
OPTIMISING THE TRANSITION TO STUDY AND EMPLOYMENT FOR SCHOOL LEAVERS OF THE ACT EDUCATION SYSTEM

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1 INTRODUCTION

A key aim of the education system in Australia is to provide young people with the skills and knowledge to accomplish their goals and reach their potential after primary and secondary schooling has ended (Department of Education and Training, 2016). This includes encouraging young people to continue into tertiary education and entering the workforce. In the ACT, efforts by the Territory government to achieve this aim include the offering of work experience placements, vocational education and training (VET) subjects and career counselling, the development of the *Pathways* career planning website, and contact with people in industry or higher education through attendance at the Canberra CareersXpo (ACT Education Directorate, 2016).

In Australia, school leavers (young people that do not attain a Year 12 certificate) continue to be less likely to achieve desired employment and study goals than those that graduate from year 12 (Australian Bureau of Statistics, 2015). The *ACT post school destinations and pathways in 2015* survey, published by the ACT Education Directorate, was conducted in order to aid the planning, development and provision of career guidance and appropriate services to all students in the ACT.

This portfolio analyses some of the major findings from the survey, quantifying disparities between pathways of graduates and school leavers. These differences define the barriers to the achievement of work and study goals for school leavers. A recommendation was made with the intention of removing these barriers and improving outcomes for school leavers after completing secondary education.

2 ACT POST SCHOOL DESTINATIONS AND PATHWAYS IN 2015

Earlier in 2016, the ACT Government Education Directorate published the *ACT post school destinations and pathways in 2015* survey, which summarised results from the survey of 2014 year 12 graduates and school leavers and the longitudinal survey of 2013 year 12 graduates and school leavers. The survey was designed in order to inform the ACT Education Directorate on the pathways graduates and school leavers take in order to assist the advancement and implementation of employment and learning options for young people that have left secondary schooling (ACT Education Directorate, 2016).

2.1 DATA AND DESCRIPTIVE STATISTICS

The following is a selection of data most relevant to the scope of this portfolio. The data includes information on what graduates and school leavers did after leaving secondary school, their satisfaction with senior secondary school, and school leavers' demographics and reasons for discontinuing their secondary education. This information is used to inform the insights and craft the recommendations later in the portfolio.

2.1.1 DESTINATIONS AND PATHWAYS

Tables referenced in this section are contained in Appendix A.

Table A1 shows the proportion of year 12 graduates employed or studying the year after graduating, by three selected demographics. 'n.a.' indicates that there was no data collected in this category. Some statistics of note are as follows:

- 91.9 percent of 2014 year 12 graduates were employed and/or studying in 2015.
- Female year 12 graduates were more likely to be employed and more likely to be employed and/or studying than male year 12 graduates, for all four years surveyed.
- Year 12 graduates that received career counselling at school were at least as likely, if not more likely to be employed the year after graduation than those who did not receive career counselling at school, for all four years surveyed.

- Year 12 graduates who participated in work experience at school were more likely to be employed and at least as likely, if not more likely to be studying the year after graduation than those who did not participate in work experience at school, for graduates in 2013 and 2014.

Table A2 shows the proportion of school leavers employed and/or studying in the year after leaving school, by four selected demographics. 'n.a.' indicates that there was no data collected in this category. Some statistics of note are as follows:

- 75.2 percent of 2014 school leavers were employed and/or studying in 2015.
- Male school leavers were more likely to be employed and/or studying than female school leavers, for all four years surveyed.
- School leavers that received career counselling at school were more likely to be employed or studying (or either) the year after leaving school than those that did not receive career counselling, for all four years surveyed.
- School leavers that participated in work experience at school were more likely to be employed or studying (or either) the year after leaving school than those that did not participate in work experience at school, for those that left school in 2013 or 2014.
- School leavers that left school before Year 12 were less likely to be employed and/or studying the year after leaving school than those that left school during year 12, for all four years surveyed.

Table A3 shows the proportion of 2013 year 12 graduates that were employed and/or studying in 2015, according to whether they were employed and/or studying in 2014. Grey boxes show the percentages of year 12 graduates who maintained the same employment/learning status from 2014 to 2015. 4.5 percent of year 12 graduates were neither employed nor studying two years after graduating, a decrease from the 6.9 percent that were neither employed nor studying one year after graduating. Of those who were not employed or studying one year after graduating, 79.1 percent were either employed or studying two years after graduating.

Table A4 shows the proportion of 2013 school leavers that were employed and/or studying in 2015, according to whether they were employed and/or studying in 2014. Grey boxes show the percentages of school leavers who maintained the same employment/learning status from 2014 to 2015. 17.1 percent of school leavers were neither employed nor studying two years after graduating, a decrease from the 21.6 percent that were neither employed nor studying one year after graduating. Of those that were not employed or studying one year after graduating, 45.2 percent were either employed or studying two years after graduating.

2.1.2 DEMOGRAPHICS OF SCHOOL LEAVERS

Table A5 shows the proportion of 2014 school leavers and 2014 year 12 graduates by selected demographics. Over two-thirds of school leavers identified as male, compared to almost half of year 12 graduates. Year 12 graduates were more likely to have received career counselling and more likely to have participated in work experience than school leavers. Students identifying as Aboriginal or Torres Strait Islander composed 5.8 percent of school leavers, compared to 1.1 percent of year 12 graduates.

2.2 METHODOLOGY AND SOURCES OF ERROR

The ACT Education Directorate were transparent with their methodology. For the 2015 survey, approach letters were mailed to 2014 year 12 graduates and year 12 school leavers, as well as the parents of year 9-11 school leavers. Letters contained information about the survey, including how it would be undertaken and necessary confidentiality provisions in order to comply with ethical research guidelines. Interviews were conducted by telephone in mid-2015. 69 percent of 2014 year 12 graduates who were sent an approach letter completed the survey (2,541 of 3,701), compared to 59 percent of 2014 school leavers (384 of 654). The published data were described as estimates due to the weighting of survey responses to reflect the total numbers of 4,291 year 12 graduates and 823 school leavers. A

similar methodology was used for the longitudinal survey of 2013 year 12 graduates and school leavers. An approach email was sent to prospective respondents containing similar information to the letter distributed in 2014. 78 percent of 2013 year 12 graduates who responded to the survey in 2014 answered the follow-up survey in 2015 (1,750 of 2,247), compared to 65 percent of 2013 school leavers (229 of 352). Again, the published data were described as estimates due to the weighting of survey responses to reflect the total numbers of 4,178 year 12 graduates and 824 school leavers. Response rates for the 2015 survey are displayed in Table A6.

Measurement error due to wording of questions is a likely source of error in this survey. This type of error exists when a respondent does not answer a question correctly, given the survey's intended responses. When completing the survey, it is up to the student to determine the meaning of phrases like 'career counselling', 'work experience' and 'future choices'. As an example, an accepted definition of 'counselling' specifically points to personal or psychological problems as the reason for professional assistance being given. In contrast, the ACT Education Directorate defines career counselling as "one on one or group discussion" with people such as career advisors and industry experts. A student may not consider one on one or group discussion with a career advisor or an industry expert as taking steps to resolve personal problems, and thus may answer negatively.

As described by the survey methodology, various response rates were recorded for different cohorts. Nonresponse error can bias results if respondents and nonrespondents are dissimilar. This suggests that data may be misleading if those that did respond to the survey took sufficiently different education and training pathways to those that did not. This is especially relevant as data has been extrapolated to treat entire populations as respondents to the survey. That is, for example, 59 percent of the 654 school leavers of 2014 responded to the survey, but the data presented in the report assumes that all 654 school leavers have identical proportions of employment, study, demographics and other surveyed items. There is no accounting for this differential in the survey, aside from disclosing this information.

Sampling error and coverage error are two further sources of error that are often present in survey-led research; however, these were able to be avoided due to the small population size of ACT graduates and school leavers. That is, the entire population was able to be reached.

3 ANALYSIS

In this section, the selected data linking year 12 graduates and school leavers was compared and the characteristics of school leavers were examined. The benchmark p -value used in hypothesis testing was 0.05, corresponding to a 95% confidence level. Only data from 2014 was considered in this section, in order to condense the findings. Findings are assumed to be generally consistent over time, due to the consistency of data as outlined in the previous section.

3.1 EMPLOYMENT AND STUDY

For the following section, the terms 'employed' and 'studying' refer to respondents that in 2015 were employed and not studying, or vice versa, respectively. This allows the possibility of obtaining more refined data from hypothesis testing, as conditions need to be exclusive to be included in a contingency table. A 'Venn diagram solver' was used to calculate values when applicable. Any inconsistencies between values come from extrapolating percentages to raw totals. All values are correct to at least a 99% confidence level.

Tables referenced in this section are contained in Appendix B.

From Tables 1 and 2, of the respondents to the survey, 91.9 percent of 2014 year 12 graduates and 75.2 percent of 2014 school leavers were employed and/or studying in 2015. Using hypothesis testing, the significance of this 16.7 percent disparity was determined. The chi-square test of independence was used since the sample size exceeds 1000, as opposed to Fisher's exact test. The contingency table and test results are displayed in Table B1.

The null hypothesis is that 2014 school leavers were as likely to be employed and/or studying in 2015 as 2014 year 12 graduates. The calculated p -value of $>1e-8$ is well below the accepted value of 0.05, suggesting that these results are statistically significant, and that the null hypothesis should be rejected. That is, the result confirms that a person that leaves school before completing year 12 is more likely to be neither employed nor studying compared to those that complete year 12.

Hypothesis testing was also used to determine what impact participating in career counselling and work experience had on 2014 year 12 graduates and school leavers.

3.1.1 CAREER COUNSELLING

The chi-square test of independence was used when analysing the effect of career counselling. The contingency table and test results are displayed in Table B2.

The calculated p -value of $>1e-8$ is well below 0.05, which suggests that there is a correlation between year 12 completion and receiving career counselling, and being employed or studying a year after graduation. Bonferroni corrections were used with pairwise comparisons of groups to highlight results of statistical significance. Five of the six possible pairwise comparisons were evaluated by conducting individual chi-square tests and finding the associated p -value. Comparisons and p -values are contained in Table B3.

The Bonferroni-adjusted p -value necessary for statistical significance is $0.05/5 = 0.01$. This means the only comparison that was not of any significant statistical result was that between year 12 graduates, depending on whether they did or did not receive career counselling. Alternate hypotheses that are to be accepted are:

- Of those that received career counselling, 2014 year 12 graduates were more likely to be employed and/or studying in 2015 than 2014 school leavers;
- 2014 year 12 graduates that did not receive career counselling were more likely to be employed and/or studying in 2015 than 2014 school leavers that received career counselling;
- Of those that did not receive career counselling, 2014 year 12 graduates were more likely to be employed and/or studying in 2015 than 2014 school leavers, and;
- Of 2014 school leavers, those that received career counselling were more likely to be employed and/or studying in 2015 than those that did not receive career counselling.

3.1.2 WORK EXPERIENCE

The chi-square test of independence was used when analysing the effect of work experience. The contingency table and test results are displayed in Table B4.

The calculated p -value of $>1e-8$ is well below 0.05, which suggests that there is a correlation between year 12 completion and participating in work experience, and being employed or studying a year after graduation. Bonferroni corrections were again used to highlight results of statistical significance. Five of the six possible pairwise comparisons were evaluated by conducting individual chi-square tests and finding the associated p -value. Comparisons and p -values are contained in Table B5.

The Bonferroni-adjusted p -value necessary for statistical significance is $0.05/5 = 0.01$. This means that null hypotheses that are to be accepted are:

- Of 2014 year 12 graduates, those that participated in work experience were neither more nor less likely to be employed and/or studying in 2015 than those that did not participate in work experience;
- Of those that participated in work experience, 2014 year 12 graduates were neither more nor less likely to be employed and/or studying in 2015 than 2014 school leavers, and;

- 2014 year 12 graduates that did not participate in work experience were neither more nor less likely to be employed and/or studying in 2015 than 2014 school leavers that did participate in work experience.

Alternate hypotheses that are to be accepted are:

- Of those that did not participate in work experience, 2014 year 12 graduates were more likely to be employed and/or studying in 2015 than 2014 school leavers
- Of 2014 school leavers, those that did participate in work experience were more likely to be employed and/or studying in 2015 than those that did not participate in work experience.

The above tests were modified and repeated to compare employment rates between groups. Data and results are shown in Tables B6 and B7.

The Bonferroni-adjusted p -value necessary for statistical significance is $0.05/5 = 0.01$. This means that null hypotheses that are to be accepted are:

- Of 2014 year 12 graduates, those that participated in work experience were neither more nor less likely to be employed in 2015 than those that did not participate in work experience;
- Of those that participated in work experience, 2014 year 12 graduates were neither more nor less likely to be employed in 2015 than 2014 school leavers, and;
- 2014 year 12 graduates that did not participate in work experience were neither more nor less likely to be employed in 2015 than 2014 school leavers that did participate in work experience.

Alternate hypotheses that are to be accepted are:

- Of those that did not participate in work experience, 2014 year 12 graduates were more likely to be employed in 2015 than 2014 school leavers
- Of 2014 school leavers, those that did participate in work experience were more likely to be employed than those that did not participate in work experience.

3.1.3 YEAR 9-11 VS YEAR 12 SCHOOL LEAVERS

The chi-square test of independence was used when analysing how employment and studying rates are affected when leaving school in year 9-11 compared to year 12. The contingency table and test results are displayed in Table B8.

The null hypothesis is that 2014 year 9-11 school leavers were as likely to be employed and/or studying in 2015 as 2014 year 12 school leavers. The calculated p -value of 0.009 is below the accepted value of 0.05, suggesting that these results are statistically significant, and that the null hypothesis should be rejected. That is, the results confirm that a person that leaves school in year 9-11 is more likely to be neither employed nor studying compared to those that leave school in year 12.

3.2 DEMOGRAPHICS

Hypothesis testing was conducted to compare the pathways of male and female and indigenous and non-indigenous young people. 'Indigenous' is used interchangeably with the phrase 'Aboriginal or Torres Strait Islander'.

3.2.1 ABORIGINAL AND TORRES STRAIT ISLANDER GRADUATES AND SCHOOL LEAVERS

The contingency table and chi-square test results for Aboriginal and Torres Strait Islander students are displayed in Table B9.

The null hypothesis for this test is that indigenous students are as likely to graduate year 12 as non-indigenous students. The calculated p -value of less than $>1e-8$ is well below the accepted value of 0.05, suggesting that these results are statistically significant, and that the null hypothesis should be rejected.

That is, the result confirms that a non-indigenous student is more likely to graduate year 12 than an indigenous student.

3.2.2 MALE AND FEMALE GRADUATES AND SCHOOL LEAVERS

The contingency table and chi-square test results for male and female students are displayed in Table B10.

The null hypothesis for this test is that male students are as likely to graduate year 12 as female students. The calculated p -value of less than $>1e-8$ is well below the accepted value of 0.05, suggesting that these results are statistically significant, and that the null hypothesis should be rejected. That is, the result confirms that a male student is less likely to graduate year 12 than a female student.

The contingency table and chi-square test results for employment and studying levels for male and female students are displayed in Tables B11 and B12.

Two pairwise comparisons were conducted to determine if pathways differed between males and females in both groups.

The Bonferroni-adjusted p -value necessary for statistical significance is $0.05/2 = 0.025$. This means that the null hypothesis that is to be accepted is that 2014 male school leavers are not statistically more likely to be employed and/or studying in 2015 than 2014 female school leavers. Conversely, female year 12 graduates are slightly more likely to be employed and/or studying in 2015 than male year 12 graduates.

4 INSIGHTS

The following section uses knowledge gained during analysis to draw inferences from the data.

4.1 EMPLOYMENT AND STUDY

2014 year 12 graduates were found to be more likely to be employed and/or studying in 2015 compared to 2014 school leavers. 91.9 percent of year 12 graduates and 75.2 percent of school leavers were employed and/or studying in 2015. This meant year 12 graduates were 22.2 percent more likely to be employed and/or studying in 2015 than school leavers.

These figures are supported by a number of studies regarding outcomes for school leavers. Young people who do not complete secondary education are less likely to find full-time and permanent employment (Australian Council of Trade Unions, 2012). Additionally, those who complete year 12 generally have higher wages, lower incidences of unemployment, better full-time employment rates, and higher-status jobs compared to school leavers (Ryan, 2011). Employers consider year 12 graduates to have more skills, experience, maturity and value compared to those that leave school before secondary school (Department of Education, 2012).

Universities and tertiary education centres in the ACT, including the Australian National University and the University of Canberra, generally demand that prospective students obtain an Australian Tertiary Admission Rank (ATAR) (Australian National University, 2016; University of Canberra, 2016). In the ACT, an ATAR is part of the ACT Tertiary Entrance Statement (TES), which is only awarded to year 12 graduates that meet a certain set of requirements, including appropriate subject choices and sitting the ACT Scaling Test (Board of Senior Secondary Studies, 2016). As a result, beginning tertiary education the year after finishing schooling is unlikely for those without a year 12 certificate. Study options tend to be limited to technical and further education (TAFE), or vocational education and training (VET) institutions, such as the Canberra Institute of Technology (CIT, 2016).

These limited employment and study options continue to affect school leavers in the ACT in the second year after leaving school. As outlined in the survey results above, the majority of 2013 school leavers

that were neither employed nor studying in 2014 (54.8 percent) continued this status in 2015. This is compared to approximately one-fifth of year 12 students being neither employed nor studying both years after graduating (20.9 percent).

4.1.1 CAREER COUNSELLING

While career counselling did not improve employment/studying rates for year 12 graduates, school leavers who did receive career counselling during their time at school were more likely to be employed and/or studying the year after leaving school than those that did not receive career counselling (82.2 percent and 69.4 percent, respectively).

Effective career advice from qualified career practitioners has been shown to be crucial for disenfranchised students. Around half of the students surveyed in a report by The Smith Family (2014) planned a different level of future education than was required for their desired career pathway. Many students were found to be unsure how to achieve their most desired job. Young people that considered themselves low in ability at school also considered career advice most beneficial, which is reflected in the findings for this survey. Another study shows that people that leave school early without career pathways defined by a career advisor were more likely to be unemployed, have shorter working lives, lower incomes, and a number of other disadvantages (Liu et al., 2011).

4.1.2 WORK EXPERIENCE

Notably, of those that participated in work experience, 2014 school leavers were just as likely to be employed in 2015 as 2014 year 12 graduates (71.3 percent). Of those who did not participate in work experience, 2014 year 12 graduates were 35.3 percent more likely to be employed in 2015 than 2014 school leavers. Of 2014 school leavers, those who participated in work experience were 26.4 percent more likely to be employed in 2015 than those who did not participate in work experience. 2014 school leavers that did participate in work experience were also more likely to be employed in 2015 than 2014 year 12 graduates who did not participate in work experience. These conclusions are also true when considering employment/studying rates together, as opposed to only employment rates.

Surveys conducted by the federal Department of Employment (2014) of employers in Australia have determined that work experience (and volunteer work), especially while still at school, improves employment opportunities for young people. Practical benefits to completing work experience are reported to include the opportunity to be educated on workplace expectations, gaining practical skills, getting an insight into an occupation, and showing a commitment to employers. The Department of Employment suggests that 13 percent of employers considered work experience as the most important factor for improving young people's employment prospects, the most common response aside from a person's attitude to work (36 percent). Work experience placements in the ACT have benefits for the student, including personal career development and aiding the transition from school to work (ACT Education and Training Directorate, 2015). Work experience also helps students to understand career and training pathways (Education Directorate, 2015), which implies that studying options are also better considered.

4.1.3 YEAR 9-11 VS YEAR 12 SCHOOL LEAVERS

80.3 percent of 2014 year 12 school leavers were employed and/or studying in 2015, compared to 68.7 percent of 2014 year 9-11 school leavers. That is, year 12 school leavers were 16.9 percent more likely to be employed and/or studying the year after leaving school than year 9-11 school leavers.

These findings are supported by numerous studies into the benefits of staying in school. Initial employment benefits were achieved by young South Australian students that spent an additional six to twelve months at school (Ryan, 2003). A common argument is that more schooling gives students a better chance of effectively integrating into the workforce or tertiary study (Rothman, 2003).

4.2 DEMOGRAPHICS

4.2.1 ABORIGINAL AND TORRES STRAIT ISLANDER GRADUATES AND SCHOOL LEAVERS

Aboriginal and Torres Strait Islander students accounted for 1.1 percent of year 12 graduates and 5.8 percent of school leavers in 2014. Non-indigenous students were 56.9 percent more likely to graduate year 12 than indigenous students (87.4 percent and 55.7 percent, respectively).

Nationally, Cave et al. (2015) found that 84.2 percent of Aboriginal and Torres Strait Islander young people aged 15-19 study full-time, compared to 94.8 percent of non-Aboriginal or Torres Strait Islander people. Furthermore, 35.5 percent of indigenous 15-19 year olds were dissatisfied or not satisfied with their studies, compared to 26.7 percent of non-indigenous 15-19 year olds. Young Aboriginal and Torres Strait Islanders were considerably less likely to show an intention of attending university (36.8 percent compared with 67.2 percent), and more likely to plan to go to TAFE or gain an apprenticeship.

Aboriginal and Torres Strait Islander young people have a higher chance of employment exclusion (Campbell et al., 2012). Of those aged 15-19 in Australia, 39.8 percent of non-indigenous people were employed part- or full-time, compared to 31.5 percent of indigenous people. This is despite Cave et al. reporting that 47.3 percent of unemployed indigenous young people actively looking for work.

4.2.2 MALE AND FEMALE GRADUATES AND SCHOOL LEAVERS

91.4 percent of female students graduated year 12 in 2014, compared to 82.6 percent of male students. Males made up over two-thirds of all school leavers (68.7 percent). Male school leavers are statistically neither more nor less likely to be employed and/or studying in the year after leaving school compared to female school leavers.

Nationally, Cave et al. found that 28.9 percent of males aged 15-19 were either dissatisfied or not satisfied with their studies, compared to 25.8 percent of females. Young males were also 59.3 percent more likely to not be studying compared to young females. A likely reason for the higher proportion of male school leavers is that male 15-19 year olds were over three times more likely to plan to get an apprenticeship, for which the completion of year 12 is not required. Female 15-19 year olds were also found to be 22.8 percent more likely to plan to go to university after completing schooling, for which graduating year 12 is for the most part a hard requirement.

5 RECOMMENDATIONS

This section uses the insights gained above to produce suitable recommendations in order to optimise specific aspects of the school system to improve outcomes for school leavers. The two main goals are: to encourage prospective school leavers to continue their secondary as long as possible, with the intention of gaining a year 12 certificate; and to give prospective school leavers the skills they need to select and participate in their chosen employment or studying options after school. As seen above, these goals can go some way to being achieved by ensuring career counselling and work experience is available for 'at risk' students.

5.1 TARGETING AND ASSISTING STUDENTS AT RISK

Under one-third of young Australians indicate that they would seek guidance from a school counsellor, and just over one-third would seek guidance from a teacher for help with an important issue (Cave et al., 2015). As such, in order to offer the necessary support and guidance to students (in the form of career counselling or organising a work experience placement), students may need to be identified as 'at risk' and approached by staff. This support, as shown above, improves employment and studying outcomes for all students, in particular those who leave school early. Demographics of students that require support include Aboriginal and Torres Strait Islander students, male students who plan on leaving school and students that have not yet participated in a work experience placement.

The first proposed stage of assisting at risk students is identifying students through a self-assessment program. Self-assessment is judgement made by students about their own learning. Self-assessment contributes to learning processes and also assists learners to identify areas in need of their focus (Boud et al., 1989). An online or written submission which addresses a number of questions regarding students' progress will allow students to self-identify that they are at risk of achieving poor education and future training and employment outcomes. These students are then provided with a support network and possible contacts, or are then contacted in order to receive support opportunities and additional services.

Students who may not complete the above submission can also be identified as at risk by monitoring attendance, grades and behavioural tendencies. The ACT Board of Senior Secondary Studies (BSSS) (2016) have outlined both attendance and assessment policies which serve as guidelines for acceptable participation. For example, a student shall be deemed 'at risk' if their attendance falls below 90 percent of the scheduled class or contact time, or if 70% of subject assessment work is not submitted.

The second proposed stage of the process is for students to be invited to consult with a career counsellor or other appropriate staff member at the school. This meeting will allow the counsellor to build rapport with the student, in order to effectively provide immediate assistance and allow the student to provide input about their career goals and education concerns.

The third proposed stage is for the career counsellor to assess the student's career management competency. The Australian Blueprint for Career Development (2010) outlines eleven competencies that can be graded from low to high depending on an individual's career development skills. This can pinpoint areas in a student's career plan that can be improved. The tool can also be used as part of the self-assessment process in Stage I.

The fourth proposed stage is for a student to plan and implement strategies and programs that will aid their career development, with guidance provided by a career counsellor. This can include completing a *Pathways* plan, study plan, literacy support program, work experience, subject changes and any other aspects of the student's learning that needs to be adjusted to encourage education engagement and improve learning outcomes.

The final stage is for career counsellors to monitor students and follow-up to ensure students are on track. When more assistance is required, the risk identification process can be repeated.

The process is summarised in Figure 1.

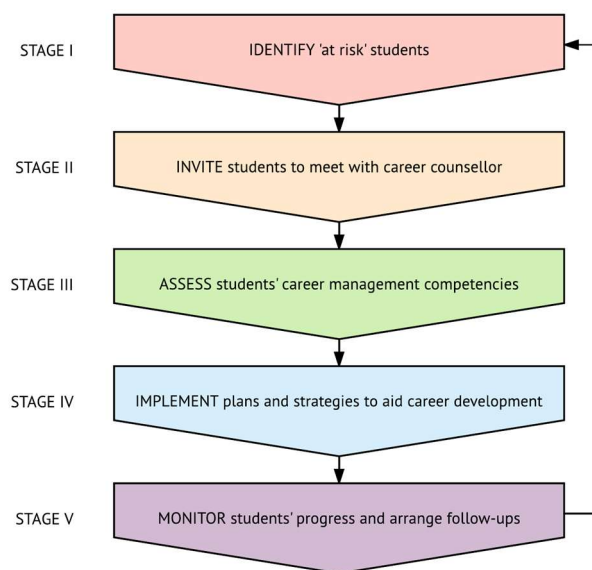


FIGURE 1: Five stage plan for identifying, targeting and assisting 'at risk' students.

This assistance cycle should run from high school through to senior secondary school. The program should be initiated on a per semester basis in order to obtain up-to-date and meaningful results from the self-assessment survey. If questions in the survey are answered quantitatively by employing Likert scales or a similar measure, this also allows a quantitative method of monitoring students over their secondary schooling life, which can optimise and simplify Stage I.

Using process control techniques, 'at risk' students can be automatically identified and trends over time can give indications of how students' schooling careers are progressing, and if the planning and implementation of strategies in Stage IV is effective. An example time series plot is shown in Figure 2.

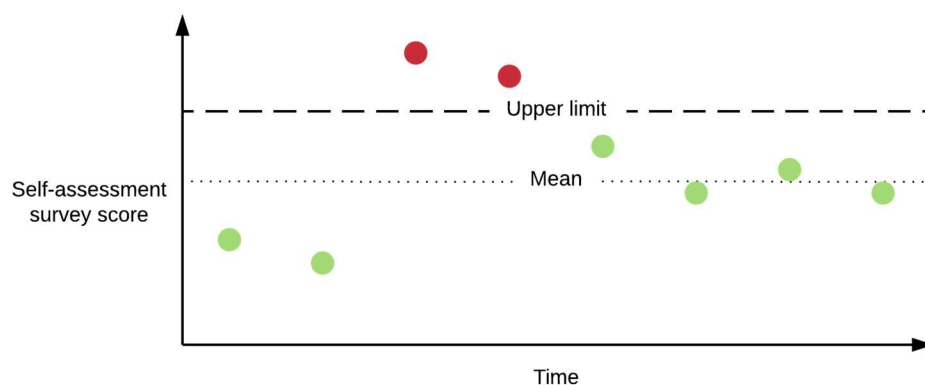


FIGURE 2: Process control example to monitor a student's pathway development. Marks in red indicate a self-assessment score above the chosen upper limit. Students that pass above this limit would be invited to meet a career counsellor (Stage II) to assess career management competencies (Stage III).

The upper limit can be defined by the school or counsellor as desired for most effective results.

5.2 CAREER COUNSELLING UPSCALING

Career counsellors at schools in the ACT offer a number of services, and can assist students manage issues with study skills, transitions across setting and schools, secondary subject choice, tertiary course options, and general career advice. Despite this crucial service being made available to all students across the ACT, less than a third of young people would consider talking to a counsellor to resolve issues.

As such, students need to be made aware of how career counsellors can assist their development and aid their transition from school into the outside world. It is highly recommended that all students be strongly encouraged to meet with a career counsellor or supportive teacher at least once per semester, even when not targeted as an 'at risk' student.

In order to ensure students are getting the most out of their meetings with career counsellors, a control system can be implemented to give feedback to counsellors in regards to if their influence is effective. Students can be encouraged to give feedback on sessions in the form of a reflection or self-assessment which can then be returned to the counsellor. The counsellor can alter their approach if it is not optimal for the student.

The counsellor must take into account ethics considerations when gathering information from students. The National Health and Medical Research Council suggests in their National Statement on Ethical Conduct in Human Research (2015) that three basic principles are followed: risk minimisation, participant consent and accountability. Students must be aware that their information is being gathered to aid the career programs, and if they decline to participate then this decision must be followed. Individual's responses should be kept secure to ensure an appropriate level of privacy.

5.3 SYSTEM OVERVIEW

5.3.1 PLANNING

Time needs to be effectively distributed amongst key programs and students in order to optimise services and pathways for all students. A suggested percentage split of time resources is shown in Figure 3.

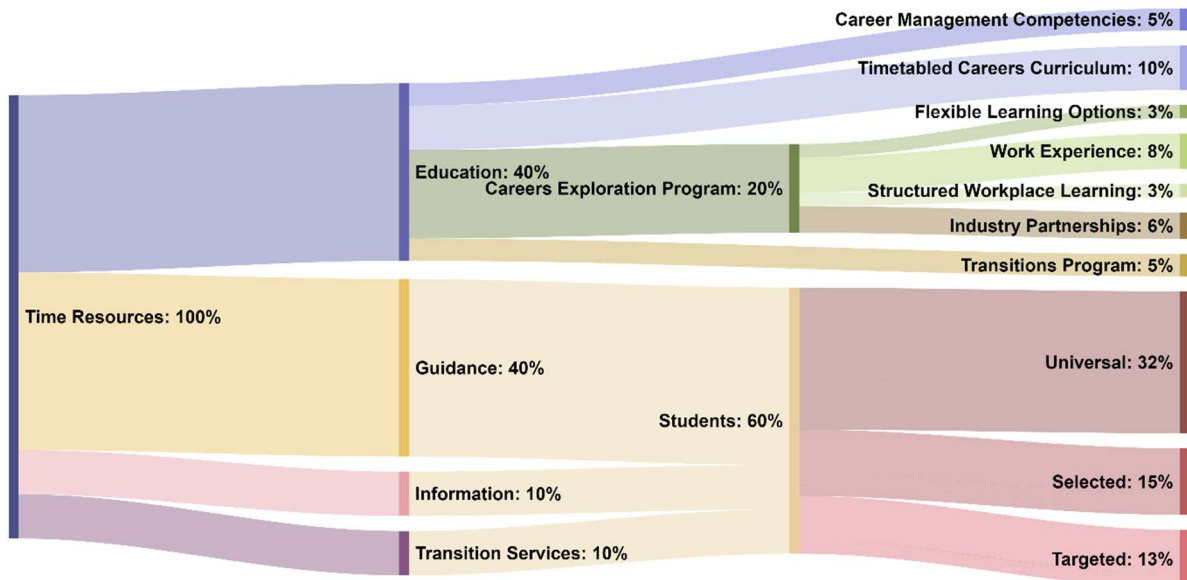


FIGURE 3: Sankey diagram illustrating a suggested distribution of time resources by career departments at high and secondary schools.

Services split amongst students are divided according to the Response to Intervention (Rtl) framework (Department of Education and Training, 2012). All students receive universal careers guidance, information and transition services. Around 15 percent of all students, such as prospective school leavers, indigenous students and those dissatisfied with their secondary school experience will be selected for further assistance. 5 percent of these students require intensive, targeted guidance in addition to universal and selected services.

The Gantt chart in Figure 4 gives an outline of the recommended career focus areas through a school year for both high school and college students. Certain programs are divided by year or according to the Rtl framework outlined above. Of note are the focuses on *Pathways* planning in high school, work experience being encouraged in four years of schooling, and regular and focused career guidance for all year levels.

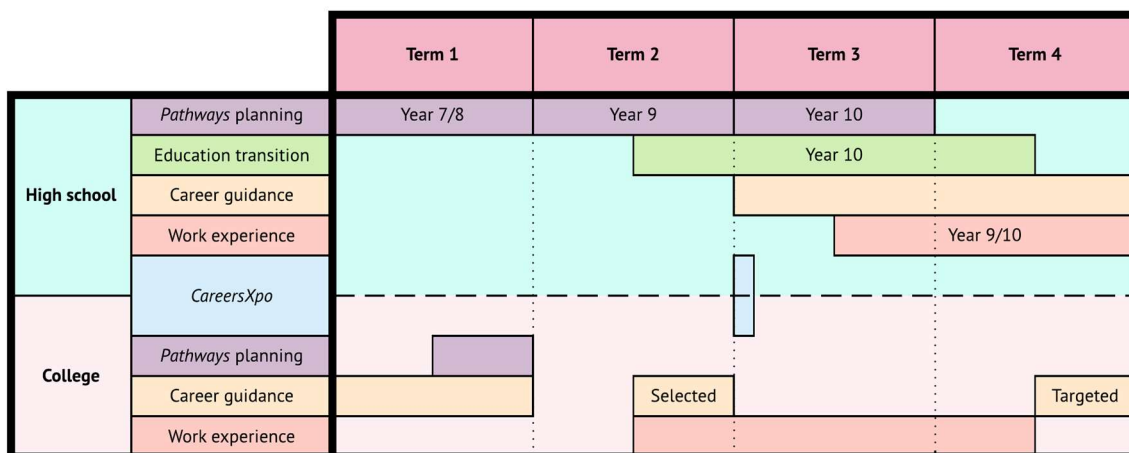


FIGURE 4: Gantt chart illustrating a suggested year plan for career departments at high and secondary schools.

5.3.2 COSTING

Currently, the ACT Education Directorate (2015) funds one Transitions and Careers Officer to each public college. These officers are tasked with providing guidance, information and transition services to students and improving access to careers programs and vocational learning. Nine public colleges reside within the ACT, and as such, nine officers were funded by the government.

For effective career services to be applied, it is recommended that there be one full-time professional level career practitioner per 500 students (Career Education Association of Victoria, 2015). In 2015, 38,776 students were enrolled in government schools in the ACT (Australian Bureau of Statistics, 2016). Assuming an even distribution amongst year levels, this means that in 2015, 11,931 students were enrolled in a public high school (year 7-10) and 5,966 students were enrolled in a public college.

The recommendation is that the ACT Government funds the recommended one Transitions and Careers Officer for every 500 high school or college students. This would equate to a total of 36 full-time Transitions and Careers Officers in the ACT. Funding for nine of these officers is already existing; so for each experienced officer with a salary of \$97,374 per annum (ACT Education Directorate, 2014), the total increased cost for the government is \$2,629,098 per annum.

In August 2016, the youth unemployment rate (15-24 year olds) in the ACT was 11.9 percent (Australian Bureau of Statistics, 2016). It is estimated that the Australia economy is cost \$2.6 billion per annum due to social welfare, health and crime prevention costs, and lower taxation revenue productivity as a result of school leavers and lower levels of education (Black, 2007). If the cost per capita in each state and territory of Australia is considered to be equal, then the youth of the ACT accounts for \$42.7 million per annum of this cost (Australian Bureau of Statistics, 2016).

As this portfolio has determined, there is a noticeable correlation between leaving school early and unemployment. Therefore, for the purposes of conducting a payback period test, it is assumed that the youth unemployment rate is directly related to the costs of school leavers and lower levels of education on the economy. If we consider all costs to be linear over time, a payback period test will forecast the amount of time required to pay back the costs of hiring extra career practitioners. This will occur when the cost of early school leavers in the ACT on the government decreases by the cost of employing of the officers - \$2,629,098. This is almost exactly \$40 million, and correlates to a decrease in the youth unemployment rate of 0.732 percent. If the hiring of additional career practitioners decreases the youth unemployment rate in the ACT by 0.1 percent per year, the costs will be paid back in seven years' time. If the decrease is by 0.5 percent, it will only take one and a half years to pay back the costs.

Results are summarised in Figure 5.

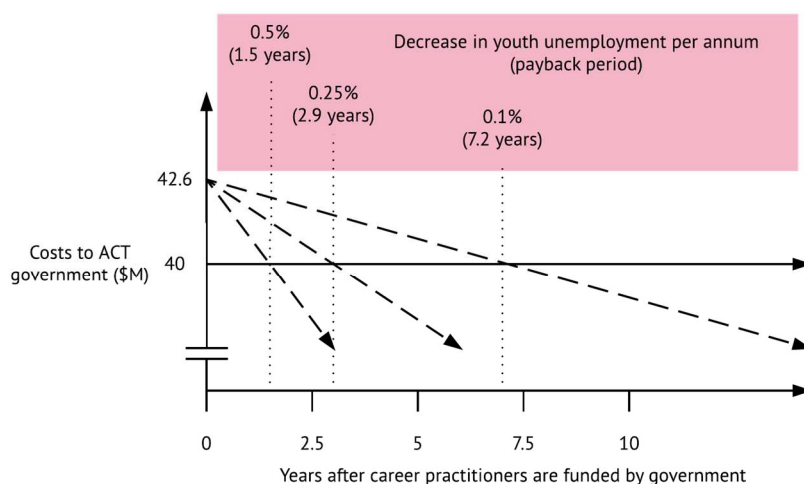


FIGURE 5: Plot showing payback period for three possible decreases in youth unemployment in the ACT per annum.

6 CONCLUSION

In an effort to optimise the ACT secondary schooling system for prospective school leavers, a systems engineering analysis was undertaken. Data from the *ACT post school destinations and pathways in 2015* survey was analysed to characterise the pathways and demographics of school leavers in the ACT. These findings were verified through evidence-based research into school leavers' options after secondary education and possible reasons for over-representation in certain demographics. Career counselling given by qualified career development practitioners was found to be an integral factor both in increasing rates of year 12 completion and improving employment and study outcomes for school leavers. Work experience was also shown to improve outcomes of school leavers significantly.

Two major recommendations were made as a result of these insights. Firstly, on a school-by-school basis, the services of career development practitioners and counsellors should be increased to ensure students are engaged and supported with their career pathways throughout secondary school. Self-assessment surveys completed by students would allow for easy detection of those at risk of leaving school unprepared for work or further study. Five stages of at risk student identification, targeting and assistance were designed as guidelines for career practitioners to follow when working at a secondary school.

Secondly, on a territory-wide basis, it is recommended that a total of 36 government-funded Transitions and Careers Officers be employed at government high schools and colleges. This would account for one officer per 500 high school and college students. This increase in career practitioners would allow for more time resources being applied per student in careers programs. The cost to the government of employing these practitioners would be paid back in under 10 years, even with only a small beneficial impact on school leaver outcomes. This payback period has the potential to be less than 2 years if recommendations are implemented successfully.

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