statistics (ARCH7216 – Individual Submission)

Descriptives

		Statistic	Std. Error	
Assignment: Assessment 1: Individual Submission (Real)	Mean	74.67	1.215	
	95% Confidence Interval for Mean	Lower Bound	72.23	
		Upper Bound	77.11	
	5% Trimmed Mean	75.00		
	Median	75.00		
	Variance	75.307		
	Std. Deviation	8.678		
	Minimum	50		
	Maximum	93		

Range	43	
Interquartile Range	11	
Skewness	-.540	.333
Kurtosis	.596	.656

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Assignment: Assessment 1: Individual Submission (Real)	.182	51	.000	.959	51	.077

a. Lilliefors Significance Correction

Appendix I – Statistics (ARCH7216 – Group Submission)

Descriptives

		Statistic	Std. Error
Assignment: Assessment 2: Group Submission (Real)	Mean	80.14	.981
	95% Confidence Interval for Mean		
	Lower Bound	78.17	
	Upper Bound	82.11	
	5% Trimmed Mean	80.15	
	Median	78.00	
	Variance	49.121	
	Std. Deviation	7.009	
	Minimum	70	
	Maximum	90	
	Range	20	
	Interquartile Range	13	
	Skewness	.165	.333
	Kurtosis	-1.292	.656

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Assignment: Assessment 2: Group Submission (Real)	.163	51	.002	.894	51	.000

a. Lilliefors Significance Correction

Appendix J – Statistics (BABS1202)

		Descriptives		
	Smarthinking		Statistic	Std. Error
Assessment Mark	Did not use Smarthinking	Mean	79.5538	1.65075
		95% Confidence Interval for Mean	Lower Bound	76.2862
		Upper Bound	82.8214	
	5% Trimmed Mean	81.6368		
	Median	80.0000		
	Variance	337.898		
	Std. Deviation	18.38199		
	Minimum	.00		
	Maximum	100.00		
	Range	100.00		
	Interquartile Range	20.00		
	Skewness	-2.155	.217	
	Kurtosis	7.061	.431	
	Used Smarthinking	Mean	86.2805	1.27931
		95% Confidence Interval for Mean	Lower Bound	83.7441
		Upper Bound	88.8168	
	5% Trimmed Mean	87.5927		
	Median	90.0000		
	Variance	175.121		
	Std. Deviation	13.23333		
	Minimum	40.00		
	Maximum	100.00		
	Range	60.00		
	Interquartile Range	16.67		
Skewness	-1.258	.234		
Kurtosis	1.675	.463		

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Smarthinking	Statistic	df	Sig.	Statistic	df	Sig.
Assessment Mark	Did not use Smarthinking	.150	124	.000	.808	124	.000
	Used Smarthinking	.150	107	.000	.875	107	.000

a. Lilliefors Significance Correction