Charles Darwin University
PASS
Semester 1 & Semester 2, 2017 Report

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Contents

1 Executive Summary

The Peer Assisted Study Scheme (PASS) provides structured peer support in subjects which have traditionally high rates of failure, or are perceived as difficult by students. In 2017 PASS provided support for a total of 12 units in Semester 1, and 16 units in Semester 2. Support was in the form of 1 hour peer led study sessions. Approximately 22 high performing students were employed by Charles Darwin University as PASS Leaders to facilitate over 600 sessions throughout the year. Student awareness of scheduled PASS sessions was achieved through announcements on Learnline, and PASS Leader introductions during lectures at the beginning of each Semester. On average, 8% of students taking subjects with PASS support attended at least 1 PASS session. Moreover, approximately 6 students attended each PASS session. Attendance was incentivised using a scheme which awards participating students a [redacted] for the [redacted], provided a student attends 5 or more PASS sessions throughout the Semester. Operationally, Semester 2 saw some minor modifications to the program. Principally, these changes included the appointment of a new PASS Coordinator, and the program itself was expanded to offer PASS support for 2 more units: NUR115, and EMA100. Finally, there were some minor changes to administrative systems helping ease the workload involved with delivering the program.

Program performance was assessed according to two separate measures: increased student academic performance, and student experience of the program. Student experience was found to be overwhelmingly positive in both Semesters, with Semester 2 showing small gains over Semester 1. Many students cited the program as an instrumental element to their success. This was evidenced through anecdotal accounts from students, and through quantitative data, captured from student surveys issued at the end of each Semester. Measures of academic performance in both Semesters were assessed using descriptive statistics and elementary economic modelling. The contribution of PASS to academic performance was positive in both Semesters 1 and 2, although these findings were not statistically significant. Semester 2 demonstrated minor improvements over Semester 1, providing encouragement that changes made to program operation helped improve the offering.

Recommendations for the program include streamlining operational processes to reduce administrative burdens, and leveraging up-to-date Learnline and Blackboard Collaborate technologies offered by the University. Execution of this recommendation would see a dedicated PASS unit created on Learnline, sitting alongside existing units, acting as a container for online PASS activities. Benefits from the implementation of this recommendation include access to Collaborate Ultra, and the ability to capture asynchronous modes of student access to PASS sessions. Additional recommendations include reviewing current PASS offerings to determine the optimal mix of offered units. There is some evidence that PASS support may no longer be a requirement for some of the units currently offered. Re-evaluation would provide opportunity for reallocation of resources within the program, which may deliver a boost to overall performance.

There is some evidence, shown in Section 4, which points to the need for increased efforts in marketing activities. Semester 2 showed that students relied more on word of mouth, compared to Semester 1. This corresponded with a fall in other modes of advertising, such as announcements on Learnline. To counteract this effect it is recommended that increased emphasis be placed on marketing strategy execution in communications to PASS Leaders. This may be achieved by increasing the face to face meetings with the PASS Leader cohort throughout the year, and providing greater transparency around attendance data during these meetings. Finally, to help ensure that the program is incrementally improving, and to help with the continuity of delivery during PASS sessions, it is recommended that resources developed by PASS Leaders throughout the year be captured and stored in a central location. This would provide new PASS Leaders with ideas, and material, for their sessions so they could focus more on improving their facilitation. Moreover, this would allow the program to retain some of the developed human capital, like delivery knowledge, which is typically lost given the natural rates of attrition seen in the PASS Leader role.

2 Program Structure

The Peer Assisted Study program (PASS) provides student support and enhances student learning outcomes for subjects in the program portfolio. The program portfolio is made up of subjects which have traditionally high rates of failure, or that are perceived as difficult by students. Subjects offered at Charles Darwin University (CDU) for Semester 1 and Semester 2, 2017 can be seen in Table 1.

Table 1: Subjects offering PASS sessions at CDU for Semester 1 and Semester 2, 2017

Unit Code	Unit Name	Unit Code	Unit Name
ACT102	Introduction to Accounting	ACT102	Introduction to Accounting
CUC106	Design and Innovation	CUC100	Academic Literacies
CUC107	Cultural Intell. and Cap.	CUC106	Design and Innovation
ENG151	Statics	EMA100	Mathematics Education 1
NUR120	Professional Nursing	ENG142	Concepts of Chemical Eng.
PSY140	Introduction to Psychology A	ENG252	Dynamics
SBI171	Anatomy and Physiology 1	NUR115	Primary Health Care
SBI172	Anatomy and Physiology 2	NUR120	Professional Nursing
SCH101	Chemical Concepts	PSY141	Introduction to Psychology B
SMA101	Mathematics 1A	QAB105	Quantitative Analysis for Bus.
SOC140	Sociological Perspectives	SBI171	Anatomy and Physiology 1
SWK101	Intro. to Human Services	SBI172	Anatomy and Physiology 2
		SCH102	Organic and Inorganic Chem.
		SMA102	Mathematics 1B
		SOC145	Global Sociology
		SWK102	Communications

PASS sessions, which are the central offering of the program, are peer led study sessions with an academic focus. Sessions are voluntarily attended by students in addition to their normal lectures, tutorials, and workshops. Study sessions are held in physical pre-booked rooms on the Casurina and Waterfront campuses, and also in non-integrated virtual rooms delivered through Blackboard Collaborate. This multi-modal facilitation allows for equity in the delivery of PASS to both internal and external students. PASS sessions are run by PASS leaders.

To prepare and develop materials for PASS sessions, PASS Leaders are provided access to lecture and tutorial resources on Learnline. From these resources, PASS Leaders develop a session structure to help students summarise the previous week's content. Activities are group focused and are typically a series of questions from prescribed textbooks, or websites from the recommended course content. In order to cater for varying levels of student ability, PASS leaders are encouraged to provide questions covering a range of difficulties. In addition to course content, PASS leaders provide advice on more general topics like preparing for exams, how to effectively search for academic information, correct referencing formats, and additional study tips that they have found fruitful in their own studies. Finally, it must be said that students often seek to use PASS sessions simply as a platform to make connections with their peers, and share mutual challenges.

3 Leader Recruitment, Training, and Cost

Potential candidates for PASS leaders positions are selected from the pool of currently enrolled undergraduate students who have maintained a GPA of 6.0 and above. Moreover, candidates require a Distinction, or a High Distinction, for subjects in which they would run PASS sessions. To aid this process, candidate recommendations are often sought from Unit Coordinators, or from previous PASS Leaders. Candidates are encouraged to apply for PASS leader positions by sending in a resume and brief letter detailing why they would be a good fit for the position. Finally, prior to appointment, interviews are conducted to provide assurance that PASS leaders have the requisite interpersonal skills - the importance of interpersonal skills is an essential criterion in addition to academic success (Terrion and Leonard, 2007).

Successful candidates are required to undertake a 16 hour training workshop, delivered over 2 days. Emphasis is placed on facilitation in online environments, encouraging student engagement, and promoting autonomous modes of learning. Furthermore, the training provides PASS leaders with clear instructions on how to successfully perform their required duties, and ensure compliance with CDU policies surrounding the program. To effectively carry out their duties, PASS leaders are expected undertake the following tasks each week:

- Attend 1 hour of lectures for their PASS subject;
- Spend 1 hour developing PASS session materials;
- Deliver two 1 hour PASS sessions.

There are two salary tiers on which PASS leaders are currently employeed. Most of the PASS leaders are [redacted], and are paid approximately [redacted] per hour (including on-costs). Historically, PASS Leaders were employed in [redacted] positions, which are remunerated at approximately [redacted] per hour (including on-costs). Payment for the 2 day training workshop is made at the [redacted] rate outlined above. Typically, PASS leaders are recruited in the second year of their undergraduate studies, and continue to work in the PASS program until graduation. The low rates of attrition in the PASS Leader program helps to ensure training costs are minimised. The there were 16 PASS Leaders employed in Semester 1, 2017 and the total cost for wages during this time was approximately [redacted]. In Semester 2, there were 19 PASS Leaders employed for an approximate cost of [redacted]. The full cost breakdown can be seen in Table 2.

Figure 1: Breakdown, by pay period, of PASS Leader wages for Semester 1, 2017 and Semester 2, 2017.

4 Marketing

Fundamental to the PASS program's success is an effective marketing strategy increasing student awareness of the program. A total of 3164 individual enrolments were recorded in subjects which had a PASS offering in Semester 1, 2017. The cohort experienced a material rate of attrition leading up to the Census date, after which only 2440 of the original enrolments remained. In Semester 2, 2017 there were a total of 4448 individual enrolments in subjects which had a PASS offering. The cohort experienced similar rates of attrition to Semester 1, which resulted in final enrolments of 3292. Note that the enrolments number does not reflect individual students, as a single student may be enrolled into multiple subjects. Information surrounding PASS sessions was marketed in a variety of ways, as shown in Table 2. A student survey undertaken at the end of each semester revealed that students principally received information on how to access PASS sessions through announcements on Learnline. The second highest was from the Unit Lecturer. A breakdown of the survey data for each semester can be seen in Figures 1 and 2.

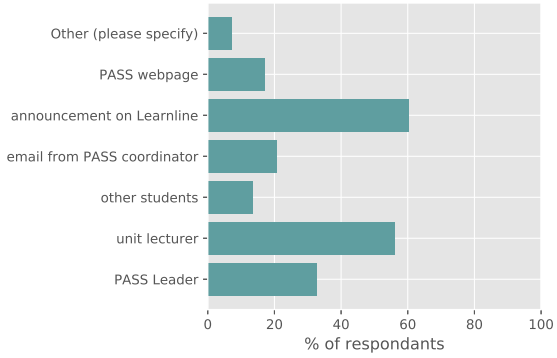

Figure 2: How students found out about PASS in Semester 1, 2017. The figure is shown as a percentage of survey respondents.

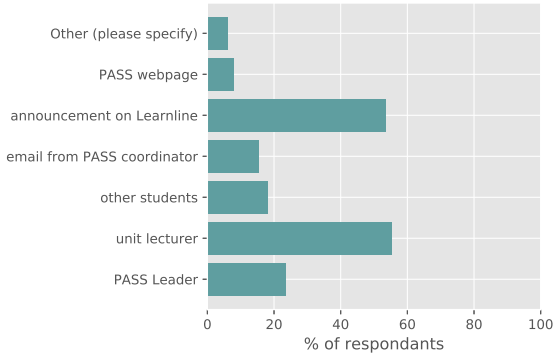

Figure 3: How students found out about PASS in Semester 2, 2017. The figure is shown as a percentage of survey respondents.

Table 2: Methods used throughout the semester to market the program

Method	**Description**
Email from PASS Coordinator	Emails from the *pass@cdu.edu.au* address advertising the program
Learnline Announcement	Announcements posted periodically on Learnline
Orientation Week	PASS Leader presentations during Orientation week to make students aware of the PASS session offerings. Two 1 hour sessions are run - one delivered on campus and one delivered via Blackboard Collaborate
Other Students	Word of mouth on campus from the broader student cohort (e.g. previous first year students)
PASS Leaders	Verbal announcements at the beginning or end of lectures (or tutorials) delivered by PASS Leaders
PASS Webpage	`www.cdu.edu.au/academic-language-learning/allsp/pass`
Print Material	Flyers and bookmark print material which advertises the PASS program distributed around campus during Orientation week
Unit Lecturer	Verbal announcements during lectures, or emails throughout the semester delivered by the Unit Lecturer

5 Semester 1, 2017

5.1 Attendance

A total of 9.79% of the 2440 individual enrolments attended at least one PASS session. Participation rates (for at least one session) can be seen for each individual subject in Figure 1. Low participation rates seen in subjects with large student cohorts, such as CUC107, would negatively impact the overall participation rate for PASS.

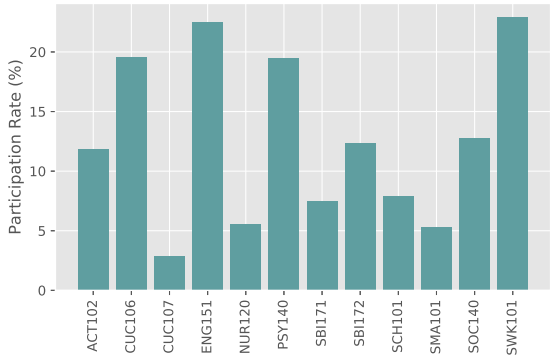

Figure 4: Participation rates for each unit with a PASS offering. (Students with a recorded withdrawal have not been included in this analysis)

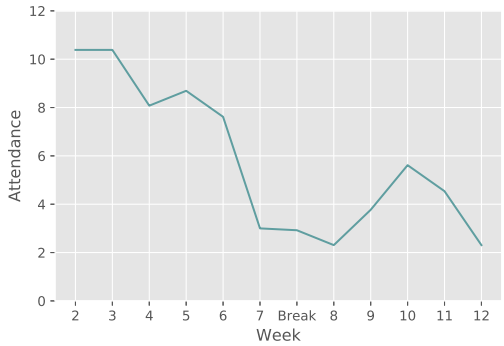

Figure 5: Average student attendance for PASS sessions throughout the semester.

Average attendance to PASS sessions, in terms of absolute student numbers, can be seen in Figure 3. Up to 10 students are participating in any given PASS session, with an average of approximately 6. Demand for PASS support can be seen to peak twice during the semester: once at the start of the semester, and again towards the end of the semester. This may provide some indication on how students are using the platform. Initially, students may be accessing PASS to help orient themselves with course material presented in a unit. The second peak is most likely students using PASS to obtain support for their final assessment items, and exam preparation. The absolute attendance broken down by subject can be seen over the page in Figure 4. Some units in this semester appear to have lower attendance, however, for SOC140 this may simply be an artefact of changes to the teaching structure. Furthermore, CUC107 has traditionally had a small cohort for the first Semester. Ongoing monitoring of these subjects is necessary to determine if PASS still needs to be offered.

An existing initiative designed to increase student attendance to PASS sessions remains in effect. The initiative uses an incentive scheme as a reward to students who attend more than 5 PASS sessions. For Semester 1, the incentive was a [redacted]. The total cost of this incentive was approximately [redacted] for Semester 1, 2017. Given the maturity of the PASS program at CDU, it is assumed that there is an existing dialogue between students highlighting the perceived benefits of continued participation in PASS sessions. The incentive scheme is continually being reviewed and as the PASS program becomes more embedded in the University, now more cost effective schemes can be introduced.

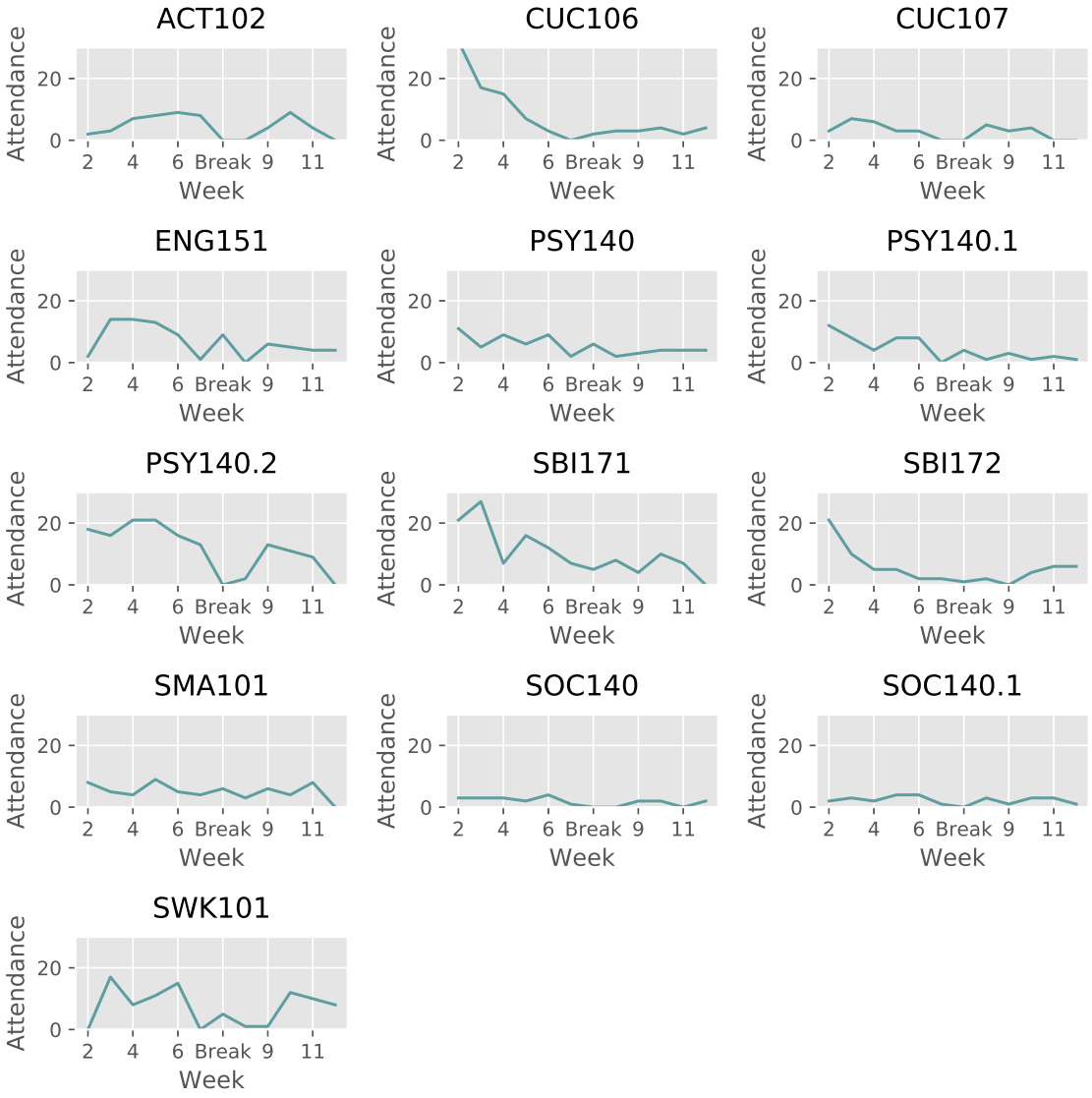

Figure 6: Absolute attendance throughout the semester for each unit supporting PASS. (Data is missing for SCH101 and NUR120)

5.2 Performance

The analysis conducted in this section is based on data collected from synchronous modes of learning, principally, classes delivered on-campus and online. This is important to note since recent student surveys on PASS participation have revealed that students' are increasing asynchronous contact through the use of PASS session recordings. Data for asynchronous modes of learning in the PASS program, to date, have not been collected, which may have a material impact on the results presented below. Overall student grade performance for units with PASS support can be seen for the entire 3164 students in the cohort in Figure 5. As expected, the distribution is roughly normal, with the exception of students who withdrew from the offered units.

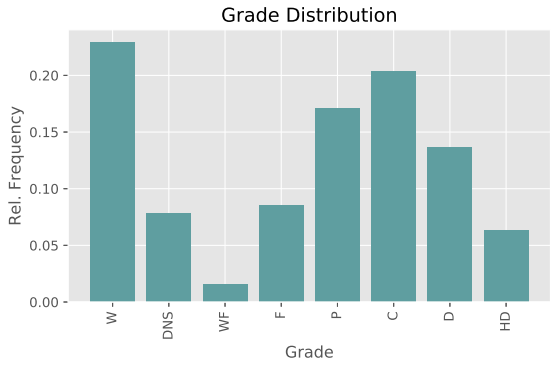

Figure 7: Relative frequency for the grade distribution for the aggregate of all subjects offering PASS in Semester 1, 2017.

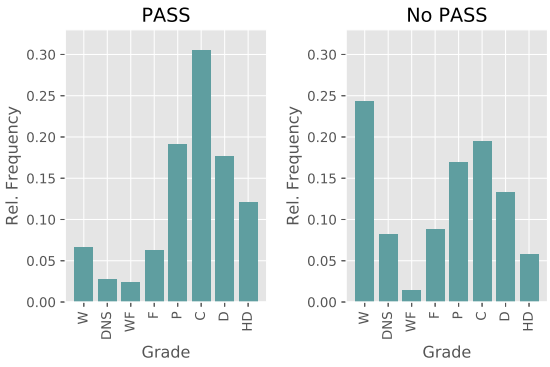

Figure 8: Relative frequency of the grade distribution for students who attended at least 1 PASS session (on the left), compared to grade distribution for students who did not attend PASS (shown on the right).

Higher levels of achievement for students attending PASS can be observed in Figure 6, however, a causal link cannot be directly ascribed to PASS as the implicit motivation and self-efficacy of students is not measured. A breakdown of grade distribution can be seen in Figure 8. The affect of the grade distribution shift seen in Figure 6 may be more pronounced with the removal of units such as CUC107 with distributions naturally skewed towards higher levels of achievement, and consistently low PASS attendance. The graph shown in Figure 7 explores the relationship between achievement and exposure to PASS. Students who withdrew prior to the Census date, were omitted from this analysis given there is no recorded achievement for their enrolment. An arbitrary ordinance structure was assigned to the grade levels, shown in Table 3.

Table 3: An ordinance structure was given to the grade achievement levels, with a High Distinction given a 5, and a Fail given a 0.

Grade	Numerical Value
HD	5
D	4
C	3
P	2
PC	1
DNS, WF, F	0

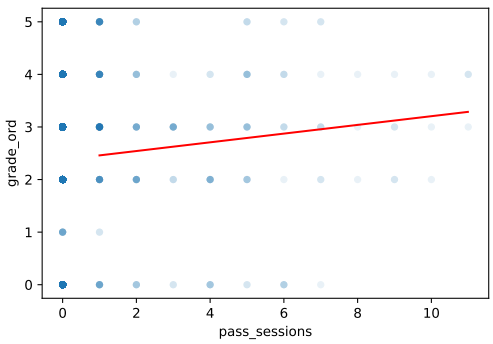

Figure 9: A scatter plot showing the number of PASS sessions attendend versus the grade achieved. The visual weight given to each point is 0.1, given the discrete nature of the data.

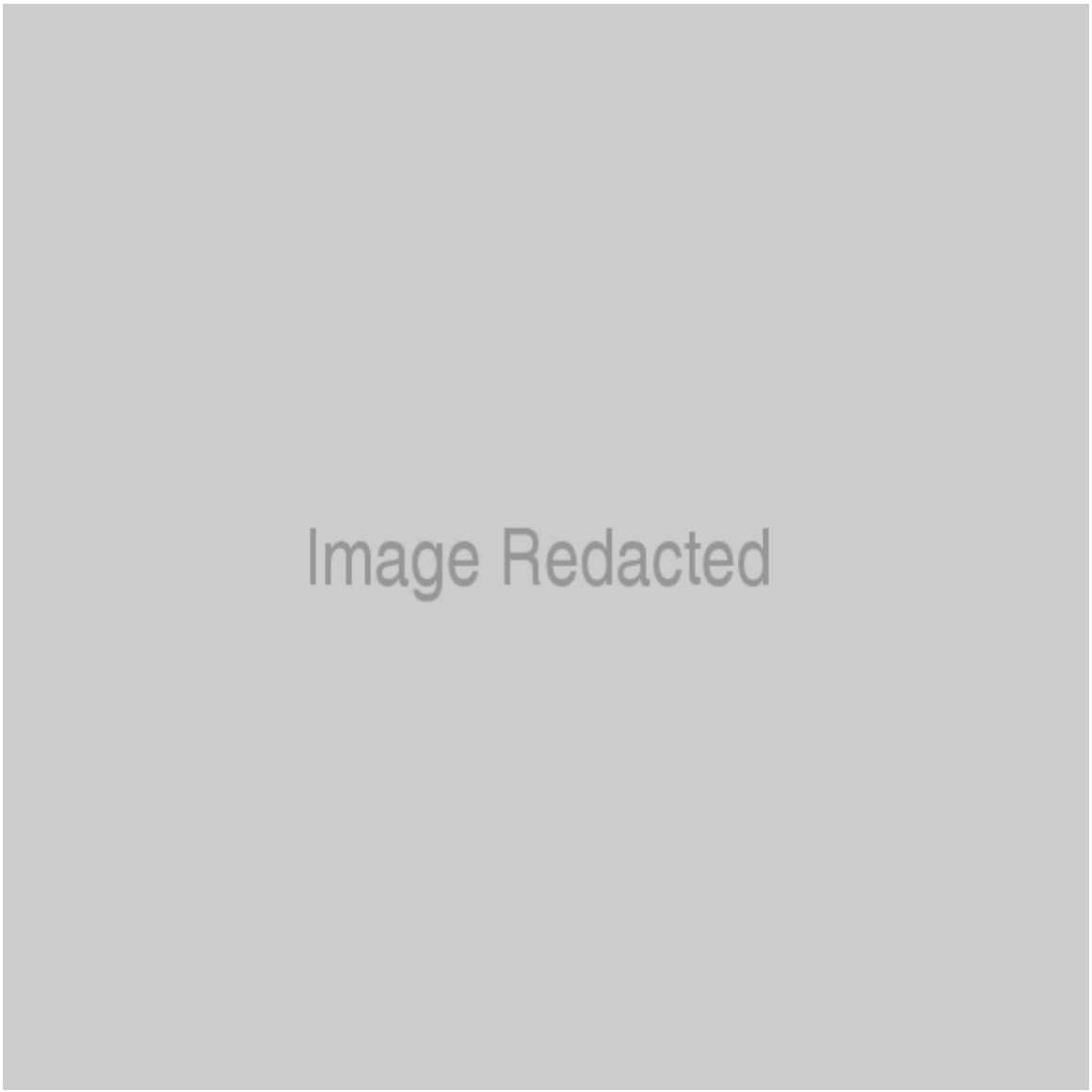

Figure 10: Relative frequency of the grade distribution for each Unit PASS was offered for in Semester 1, 2017.

If `grade` represents the numerical value of a student's recorded achievement, and `pass` represents the number of PASS sessions attended, the following model can be fit to the data:

$$\texttt{grade} = \beta_0 + \beta_1 \cdot \texttt{pass} + \epsilon \tag{1}$$

Basic Ordinary Least Squares (OLS) regression was employed to fit the model - the output can be seen in Appendix A. The model is visually represented in Figure 7. The PASS attendance parameter, β_1, was statistically significant at both the 1% and 5% levels, lending support to the argument that PASS contributes to increased student achievement. If a full grade shift (e.g. from a Credit to a Distinction) is represented by an increase of 1 point then, according to the model, each additional pass session attended contributes to, on average, a 0.08 point increase in grade. Unfortunately the model has a very low R^2 value indicating serious misspecification. Focusing the analysis on students who attend PASS sessions reveals a positive correlation between historical performance and the number of sessions attended - put simply, there is some evidence that students with more intrinsic motivation attend a higher number of PASS sessions. This relationship can be seen Figure 9, on the previous page. Taking this into account, an improved model would statistically test for PASS performance whilst controlling for individual intrinsic motivation. Theobald and Freeman (2014) suggest that historical grade point average can be employed to control for intrinsic motivation with some degree of reliability. If `GPA` acts as the variable for historical grade point average, the improved model can be written as:

$$\texttt{grade} = \beta_0 + \beta_1 \cdot \texttt{pass} + \beta_2 \cdot \texttt{GPA} + \epsilon \tag{2}$$

Basic OLS regression was again used to fit the model - the output can be seen in Appendix B. A dramatic improvement in the R^2 value was observed suggesting that the combined variations in `pass` and `GPA` explained over 61% of the variation in `grade`. Despite improved model specification, the analysis revealed that contributions of the PASS program to student grade performance was statistically insignificant, certerus paribus.

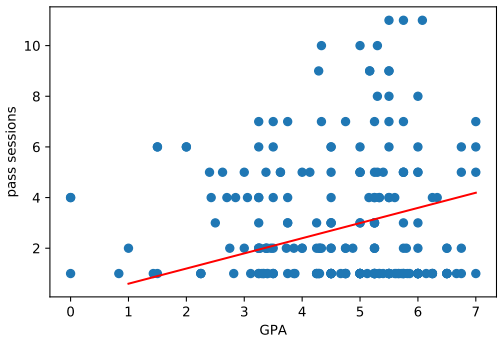

Figure 11: A scatter plot which shows the relationship between historical GPA and the number of PASS sessions attended.

This finding is inconsistent with a number of studies conducted on peer assisted learning programs, which use almost identical techniques. O'Brien (2005) conducted a study at the University of Wollongong (UOW) which found PASS attendance improved a student's results. There is no immediate reason for the lower than expected performance of the PASS program at CDU. One possible explanation, though slightly tenuous, may be due to the demographic profile of CDU's student cohort. Approximately 70% of the CDU student cohort are 25 years or older in age (CDU Annual Report, 2017). This is in contrast to other Australian Universities, like UOW, which has 30% (or less) of their student cohort aged 25 years and older. Studies suggest that the main challenge mature age students face is in regard to the limited amount of time available to them due to many other commitments, such as family, domestic duties and paid work (Cowell, 2010). Increased competition for a student's time may render independent study and PASS attendance as mutually exclusive activities. In other words, students are attending PASS at the sacrifice of some of their independent learning time - the net effect being no gain (or loss) to grade performance. It is worth highlighting that this analysis has only been applied to a small section of the working life of the PASS program. To better understand the program's effects on grade performance a longitudinal analysis would need to be undertaken.

5.3 Student Experience

The PASS program is intended to operate as a support program. In this respect student perception of the support provided can be considered of more importance than returns of the program based on student achievement (Watters & Ginns, 1997). Student experience data was captured through an incentivised online survey. The survey was 31 questions in length, and was emailed to the 239 students who attended PASS throughout the semester. There were 140 responses received. The full survey can be seen in Appendix C. Four of the questions asked, which provide a high level overview of the student experience, are as follows:

1. Attending PASS has helped my independent study be more effective
2. Attending PASS has increased my motivation to complete the unit
3. Attending PASS has encouraged me to take more responsibility for my own learning
4. Attending PASS has improved my understanding of the unit content

Students were asked these questions as part of the survey, and could choose from the following responses: strongly disagree, disagree, agree, and strongly agree. The student response data can be seen in Figures 10 - 13. Student responses to the perceived benefits of the program were overwhelmingly positive. There may be some positive bias in the responses due to the incentivisation scheme used to improve the response rate, however, the impacts on the integrity of the data captured would be minimal (Cole, Sarraf, and Wang, 2015).

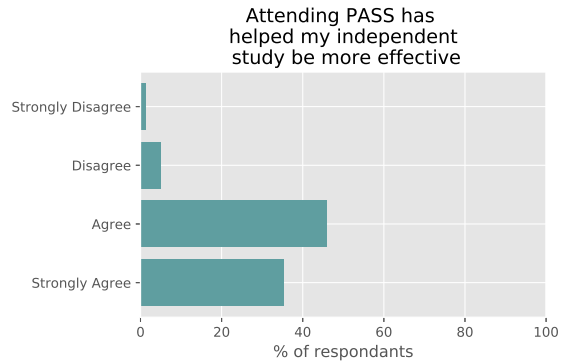

Figure 12: Student response data from survey which shows student perceptions of how PASS aided independent study skills

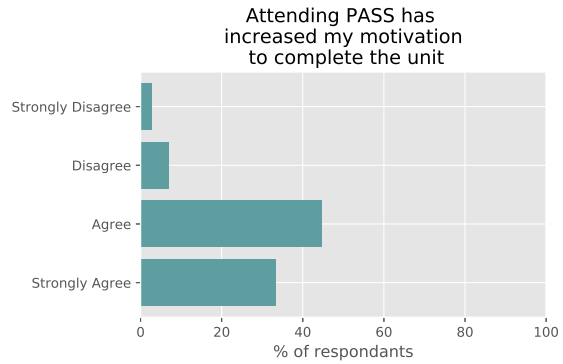

Figure 13: Student response data from survey which shows student perceptions of how PASS improved motivation to complete unit work

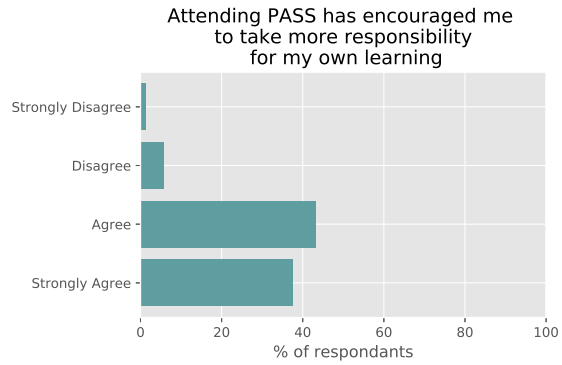

Figure 14: Student response data from survey which shows student perceptions of how PASS increased levels of responsibility

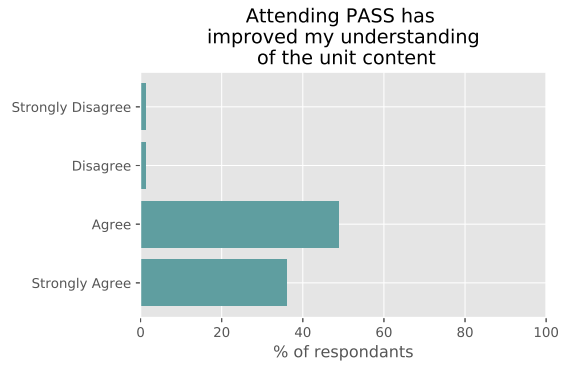

Figure 15: Student response data from survey which shows student perceptions of how PASS aided understanding

In addition to quantitative data, students were also asked to provide written feedback on what they liked most about the program. Some selected responses can be seen below.

> *The Pass leader was a student who has faced the same problems and can empathise with you.* [redacted] *was a very good Pass leader who really helped us all a lot. She is friendly and always willing to help, but led you to work out the question and promoted each student to explain ideas so really cement the knowledge. I liked collaborating in a small group with other student online, because being an external student, you don't get that opportunity much.*
>
> *I'm a very interactive learner. Interacting with the Pass leader and other students via Blackboard made learning more easier, and a fun way to learn.*
>
> *The Pass leader was well prepared and she was so confident while giving instructions. She made us share our opinions whether it is wrong or right. She is a good motivator. Always motivated on our essays topic.*
>
> *Provides the opportunity for first years to talk to older students which is extremely important for their personal development, learning how to function at University, social skills, learning about the non-academic side of being at uni, networking, etc. Provides an opportunity for older students to share their knowledge and experiences so that younger students can benefit from their experience.*
>
> *Highly recommended for all students, learnt so much, not just the unit. Help with Microsoft and other resources, encouragement to keep going and great networking opportunity with other students*
>
> *Provides a clear idea what has to be done and how? I was able to prepare my assignments timely, reduced the study load and stress.* [redacted] *was always ready to help even after the Pass session. She was always there with a warm and positive manner. She was well prepared with her resources regarding the unit, making the unit more interesting.*

6 Semester 2, 2017

6.1 Attendance

A total of 7.2% of the 3292 enrolled students attended at least one PASS session, which is marginally lower than Semester 1. Participation rates (for at least one session) can be seen for each individual subject in Figure 15.

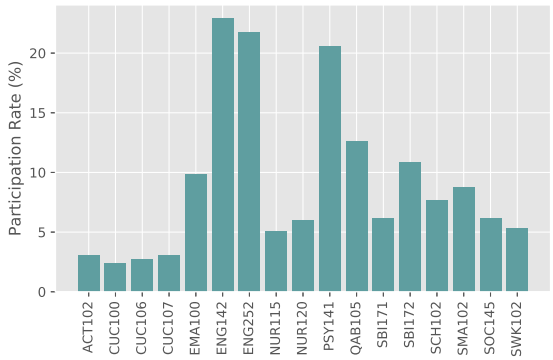

Figure 16: Participation rates for each unit with a PASS offering for Semester 2, 2017. (Students with a recorded withdrawal have not been included in this analysis)

Figure 17: Average student attendance for PASS comparison of Semester 1 and Semester 2.

Average attendance to PASS sessions, in terms of absolute student numbers, can be seen in Figure 16. On average up to 8 students are participating in any given PASS session. The overall average attendance in Semester 2 follows a similar trend to Semester 1, although marginally lower during some periods. A number of new units were added to the PASS offering for Semester 2, some of which had lower than expected participation rates, which may explain some of the dilution in average attendance numbers. This highlights a need for some restraint when considering growth of the program. It also underpins the need for a deeper analysis of program successes, so understanding can be applied to develop a more sustainable model for growth.

Again, demand for PASS services can be seen to peak twice during the semester: once at the beginning of the semester and once towards the end of the semester. This lends further support to the notion that PASS is being used to help students orient themselves in a unit, and to help them negotiate final assessment items. The absolute attendance broken down by subject can be seen over the page in Figure 4. Some units in this semester appear to have lower attendance, however, for SOC140 this may simply be an artefact of changes to the teaching structure. Furthermore, CUC107 has traditionally had a small cohort for the first Semester. Ongoing monitoring of these subjects is necessary to determine if PASS support is still a requirement.

The $20 book voucher initiative used in Semester 1 was used again in Semester 2. The total cost of this incentive for Semester 2, 2017 was approximately $1700. Please refer to Semester 1 for a more detailed discussion of this incentive scheme.

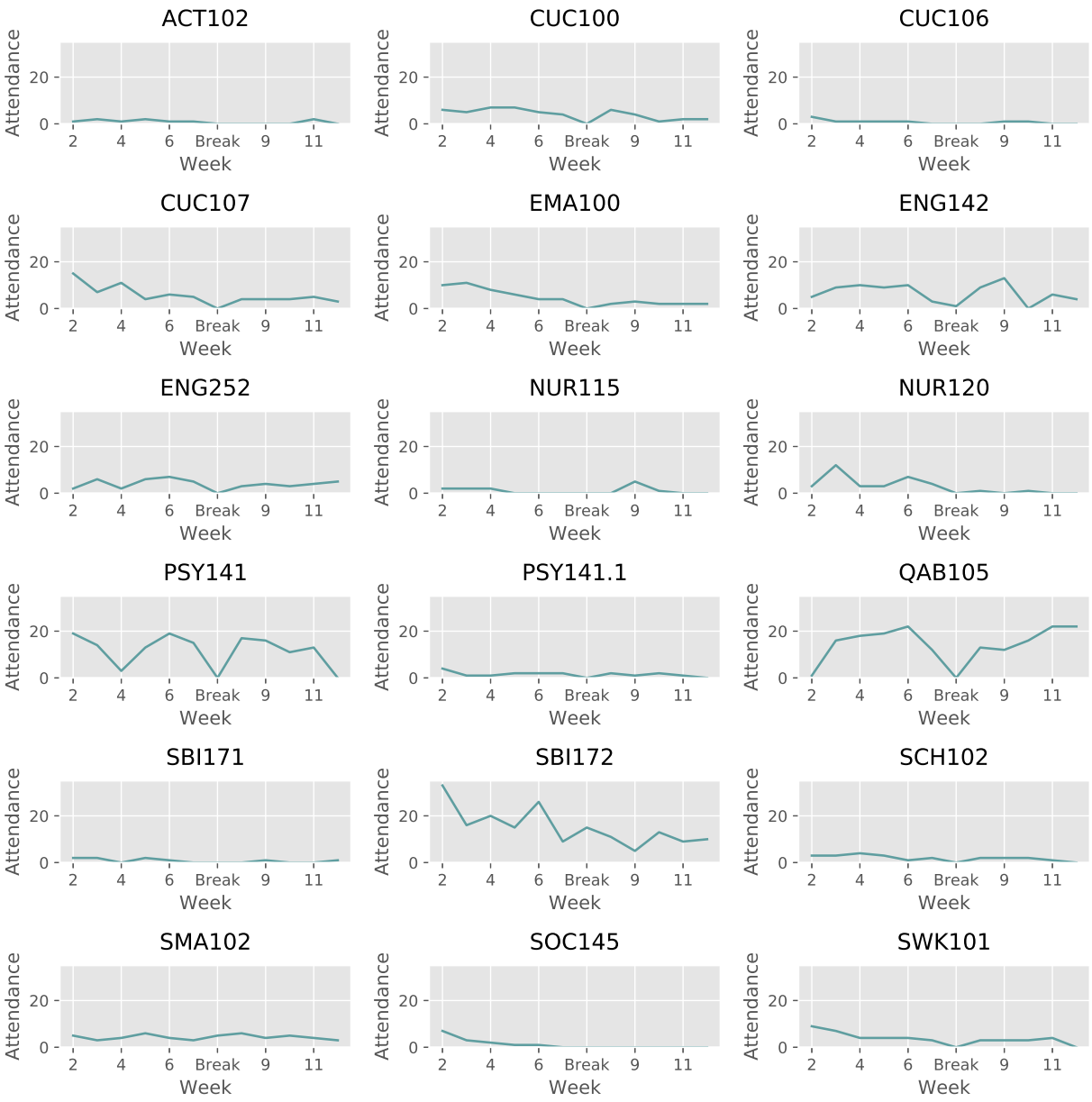

Figure 18: Absolute attendance for each unit offering PASS for Semester 2, 2017.

6.2 Performance

Overall student grade performance for units with PASS support can be seen for the entire 4448 students in the cohort, which is shown in Figure 18. As expected, the distribution is roughly normal, with the exception of students who withdrew from the offered units.

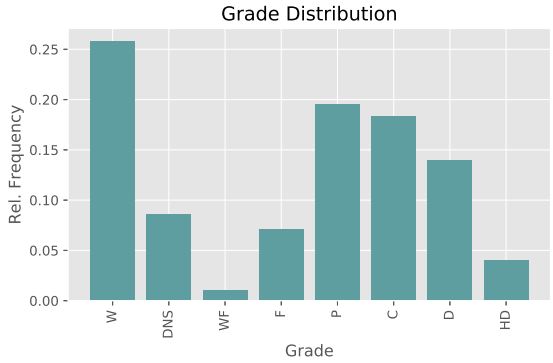

Figure 19: Relative frequency for the grade distribution for the aggregate of all subjects offering PASS in Semester 2, 2017.

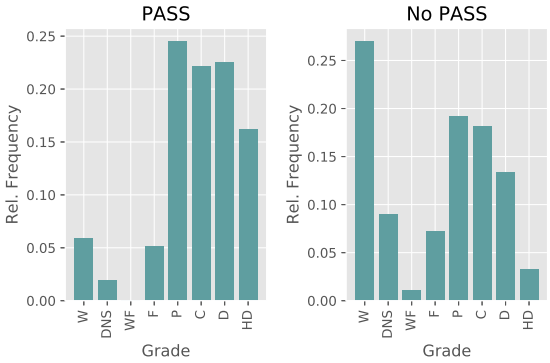

Figure 20: Relative frequency of the grade distribution for students who attended at least 1 PASS session (on the left), compared to grade distribution for students who did not attend PASS (shown on the right).

Higher levels of achievement for students attending PASS can be observed in Figure 19. It must be highlighted that this effect is significantly more pronounced than Semester 1. Notably, the grade distribution for students who attended PASS is more heavily skewed towards higher grades. As previously stated, a causal link cannot be directly ascribed to PASS as self selection bias has not been accounted for. A breakdown of grade distribution by unit can be seen in Figure 21, again showing that the mix of subjects supported by PASS generally fit the high failure and withdrawal criterion of the program. Possible exceptions include NUR120 and CUC107. The graph shown in Figure 20 compares Semester 1 and Semester 2 results from the OLS regression for equation (1) in Section 5.2 - the full results from the OLS regression can be seen in Appendix C. Students who withdrew prior to the Census date were omitted from this analysis given there is no recorded achievement for their enrolment. An arbitrary ordinance structure was assigned to the grade levels, shown in Table 5. The PASS attendance parameter, β_1, was again statistically significant at both the 1% and 5% levels, however, the overall R^2 value was still low, indicating model misspecification. Despite the model misspecification, it is encouraging to see a minor improvement in the academic achievement in the program. This helps to provide some guidance that operational changes made to the program in Semester 2 may be having some impact.

Table 4: An ordinance structure was given to the grade achievement levels, with a High Distinction given a 5, and a Fail given a 0.

Grade	Numerical Value
HD	5
D	4
C	3
P	2
PC	1
DNS, WF, F	0

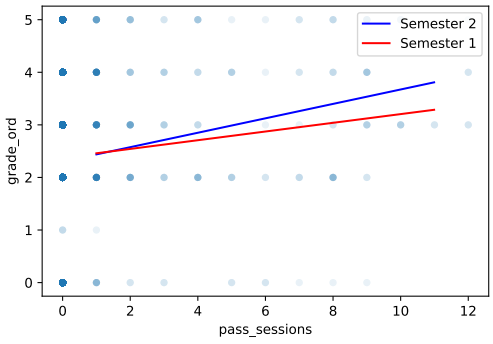

Figure 21: A scatter plot showing the number of PASS sessions attendend versus the grade achieved. The visual weight given to each point is 0.1, given the discrete nature of the data.

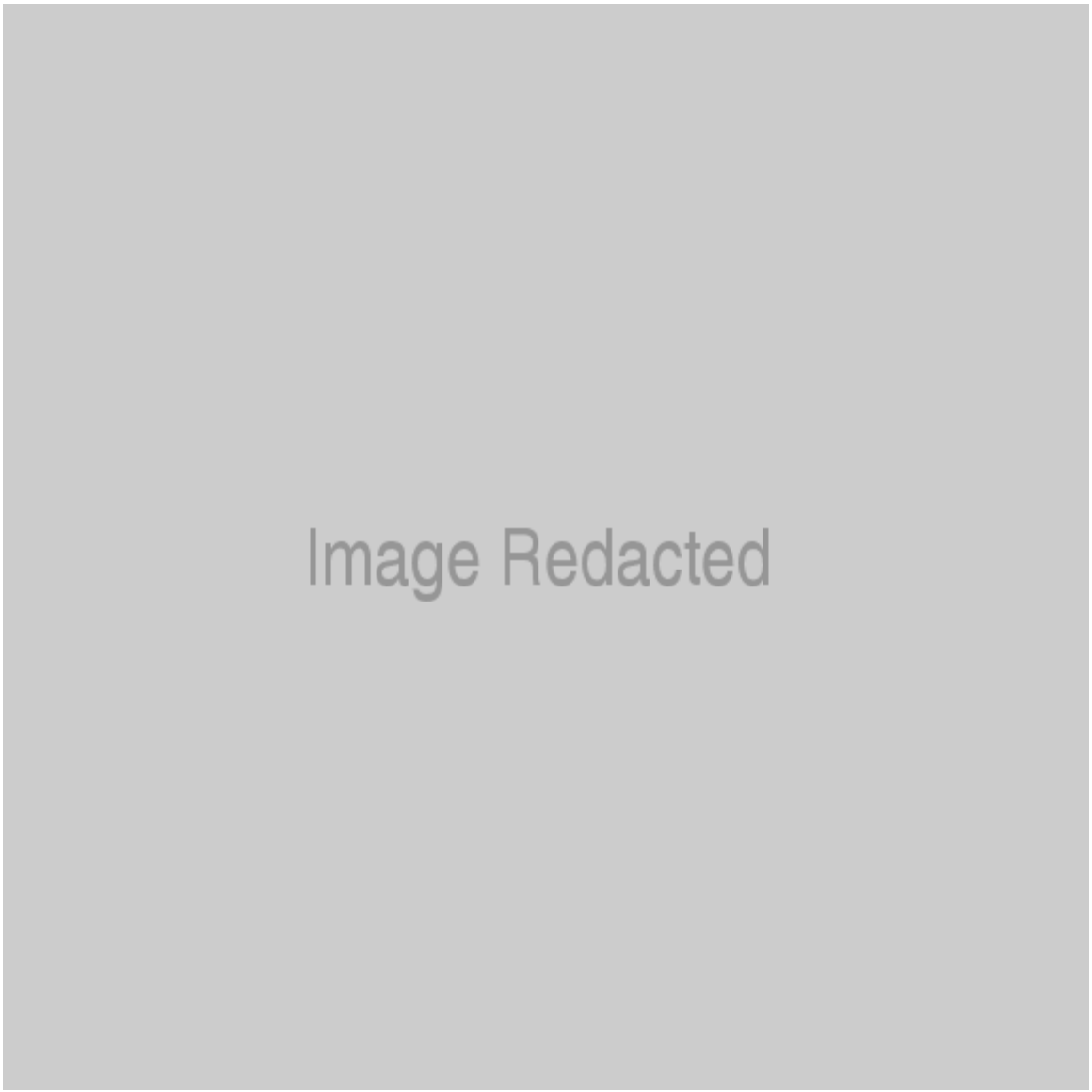

Figure 22: Relative frequency of the grade distribution for each Unit PASS was offered for in Semester 1, 2017.

6.3 Student Experience

Student experience data was again captured through an incentivised online survey. The survey was almost identical to Semester 1, with one notable change being the addition of a neutral category for questions which seek ratings on the program performance. The survey was 31 questions in length, and was emailed to the 239 students who consumed PASS services throughout the semester. There were 140 responses received. The full survey can be seen in Appendix C. Four of the questions asked, which provide a high level overview of the student experience, are as follows:

1. Attending PASS has helped my independent study be more effective
2. Attending PASS has increased my motivation to complete the unit
3. Attending PASS has encouraged me to take more responsibility for my own learning
4. Attending PASS has improved my understanding of the unit content

Students were asked these questions as part of the survey, and could choose from the following responses: strongly disagree, disagree, neutral, agree, and strongly agree. The student response data can be seen in Figures 18 - 21. Student responses to the perceived benefits of the program were again overwhelmingly positive. In fact, student survey responses were more positive towards the program when compared to Semester 1, however, this may simply be due to the addition of a neutral category to the response options.

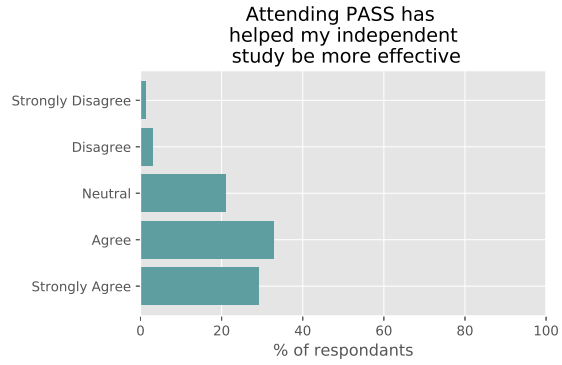

Figure 23: Student response data from survey which shows student perceptions of how PASS aided independent study skills

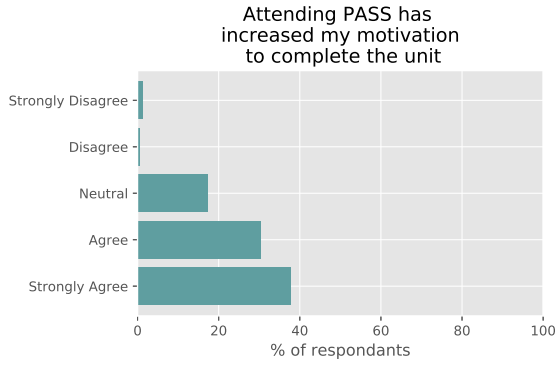

Figure 24: Student response data from survey which shows student perceptions of how PASS improved motivation to complete unit work

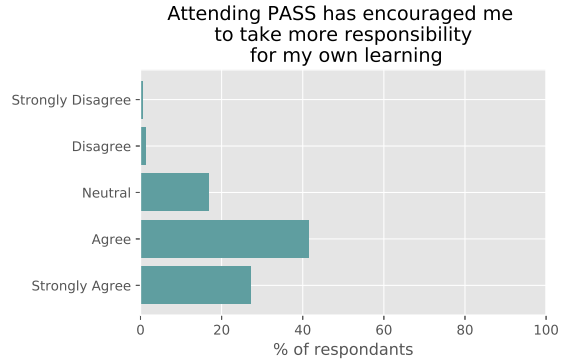

Figure 25: Student response data from survey which shows student perceptions of how PASS increased levels of responsibility

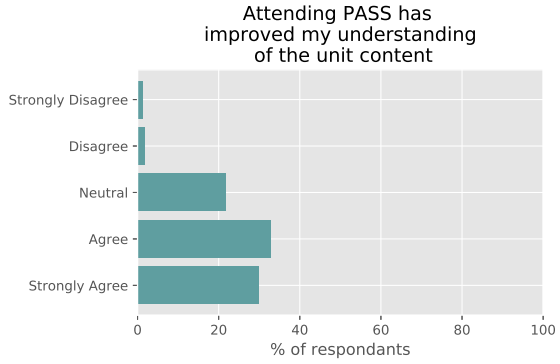

Figure 26: Student response data from survey which shows student perceptions of how PASS aided understanding

In addition to quantitative data, students were also asked to provide written feedback on what they liked most about the program. Some selected responses can be seen below.

> *The Pass leader was a student who has faced the same problems and can empathise with you.* [redacted] *was a very good Pass leader who really helped us all a lot. She is friendly and always willing to help, but led you to work out the question and promoted each student to explain ideas so really cement the knowledge. I liked collaborating in a small group with other student online, because being an external student, you don't get that opportunity much.*
>
> *I'm a very interactive learner. Interacting with the Pass leader and other students via Blackboard made learning more easier, and a fun way to learn.*
>
> *The Pass leader was well prepared and she was so confident while giving instructions. She made us share our opinions whether it is wrong or right. She is a good motivator. Always motivated on our essays topic.*
>
> *Provides the opportunity for first years to talk to older students which is extremely important for their personal development, learning how to function at University, social skills, learning about the non-academic side of being at uni, networking, etc. Provides an opportunity for older students to share their knowledge and experiences so that younger students can benefit from their experience.*
>
> *Highly recommended for all students, learnt so much, not just the unit. Help with Microsoft and other resources, encouragement to keep going and great networking opportunity with other students*
>
> *Provides a clear idea what has to be done and how? I was able to prepare my assignments timely, reduced the study load and stress.* [redacted] *was always ready to help even after the Pass session. She was always there with a warm and positive manner. She was well prepared with her resources regarding the unit, making the unit more interesting.*

7 Recommendations

PASS reporting, in previous years, has not seen continuity in the tools used to measure program performance. One key operational change in 2017 was the implementation of metrics used to measure critical aspects of student experience and academic performance. Despite the ongoing success of the program, these metrics have highlighted the need for minor changes in the name of continuous improvement. A simple change that may have a positive binary effect on performance involves reviewing the subject mix offered for PASS. There are instances of units where grade distributions no longer meet program specifications - an example of this is NUR120. Further to this, there are instances of low participation rates from the student cohort indicating that students may not be valuing the PASS offering for that unit. This represents an opportunity to redirect resources to areas in the program where they would have a higher impact on performance. This comes with an additional recommendation that PASS should seek to adopt a sustainable growth model. Historically, the program has sought growth each year. Whilst this may have been a desirable strategy in the initial stages of the project, some of the newly established metrics report softer performance for newer unit additions. It would be prudent to establish higher levels of performance in existing units prior to embarking on growth of the program.

One aspect of the program currently under review is the streamlining of Learnline and Blackboard Collaborate set-up procedures. Currently, the process is somewhat resource intensive, relying heavily on the CDU Learnline Support team. Reviewing operational process has also allowed some inquiry into the technologies leveraged to deliver the program. One recommendation, that has been highlighted in this process, is the creation of a PASS unit on Learnline. The unit would sit alongside current Learnline offerings, and act as a container for PASS activities. This change comes with a number of binary benefits, including:

- Storing all PASS resources in a central location;
- Streamlining of operational processes;
- Reduction in the resource intensive activities involved in PASS set-up for Learnline support staff;
- Implementation of up-to-date Collaborate technologies like Collaborate Ultra (currently PASS uses legacy systems); and
- Extra functionality allowing the capture data from asynchronous access;

Comparison of the attendance data for Semester 2, compared to Semester 1 (Section 6.1), highlights the need for renewed effort in the program's marketing strategy. Indeed, data captured on marketing for Semester 2 (Section 4) shows that students relied more heavily on word of mouth to hear about the program, which also corresponded with a fall in those hearing about the program through announcements on Learnline, advertising on campus, and announcements from the PASS Leader during lectures. To help raise awareness of the program this report recommends increased emphasis be placed on the marketing strategy in communications to PASS Leaders. Additionally, an increase in face to face meetings between the PASS Coordinator and PASS Leaders, coupled with more transparency around attendance data, will help to further communicate the importance of the marketing strategy.

Finally, to help ensure that the program is incrementally improving, and to help with continuity in delivery, this report recommends that resources developed by PASS Leaders are collected and stored in a central location for future use by the program. To help facilitate their sessions, PASS Leaders develop resources throughout the semester. These resources would be beneficial to the PASS program so that future PASS Leaders do not have to re-invent offerings from scratch. Further, capturing resources and delivery knowledge will help to ensure that aspects of human capital are retained despite natural attrition seen in the PASS Leader role.

8 References

Charles Darwin University. (2017). *Charles Darwin University 2016 Annual Report*, Retrieved from `http://www.cdu.edu.au/sites/default/files/mace/docs/annual-report-2016.pdf`.

Cole, J. S., Sarraf, S. A., & Wang, X. (2015), Does use of survey incentives degrade data quality?, *Presented at the Association for Institutional Research Annual Forum*, May, 2015.

Cowell, J. E. (2010). Coping with the demands of mature age student life. Retrieved from `http://ro.ecu.edu.au/theses_hons/1347`

O'Brien, M. (2016), An Analysis of the Effectiveness of PASS, *National Centre for PASS, University of Wollongong*, 73-77.

Terrion, J. L., & Leonard, D. (2007), A taxonomy of the characteristics of student peer mentors in higher education : findings from a literature review, *Mentoring & Tutoring*, 15, 149-164.

Theobald, R., & Freeman, S. (2014), Is It the Intervention of the Students? Using Linear Regression to Control for Student Characteristics in Undergraduate STEM Research, *CBE - Life Sciences Education*, 13, 41-48.

Watters, J. J., & Ginns, I. S. (1997), *Peer assisted learning: Impact on self-efficacy and achievement*, Presented at the annual meeting of the American Educational Research Association, 24-28 March, 1997.

Appendix A

Basic Ordinary Least Squares regression was undertaken to fit the model specified by equation (1) in Section 5.2, for Semester 1.

OLS Regression Results

Dep. Variable:	grade_ord	R-squared:	0.004
Model:	OLS	Adj. R-squared:	0.003
Method:	Least Squares	F-statistic:	8.779
Date:	Mon, 16 Oct 2017	Prob (F-statistic):	0.00308
Time:	12:18:00	Log-Likelihood:	-4480.3
No. Observations:	2381	AIC:	8965.
Df Residuals:	2379	BIC:	8976.
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[95.0% Conf.	Int.]
const	2.3767	0.034	70.892	0.000	2.311	2.442
pass_sessions	0.0828	0.028	2.963	0.003	0.028	0.138

Omnibus:	515.511	Durbin-Watson:	1.615
Prob(Omnibus):	0.000	Jarque-Bera (JB):	121.430
Skew:	-0.252	Prob(JB):	4.28e-27
Kurtosis:	2.015	Cond. No.	1.35

Appendix B

Basic Ordinary Least Squares regression was undertaken to fit the model specified by equation (2) in Section 5.2, for Semester 1.

OLS Regression Results

Dep. Variable:	grade_ord	R-squared:	0.614
Model:	OLS	Adj. R-squared:	0.614
Method:	Least Squares	F-statistic:	1887.
Date:	Mon, 16 Oct 2017	Prob (F-statistic):	0.00
Time:	14:26:11	Log-Likelihood:	-3341.3
No. Observations:	2376	AIC:	6689.
Df Residuals:	2373	BIC:	6706.
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[95.0% Conf.	Int.]
const	-0.2801	0.048	-5.810	0.000	-0.375	-0.186
pass_sessions	-0.0217	0.017	-1.243	0.214	-0.056	0.013
gpa	0.6847	0.011	61.249	0.000	0.663	0.707

Omnibus:	25.382	Durbin-Watson:	1.564
Prob(Omnibus):	0.000	Jarque-Bera (JB):	39.302
Skew:	-0.074	Prob(JB):	2.92e-09
Kurtosis:	3.612	Cond. No.	10.8

Appendix C

Basic Ordinary Least Squares regression was undertaken to fit the model specified by equation (1) in Section 5.2, for Semester 2.

OLS Regression Results

Dep. Variable:	grade_ord	R-squared:	0.014
Model:	OLS	Adj. R-squared:	0.014
Method:	Least Squares	F-statistic:	45.34
Date:	Tue, 28 Nov 2017	Prob (F-statistic):	1.96e-11
Time:	10:44:14	Log-Likelihood:	-5903.2
No. Observations:	3220	AIC:	1.181e+04
Df Residuals:	3218	BIC:	1.182e+04
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[95.0% Conf.	Int.]
const	2.3013	0.027	84.470	0.000	2.248	2.355
pass_sessions	0.1372	0.020	6.733	0.000	0.097	0.177

Omnibus:	562.103	Durbin-Watson:	1.820
Prob(Omnibus):	0.000	Jarque-Bera (JB):	158.444
Skew:	-0.275	Prob(JB):	3.93e-35
Kurtosis:	2.063	Cond. No.	1.43

Appendix D

The student experience survey is sent out in Week 11 of the semester to provide some insight on how students are using the services, in addition to the student perception of the program, and provide an avenue for feedback on how the program could be improved. The survey consists of 31 questions shown below:

1. How did you find out about PASS?
2. For which units did you attend PASS sessions?
3. How did you attend the PASS sessions?
4. Which mode did you prefer?
5. Why did you prefer that mode?
6. Attending PASS has improved my understanding of the unit content
7. Attending PASS has encouraged me to take more responsibility for my own learning.
8. Attending PASS has helped my independent study be more effective.
9. Attending PASS increased my motivation to complete the unit.
10. Attending PASS helped me better prepare for the exams/final essay.
11. The PASS leader was well prepared.
12. The PASS leader promoted a positive learning environment.
13. The PASS leader responded to or acknowledged my contributions during the sessions.
14. The PASS leader used effective questioning to guide my learning rather than simply giving answers
15. Opportunity ws given to raise any problems, issues or questions about the unit.
16. I felt comfortable contributing to the sessions.
17. Through these sessions, I have been made aware of other...
18. I would recommend first-year students to attend PASS.
19. PASS helped me to continue in the uni with more confidence and skills.
20. What I like most about the PASS program is...
21. PASS at CDU could be improved by...
22. How many PASS sessions did you attend?
23. Were any of these factors barriers to your attendance?
24. We would apreciate any suggestions or comments you might have to help us make the sessions more relevant to you.