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Transitions to tertiary education: Measuring and minimising inequality between private and public school students in a university outreach program

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Much of the literature concerned with evaluating public and private schooling focuses upon year 12 examination results. Investigating the transition to university, some studies have compared these results with first-year university marks. Very few researchers, however, have looked beyond students' marks. This paper examines how "school type" affects student performance, participation, and experience in a university outreach program – SmARTS. SmARTS is run through The University of Western Australia's (UWA) Faculty of Arts, Humanities, and Social Sciences (FAHSS). It engages year 11 students in a six-month research project, facilitated by the use of both e-learning and more traditional face-to-face methods. This paper is based on research that evaluated the 2009, 2010, and 2011 programs. The methods employed include analyses of student completion rates and results, as well as 198 student surveys, ten school coordinator surveys, and three group interviews with tutors. Based on schools' socio-economic backgrounds, fees, and examination results, we have divided schools into four types: top-tier private, second-tier private, top-tier public, and second-tier public. Our findings suggest that top-tier private and top-tier public school students have the highest levels of participation, the lowest drop-out rates, and gain the highest results in SmARTS, while the opposite is evident for second-tier public school students. We also found, however, that second-tier public school students reported to have gained more generic skills from the program than did other groups. Our findings suggest that analysing examination results provides only a limited picture of how students experience the transition to university. We argue that through research and practice such as ours, inequalities can be more accurately measured, and thus minimised, before students enter university.

Key Words: private schools, public schools, inequality, blended learning, e-learning, online learning, secondary education, tertiary education, university outreach.

1. Introduction

Many studies that compare the transition of public and private school students from secondary to tertiary education focus narrowly on student results, rather than considering the diverse experiences of learners (Australian Bureau of Statistics [ABS], 2006, p. 107; Birch & Miller, 2006; Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005). In this study, in addition to examining results, we also analyse students' perceptions and self-evaluations, as well as those of their teachers. We do this in order to explore, in greater depth, the ways that these students adapt to university contexts. Our findings suggest that university teaching methods, in this case a combination of face-to-face and e-learning (or blended learning), often risk perpetuating the inequalities that are endemic in Australia's secondary school system. Here, we argue that steps can be taken by educators to reduce these potential problems.

The SmARTS program at the University of Western Australia (UWA), which enables secondary-school students to experience university life, provides an excellent opportunity to consider the transitional context. Therefore, in three consecutive programs (2009, 2010, and 2011), we took SmARTS as a case study. It is well documented that, in Australian secondary schools, students from private schools achieve higher marks than their public school counterparts (Dobson & Skuja, 2005, pp. 53-54, 58). Given these findings, this paper will focus on the extent to which SmARTS students appear to be advantaged or disadvantaged by their school backgrounds, as they engage in a program of blended learning. We compare students' workloads, participation, completion rates, and results. Furthermore, in keeping with Chris Bonnor and Jane Caro's (2007, pp. 72-73) proposition that the degree to which students improve should be taken into account, we also consider what SmARTS students gained through the program.

2. Background

2.1. Background of the SmARTS program

UWA's SmARTS program is an initiative of the Faculty of Arts, Humanities, and Social Sciences (FAHSS). SmARTS runs between March and August/September of each year and brings together year 11 students from across the Perth metropolitan area. Students are divided into small groups to conduct research on a topic of their choice. Groups are facilitated by a university tutor and individual students are supported by their school's SmARTS coordinator. Throughout the year, students prepare written research projects, and the program culminates with the Presentation Evening, at which each group showcases its findings to an audience of peers, parents, and staff. Awards for leadership and excellence are also given to groups and individuals on the night. Individual awards are nominated by peers and tutors who determine the outstanding members of each group. In addition, groups are recognised for submitting the best written projects and for performing the most innovative presentations. These awards are judged by separate panels of academic staff and experts.

Although SmARTS participants are high-school students, the program aims to teach introductory university-level skills in critical thinking, research, writing, editing, referencing, and oral presentation. In 2009, 2010, and 2011, these skills were developed through online tasks, as well as at on-campus workshops and group meetings. SmARTS, therefore, could be seen as a transition to university studies for many of the students involved.

SmARTS employs blended learning in order to cater to the needs of its students who reside in the sprawling suburban context of Perth, Western Australia. A city with a large urban sprawl, Perth had a population density of 314.9 persons per square kilometre in 2010, the third smallest of all the state and territory capitals (ABS, 2011a). As a result, it takes some students as long as an hour and a half to reach the University's campus. Due to the travel time, as well as the fact that the participants are all full-time high-school students and have other commitments, SmARTS has always included an online component that takes place, on average, in three out of every four weeks. The face-to-face on-campus meetings occur once a month.

A major aim of the SmARTS program is to encourage students from lower socio-economic backgrounds to attend university. As such, there has been a strong focus on enabling students to experience university life. Since the program's beginning, the majority of the students have come from schools located in socio-economically advantaged areas. This pattern is perhaps due to the location and reputation of UWA, and the relationships it has with various socio-economically advantaged schools in the area. SmARTS, however, has always aimed to increase the proportion of students coming from public schools, and is gradually succeeding in this endeavour. In 2011 there were more public school students involved than in 2010 and 2009. Indeed, in 2011, SmARTS included some of Perth's most socio-economically advantaged *and* disadvantaged schools. Yet, as the socio-economic diversity of SmARTS has increased, problems regarding inequality have arisen.

Inequalities between schools have the capacity to disadvantage particular students in terms of travel to university. Many of the most socio-economically advantaged schools are located close to the University's campus, for instance. In addition, these schools often provide transportation for their students to attend the SmARTS on-campus sessions. In comparison, many of the less socio-economically advantaged schools are quite far away from the campus, and students must therefore travel further to reach the university. These factors are likely to impact the on-campus attendance rates of students from different school types. Accordingly, we have found it desirable to hold on-campus sessions on a monthly basis, rather than more frequently.

The use of infrequent on-campus sessions (for the reasons listed above) has made it necessary to supplement face-to-face contact with e-learning, in the form of online tasks. In implementing the online component, we have, however, taken care not to exacerbate inequalities between students. A student's computer and internet access, the quality of their access, and their skills in using these technologies may be strongly influenced by their socio-economic background, including their school type. Thus, we have chosen an online platform requiring minimal skill and internet speed.

The online component has taken on various forms since the program's inception in 2000. From 2006 until early 2010, SmARTS used the University's learning management system, WebCT, as its online platform. Furthermore, prior to 2009, the weekly online group meetings were conducted synchronously in online chatrooms. Starting in 2009, however, and in response to student and tutor feedback, blogs (initially linked to WebCT, but requiring another password) replaced the weekly chatroom meetings. This allowed groups to communicate online asynchronously, catering to students' busy lives. In early 2010, again in response to student and tutor feedback, WebCT and the blog used in 2009 were replaced by a new online platform – "Posterous". Students and tutors had reported difficulties accessing WebCT from home, particularly when they attempted to gain access through a dial-up internet connection rather than a broadband one. In contrast, an advantage of Posterous was that it did not require a high-speed internet connection. In addition, rather than requiring different passwords for WebCT and the blog, Posterous enabled students to post their weekly tasks, comment on each other's messages, and organise their group's project simply by sending an email. Posterous was, therefore, trialled in 2010, and its use continued in 2011. While the introduction of this platform has been largely successful, an ongoing challenge for SmARTS has been the need to continually update the online platform, in order to satisfy the ever-changing expectations, capabilities, and resources of year 11 students. We also consider it important to remain proactive in finding and using platforms that satisfy both teaching and learning needs.

Over the years, the on-campus sessions have also seen changes, particularly in regard to the duration of the class, the meeting day and time, the delivery style, the class structure, and the content. In 2010, in response to student and tutor feedback, we increased the duration of on-campus sessions (from one to two hours), and added academic skills-based workshops. Therefore, in a two-hour on-campus session, students would spend one hour in a tutorial with their tutor and small group working on their group's research project, and a second hour attending a workshop with the entire SmARTS cohort in a lecture theatre.

2.2. The private/public school divide

When examining the context of SmARTS, it is important to first understand private and public schooling in Australia. Despite commonly held assumptions that schooling facilitates upward mobility for lower-class students, research shows that these institutions still facilitate the reproduction of inequalities related to class, race, and gender (Carr-Chellman, 2005, p. 1; Forsey, 2007, p. 10; Holland & Eisenhart, 1990, p. 6). In the Western Australian context, it has become apparent that the type of school a student attends is a strong predictor of his or her overall academic success, with the annual league tables published by *The West Australian* newspaper consistently showing that "state schools in less affluent areas produce substandard results", and that "growing numbers of the top achievers come from private schools" (Forsey, 2007, p. 62). These ongoing trends challenge popular claims of egalitarianism in the Western Australian education system.

The historical roots of inequalities between private and public schools are complex, yet they warrant an overview here. Australia's first schools were church-affiliated (both Catholic and Protestant), and were generally set up in more established settlements (Bonnor & Caro, 2007, p. 27). State governments, therefore, were required to set up schools in less-established areas (Bonnor & Caro, 2007, p. 27; Sherington, 2004, p. 169). From these schools, a highly centralised, "compulsory, free and secular" public education system emerged (Sherington, 2004, p. 170). State government funding of schools, private or public, was initially tied to "curriculum enrolments, inspections and school fees (charged by all schools)" (Bonnor & Caro, 2007, p. 29). In the late 1800s, states enacted legislation removing government aid and regulation of private schools (Bonnor & Caro, 2007, p. 29).

In the 1960s, however, public schools were struggling to cope with the increased student numbers brought about by post-war population growth, while many Catholic schools were experiencing financial and academic difficulties (Bonnor & Caro, 2007, p. 35). In 1962, for example, the Catholic Church closed all of its schools in Goulburn, New South Wales, to increase pressure on local public schools (Bonnor & Caro, 2007, p. 36). It did so in the hope of gaining financial support from government and, indeed, was successful in obtaining non-recurrent funding for poorer private schools (Bonnor & Caro, 2007, p. 36). In 1972, following its election, the Whitlam government introduced ongoing needs-based funding; it did so without subjecting recipients of funds to any government regulation (Bonnor & Caro, 2007, p. 36; Sherington, 2004, p. 176). From 1996, the newly-elected Howard government increased federal subsidies for private schools, whilst removing restrictions regarding the establishment of new private schools (Bonnor & Caro, 2007, pp. 3, 40). These restrictions had previously ensured that schools were only built in areas where they were needed, and that school facilities were not simply being duplicated (Bonnor & Caro, 2007, p. 3).

In Australia today, private schools continue to be subsidised by governments, yet remain relatively free from restriction (Bonnor & Caro, 2007, p. 29). This situation is unusual, and most other countries (including New Zealand, England, Canada, and the U.S.) either do not provide public funding to private schools, or demand that these schools are subject to some degree of regulation in return for it (Bonnor & Caro, 2007, p. 42). Furthermore, with the growth of the middle class in Australia, an increasing proportion of these students began attending publicly-funded private schools (Bonnor & Caro, 2007, pp. 32, 90-91; Ryan & Watson, 2004, p. 37). In 2010, 65 percent of Western Australian secondary school students, both full-time and part-time, attended public schools (ABS, 2011b, p. 17). This was a decrease from 2000, when 71 percent attended public schools (ABS, 2011b, p. 17).

Meanwhile, many public schools "were left with a disproportionate number of the poor and poorly educated" (Bonnor & Caro, 2007, p. 32). This divide has been reflected in year 12 examination results which reveal that non-selective public school students achieve lower results than Catholic school students, who in turn receive lower results than Independent private school students; interestingly, the selective public school students achieve the highest results (Dobson & Skuja, 2005, pp. 53-54, 58). Recent research suggests that much of this advantage or disadvantage is the outcome of students' socio-economic backgrounds, and that non-selective public school students' poorer performances are a direct outcome of the socio-economic

disadvantage experienced by many of their students (ABS, 2006, p. 107; Holmes-Smith, 2006, p. 29; Organisation for Economic Co-operation and Development [OECD], 2004, p. 252). This situation is unsurprising, given that private and academically-selective public schools are able to choose which students they teach, and that the former group of schools can also charge fees, which is a prohibitive factor for most students from low socio-economic backgrounds (Bonnor & Caro, 2007, p. 70).

However, Australian research (including some conducted at UWA) suggests that public school students achieve higher marks than their private school counterparts if and when they enter university (Birch & Miller, 2006; Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005). Furthermore, a study conducted by Dobson and Skuja (2005) found that students from selective public schools tended to receive lower marks than those from non-selective public schools (and, indeed, that their marks were also lower than those from private schools). In addition to this research, it has been shown that the first year university retention rates of low socio-economic status students are similar to overall first year student retention rates (James, 2009, p. 15). Given these findings, one might conclude that the advantages enjoyed by those attending private schools and selective public schools disappear once they enter university, while non-selective public school students' talents begin to be nurtured (Dobson & Skuja, 2005, p. 57). Yet, such findings do not necessarily indicate that students' inequalities invariably vanish once they reach university, just that they may be somewhat reduced. Indeed, there is little to suggest that universities are "level playing fields" (Dobson & Skuja, 2005, p. 59). Regardless of the extent to which inequalities persist, it is unclear what brings about this greater equity found within tertiary education institutions. For instance, it is possible that the skills development workshops and services made available to undergraduates allow students of low socio-economic status to obtain higher grades than previously.

3. Methods, definitions, and aims

3.1. Categorisation and definition of school types

For the purposes of our analysis, we have divided schools into four "types": top-tier private, second-tier private, top-tier public, and second-tier public. We refer to schools as public and private, rather than as government and non-government, because of the possible confusion caused by Australia's current system of school funding, whereby private schools are often dependent on government funding. As such, we use the categories described by the OECD (2004, p. 314), which states that "[s]chools are classified as either public or private according to whether a private entity or a public agency has the ultimate power to make decisions concerning its affairs".

In categorising schools into four types, we are aware of the various ways in which schools, both private and public, are commonly divided. As was shown above, private schools are most often divided into "Independent" and "Catholic" categories (ABS, 2006, p. 104; Birch & Miller, 2006; Dobson & Skuja, 2005; Win & Miller, 2005), although it is worth noting that most private schools in Australia are "faith schools", and independent only in the sense that they are not part of the expansive Catholic school system (Bonnor & Caro, 2007, pp. 7). Meanwhile, public schools are sometimes divided into "selective" and "non-selective" (see Dobson & Skuja, 2005). While public schools charge comparatively minimal fees, those charged by private schools can vary a great deal (Dobson & Skuja, 2005, p. 53). In general, however, Catholic schools have lower fees than Independent schools (Dobson & Skuja, 2005, p. 53). Although our groupings generally correlate with these widespread categorisations, they are socio-economically based. Yet, it is important to note that socio-economic divisions are not always clear cut.

Between 2009 and 2011, 29 different schools took part in the SmARTS program, with many taking part for two or more of these years. Of these schools, ten have been categorised as top-tier private schools. We identified these schools as: (1) having relatively high tuition fees; (2) being located in affluent suburbs (according to the ABS's SEIFA index for relative socio-economic advantage and disadvantage) (ABS, 2008), most of which were relatively close to the

University and/or to the centre of Perth; and (3) being generally highly ranked in the state's annual league tables. Private schools with at least two of these criteria were categorised as top-tier private. These were largely Independent schools. However, there were a small number of Catholic schools among this group. With the exception of three schools in this category, all charged more than $10,000 in tuition fees annually, and most fees were close to or above $20,000 per annum.

A further ten schools have been categorised as second-tier private. We identified these as: (1) having relatively low tuition fees; (2) being located in areas that were not affluent (ABS, 2008), most of which were distant from central Perth; and (3) being not generally ranked highly in the state's annual league tables. Private schools with at least two of these criteria were categorised as second-tier private. These were largely Catholic schools, although some were Independent. With the exception of one school in this category, all charged less than $10,000 in tuition fees annually, and most fees were close to or below $5,000 per annum.

Only two public schools were categorised as top-tier. These schools were both (1) located in affluent areas (ABS, 2008) close to central Perth and, (2) consistently highly ranked in the state's annual league tables. One of these schools was selective in its enrolments. Thus, they were in keeping with Bonnor and Caro's (2007, p. 125) descriptions of some public schools as "academically selective, or socio-economically selective by dint of their geographic location". Finally, second-tier public schools were those not located in central, affluent areas (ABS, 2008). These schools were also not consistently high-achieving. Seven such schools took part in the program between 2009 and 2011.

3.2. Data collection methods

The research on which this paper is based took place following the completion of the 2009, 2010, and 2011 SmARTS programs. Our 2011 research, however, was far more extensive than in previous years. Some methods were only undertaken in 2011, and various survey questions were asked only in 2011, or in 2010 and 2011. We have included findings from all years in our analysis whenever they have been collected. The methods we employed in our research included:

- Analysis of students' enrolment, completion, and drop-out rates: These proportions were calculated in relation to school type. Data was collected from the years 2009, 2010, and 2011. During this time, 293 students enrolled in SmARTS, 239 completed the program, and 54 dropped out.

- Analysis of students' results: Each group's mark for the written project was examined in relation to individual students' school types. Furthermore, we calculated the proportion of students from each school type who received "best group member" awards. Both were documented in 2009, 2010, and 2011.

- Analysis of tutor-assessed student participation: Following the completion of SmARTS, tutors were asked to complete a brief assessment sheet detailing each completing student's school type as well as their online, on-campus, and overall participation. Participation was only measured in 2011, with the 86 students who completed the program that year being assessed.

- Student surveys: These were completed by SmARTS students at the end of the program. These surveys asked students for general background information such as the name of the school they attended, the amount of time it took them to travel to the university for on-campus sessions, their access to computers and the internet at home and school, their self-assessed computer and internet skills, and any prior experience they had using blogs. Students were also asked to reflect on their experience of SmARTS, and they answered questions about their online and on-campus participation, the ease with which they used the SmARTS blog, and so on. Surveys were conducted in 2009 (when 52 responses were collected), 2010 (when 73 were collected), and 2011 (when 73 were collected).

- School coordinator surveys: These were filled out by the school SmARTS coordinators following the completion of the program. Coordinators were asked to outline any online-

access issues experienced by their students. Furthermore, they answered questions about their students' online abilities, and whether they had completed their online tasks at school. School coordinator surveys were only conducted in 2011, and we received responses from ten of the 22 coordinators for that year. Unfortunately, neither of the two top-tier public school coordinators responded to our survey, although coordinators from all other school types did.

- Tutor interviews: Following the completion of the program, tutors took part in a group interview. Topics of discussion included problems with the online technologies used, the advantages of the technologies used, and any visible inequalities and differences between students based on school type. Interviews took place in 2009 (when four of the five tutors participated), 2010 (when all six tutors participated), and 2011 (when all six participated). The names provided when we have quoted tutors are pseudonyms.

Although we draw on all of these research methods throughout our discussion, we focus most strongly on students' survey responses, tutors' assessments of student performance, and students' completion rates. We also gathered data on students' gender, their suburb of residency, and their parents' professions, although in this article we have focused exclusively on school type.

Chi-square tests were performed on the quantitative data that appears in the graphs that follow. A limitation of this study is the small amount of data in some of the categories (particularly in regard to second-tier public schools), which meant that testing for significance was not always possible. Although we acknowledge that the small response size means that findings related to public school students are less reliable than those we have gathered from private school students, these students still represent the vast majority of those from public schools who have completed the SmARTS program. In 2009, 2010, and 2011, 92 percent of top-tier public school students who completed the SmARTS program filled out the survey, as well as 77 percent of completing second-tier public school students. Overall, 83 percent of students completing from 2009 to 2011 submitted a survey. Thus, the second-tier public school respondents' personal experiences (and those of top-tier public school students to a lesser extent), although not supported by large numbers, remain meaningful to our findings.

3.3. Project aims and research questions

The research discussed here aims to examine how inequalities between students, based on their school type, played out in the transitional context that is the SmARTS program. In particular, we asked how students' performances, engagement, and experiences were affected by their school type. In this way, we endeavoured to extend existing research that has simply looked at students' secondary school and university results (ABS, 2006, p. 107; Birch & Miller, 2006; Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005).

We also considered how inequalities between students might be minimised. We sought to examine the influence of various changes made prior to the commencement of the 2010 SmARTS program: namely, the introduction of a new online platform and the restructuring of on-campus sessions. We were particularly concerned with the possibility that programs such as SmARTS might replicate inequalities that already existed, as well as with uncovering ways that such inequalities might be minimised.

In order to see whether any group was disadvantaged by competing demands on their time, we commence our discussion by looking at how students spent their time, focusing in particular on extra-curricular activities and paid or unpaid employment. We then examine students' completion and drop-out rates. Next, we investigate their group and individual results. Finally, we discuss students' participation, as well as any limitations that they may face, both online and on-campus.

4. Findings and discussion

4.1. Time spent on extra-curricular activities and other work

It can be surmised that time constraints resulting from employment or extra-curricular activities will impact on students' participation in the SmARTS program. Indeed, various tutors, at different points in time, have noted that many of their students were extremely busy with extra-curricular activities, school work, or other commitments. During the 2011 tutor group interview, one tutor, Katie, commented that "every week there was some extra-curricular thing on. Dance or singing or drama" (tutor group interview, September 6, 2011). She later went on to speak about two students from a top-tier private school, who:

> [W]ere really good on-campus and … started out online quite good as well. And then they just seemed to get bogged down … One of them didn't end up contributing to the project because she just said "I can't do it", and she sort of disappeared. And the other one … and she was a lovely, lovely girl, but [she was always late] … she said "I've got dance and my dance teacher won't let me leave and then I've got [SmARTS]" (tutor group interview, September 6, 2011).

When discussing such issues, tutors generally referred to specific students; they virtually always spoke of top-tier private school students, and occasionally of top-tier public school students. Whether other commitments affected the performance of the majority of top-tier private school students, or only a few of them, is questionable. For instance, another 2011 tutor, Helen, suggested that while some students were able to cope with the additional workload of SmARTS, others were not (tutor group interview, September 6, 2011). One might expect that if top-tier private school students were collectively less able to manage the workload, then it would be evident in their overall performance, including their tutor- and self-assessed participation. As will be discussed below, we found this inference not to be the case.

The surveys completed by students also provided some insight into their workloads. In 2010 (n = 73) and 2011 (n = 73), students were asked about the amount of time that they spent on extra-curricular activities (other than SmARTS) in a week. In 2010, we severely underestimated the amount of time that many students spent on such activities, providing them with the following options to answer the survey question: "no hours", "one hour or less", "two hours or less", and "more than two hours". Several students, however, when circling "more than two hours", wrote in a much higher figure, in some cases up to 20 hours per week. Survey findings remained in keeping with tutors' observations, however, with top-tier private school students being the most likely to spend more than two hours a week on extra-curricular activities, followed by top-tier public school students, and, finally, second-tier public school and second-tier private school students.

In 2011, students were provided with a wider range of possible responses for the amount of time that they spent on extra-curricular activities (other than SmARTS) in a week: "none", "less than five hours", "five to nine hours", "ten to 14 hours", "15 to 19 hours", and "20 hours or more". The pattern that arose was virtually the same, with top-tier private school students having the largest proportion of students spending ten or more hours a week on extra-curricular activities (51.5%), followed by top-tier public school students (45.5%). Second-tier students, who appeared to spend virtually the same amount of time on such activities in 2010, had a more significant difference in 2011, with 38 percent of second-tier private school students spending ten or more hours a week on extra-curricular activities (38%), as opposed to no second-tier public school students.

In regard to paid and unpaid employment, combined survey findings from 2010 and 2011 (n = 146) revealed that second-tier public school students were the most likely group to have a job, with 64 percent of them being employed. Top-tier public school students were slightly less likely to work, with 50 percent of them having a job. Second-tier private school students were again less likely to work, with 44 percent of them being employed. Finally, only 28.5 percent of top-tier private school students were employed, making them the least likely to work.

Thus, it was shown that students from top-tier private schools were the least likely to be employed, but the most likely to spend substantial amounts of their time on extra-curricular activities. Conversely, second-tier public school students were the most likely to be employed and the least likely to be engaged in extra-curricular activities for long periods. Top-tier public school students were the second most likely to be employed and again the second most likely to be engaged in extra-curricular activities for substantial amounts of time; second-tier private school students were third. Top-tier public school students, therefore, would seemingly be the group most likely to be juggling employment and substantial extra-curricular commitments. Of those in this group who were employed in 2011, however, the majority (64%) worked for five hours or less a week, which was less than working students in most other groups. Thus, top-tier private and public school students spent about the same amount of time on extra-curricular activities and/or employment.

Indeed, although more time, on average, was spent on extra-curricular activities than on employment, the total time that students spent on these activities more or less balanced out between school types. Furthermore, as mentioned by one tutor above, certain students may have been better prepared to handle this workload. Students who struggled with the workload most often attended top-tier private schools, although this challenge does not appear to have negatively influenced their groups' overall performance. It is also possible that top-tier public school students benefited from the combination of paid employment and extra-curricular activities, which were common amongst them. Experience with extra-curricular activities, such as debating, may have been helpful in the development of academic and communication skills. On the other hand, paid employment might have taught students skills such as time management, teamwork, and communication. Furthermore, top-tier public school students' shorter working hours may indicate that their employment was chosen for "the experience", rather than being considered a necessary task to gain disposable income. The latter may have been the case with other groups.

4.2. Completion and drop-out rates

An analysis of student completion rates also produced interesting findings in regard to school type. As previously mentioned, throughout the history of the SmARTS program, the majority of students have come from private schools. Of all the students who enrolled in the program in 2009, 2010, and 2011 (n = 293), top-tier private school students made up 43.5 percent. They were closely followed by second-tier private school students, who made up 35 percent. This predominance of private schools, however, has been changing gradually. In 2009, there were 82 enrolling students, with 13 percent of them coming from public schools (2% top-tier public and 11% from second-tier public). In 2010, there were 96 enrolments, 21 percent of who were from public schools, 15 percent from top-tier public, and six percent from second-tier public. In 2011, of all enrolling students (n = 115), 28 percent of them were from public schools (12% top-tier public and 16% second-tier public). Thus, the proportion of public school students enrolled in the program has increased with each consecutive year.

The proportion of students who dropped out of the SmARTS program also gives us some insight into variation between school types. Students enrolled in the program several months prior to its commencement, and before beginning year 11. Those who dropped out tended to cite other commitments or a lack of time as the reason why. Yet it is important to note that some students who remained enrolled in SmARTS submitted few online tasks, had poor attendance at on-campus meetings, or contributed relatively little to their group's written project and presentation.

In 2009, 2010, and 2011, second-tier public school students were the most likely to drop out (33% of 33), followed by second-tier private school students (22% of 103). Top-tier public school students (13% of 30) and top-tier private school students (13% of 127) were the least likely to drop out. Above, we established that private and public second-tier students did not, on average, have more substantial workloads than their top-tier counterparts. Why, then, did greater proportions of them drop out of the SmARTS program? There are many possible reasons that can be explored, including a lack of confidence among second-tier students. Such students may

also feel alienated from, or intimidated by, the students from top-tier schools, and may lack a sense of belonging to the SmARTS program.

4.3. Students' group marks, awards, and tutor-assessed participation

Our examination of the groups' written project marks, analyses of the recipients of "best group member awards", and tutors' assessments of their students' overall participation uncovered some differences between students, based on their school type, but further research is required to confirm these differences. As groups were arranged so that students from particular school types were distributed relatively evenly, we did not expect to find substantial differences between students' marks based on their school type. In 2009, 2010, and 2011, however, second-tier public school students received lower group marks than students from other school types, who generally obtained similar marks. Yet these differences were minimal, and most likely did not fully reflect the discrepancies between individual students' performances. Thus, in keeping with our expectations, school type did not appear to significantly impact completing students' group marks.

With regard to the "best group member" awards, the winners of these were selected by students' peers in their group and their tutor, with 40 of these being awarded between 2009 and 2011. Completing students from top-tier public schools received the highest proportion of these awards: 38 percent. They were followed by top-tier private school students (15%), second-tier public school students (14%), and second-tier private school students (12.5%). Thus, top-tier public school students were by far the most likely to receive these awards, with other school types receiving roughly the same proportion. Although these findings may tell us something about school type in relation to *outstanding* students, such analyses uncover little about students' general performance and participation.

In 2011, tutors assessed their students' participation by categorising each completing student's (n = 86) overall contribution as either "excellent", "good", "average", "poor", or "very poor" (see Figure 1 below). Here, we found that a similar pattern was evident to that observed in students' completion rates and in the number of hours spent on extra-curricular activities. Top-tier private school students received the best overall feedback, with 48% being categorised as excellent. They were followed by top-tier public school students (46% being excellent), second-tier private school students (38% being excellent), and, finally, second-tier public school students (22% being excellent). Furthermore, second-tier public school students had by far the highest proportion of students categorised as having made a poor contribution (22%). Due to the small numbers though (particularly in the categories of public school students), further research is required to confirm these apparent patterns.
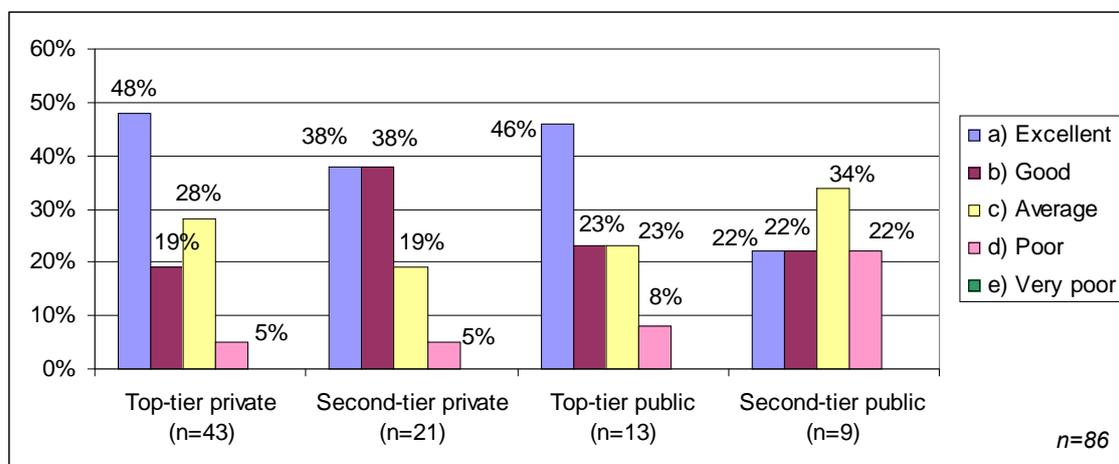

Figure 1. Tutor assessed student participation in 2011 by school type.

Thus, our analysis of students' results showed that group marks were not influenced considerably by students' school types. However, top-tier public school students received a much higher proportion of "best group member" awards than did students from other schools. Here, it is worth drawing attention to the fact that, over the years, numerous tutors have observed that award-winners tend also to be group editors (a role that is generally taken up by one or two students in each group). The high proportion of top-tier public school students that won "best group member" awards may reflect this group's greater willingness to volunteer as editors. Indeed, award winners are not necessarily those that submit the best academic work; rather, they tend to be the students who do the greatest quantity of work. It might be hypothesised that *some* top-tier private school students, although they possessed the confidence and skills to do so, were unwilling to volunteer for "editing" positions due to their inability to cope with an already large workload (as some tutors observed). This suggestion is supported by our finding that tutors judged top-tier private school students most favourably in regard to their overall contributions, followed by top-tier public, second-tier private, and second-tier public school students. Thus, it seems that students from top-tier schools, both public and private, were the most likely to be individually successful in the SmARTS program. It is possible that this finding might be linked to the greater extra-curricular engagement of these groups, and might also be reflected in their lower drop-out rates. However, results alone cannot tell us what students gained from (and brought to) the SmARTS program.

4.4. Online access, computer/internet skills, and online participation

While a student's school is perhaps unlikely to have a major influence his/her access to and proficiency when using computers and the internet, their socio-economic status, reflected in their school type, *is* likely to do so. Access to a home computer is extremely widespread in Australia, so this issue is unlikely to have been a problem for any of the SmARTS students (ABS, 2009; OECD, 2011, p. 147). The quality of students' internet access is perhaps of greater concern. The authors and the 2011 second-tier public school SmARTS coordinators all observed that these students had more difficulty accessing the program's online platform. In their survey response, one school coordinator said that, of their two students, one "had a lot of trouble electronically gaining access. Her email address did not [w]ork and her communication dropped off". The coordinator elaborated later that the student "had to use her mother's email and that proved difficult sometimes. Her computer needed different programs to link to the SmARTS program". Another coordinator, also from a second-tier public school, said in their survey response that their students "sometimes had trouble accessing on-line tasks, or had trouble understanding tasks" and that "[l]ogging on was a problem for a couple of students initially". It is worth noting that only second-tier public school coordinators mentioned access difficulties in their survey responses, although one other coordinator mentioned a minor technical problem with students' emails.

In regard to students' internet access, in 2009, 2010, and 2011, students (n = 198) were asked whether their internet access was "always reliable and fast", "always reliable, but slow", "sometimes unreliable", or "always unreliable". Top-tier public and top-tier private schools had the highest proportion of students who answered "always reliable and fast": 67 percent and 63 percent respectively. Second-tier private and public schools had about the same percentage of students that gave this answer, the former having 58 percent and the latter 59 percent. Second-tier public schools had the highest proportion of students who said that their access was "sometimes unreliable": 35 percent. Thus, second-tier public school students appeared to be slightly disadvantaged in regard to the quality of their internet connections.

Our prior research suggests that students' technological literacy is often not as advanced as is commonly assumed (Crawford & McKenzie, 2011, pp. 565-566). Indeed, the majority of students were identified as "tech-comfy", not "tech-savvy", meaning that they used technologies for "social and entertainment purposes" rather than "educational and professional" reasons (Pegrum, 2009, p. 43). Furthermore, students from certain school types seem to have greater difficulties than others. This observation is in keeping with an OECD report's (2011, p. 144) suggestion that:

[T]he digital divide is no longer only about having physical access to a computer and the Internet at home and at school. While it is still true that students without or with only limited access to ICT [information and communication technology] at home and at school will not reap the same benefits as those with unrestricted access, a second digital divide is emerging between those who have the skills to benefit from ICT use and those who do not. Understanding how and where students use ICT, and their attitudes towards and confidence in using them, is essential for assessing the extent to which students are being prepared for full participation in the knowledge-based economy.

Accordingly, we now focus on inequalities, based on school type, in students' confidence and skill with computers and the internet.

In 2009, 2010, and 2011, when students were asked how they felt about using computers and the internet (see Figure 2 below), 71 percent of top-tier public school students said they were "always confident". Sixty-four percent of second-tier private school students said the same, as did 59 percent of second-tier public school students. Interestingly, however, top-tier private school students expressed the least confidence, with only 49 percent saying they were "always confident". The reverse pattern appeared when the proportions of students answering "mostly confident" were analysed by school type.

To confirm that the observed differences were in fact statistically significant, chi-square tests of this data (of the categories always confident and mostly confident), with a significance level of $p < 0.05$, were conducted. The difference between top-tier private and second-tier private schools is statistically significant [$\chi^2(1) = 4.24$, $p = 0.04$]. In addition, the difference between top-tier private and top-tier public schools is statistically significant [$\chi^2(1) = 5.28$, $p = 0.02$]. More data is required for second-tier public schools.

These findings are in keeping with our previous observations, which suggested that second-tier private school students were more confident with computers and the internet than were top-tier private school students (Crawford & McKenzie, 2011, p. 541). Public school students, however, were not included in this earlier analysis (Crawford & McKenzie, 2011, p. 541). Our analysis here, regarding students' self-assessed feelings about technology, mirrors findings already discussed in relation to top-tier public, second-tier private, and second-tier public school students (for instance, students' completion rates, time spent on extra-curricular activities, and tutor-assessed overall performance). The anomaly here is that top-tier private school students reported a somewhat lower level of confidence when using computers and the internet.
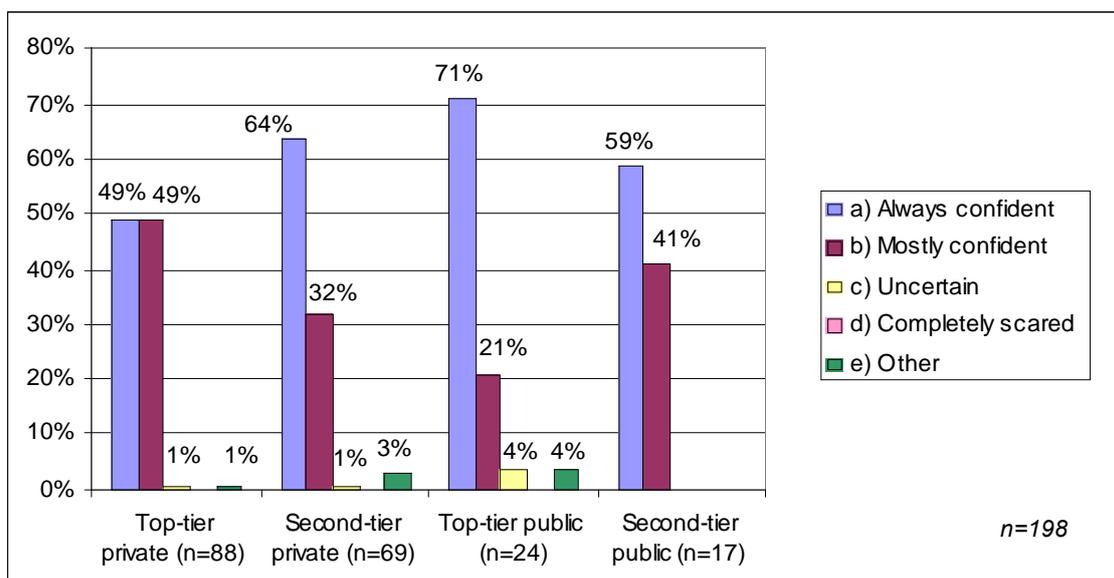

Figure 2. Student assessed use of computers and the internet in 2009-2011 by school type.

It seems likely that students' levels of confidence reflected, at least to some extent, their skills, and that, therefore, top-tier private schools may have had a somewhat higher proportion of slightly less skilled students than did other school types (in regard to use of computers and the internet). During the 2010 tutor interview, this tendency was raised by a tutor. Another tutor, Sophie, then agreed with this comment, and went on to relay an anecdote about one of her groups. She explained:

> They had this classic, weird [situation]… where the two [top-tier private school] girls had this shiny, brand spanking new Apple laptop that they didn't know how to use, and the [top-tier public school] kids had to show them how to use it, and go 'right you do this in iMovie'. They had to kind of talk them through it (tutor group interview, September 10, 2010).

It should be noted that as part of the SmARTS program in 2010, all students took part in a training workshop on iMovie. Thus it appears that on average, top-tier private school students may have been less proficient with computers and the internet, as well as being less confident with them. More generally, however, students attending top-tier public schools appeared to be about as advantaged as their private school counterparts (as was evident in our analyses of students' engagement in extra-curricular activities, completion rates, and individual results).

The picture was similar when students' self-reported online contributions were examined. As seen below in Figure 3, top-tier public school students appeared, according to students' self-assessment of their participation, to do the most work online, with 58 percent of them claiming that they completed their online tasks regularly. Fifty-five percent of second-tier private school students stated that they completed their tasks regularly. Second-tier public school students claimed to complete their tasks less often than all other groups, with only 29 percent completing them regularly. Top-tier private school students completed their tasks less regularly than their top-tier public and second-tier private school counterparts, though more regularly than second-tier public school students. Forty-four percent of these students claimed to complete their tasks regularly. Both top-tier private and second-tier public schools had the highest proportions of students that claimed to complete their tasks rarely: 17 percent and 18 percent respectively. Due to the small amount of data in some groups and categories, more research is needed to confirm the observed patterns.
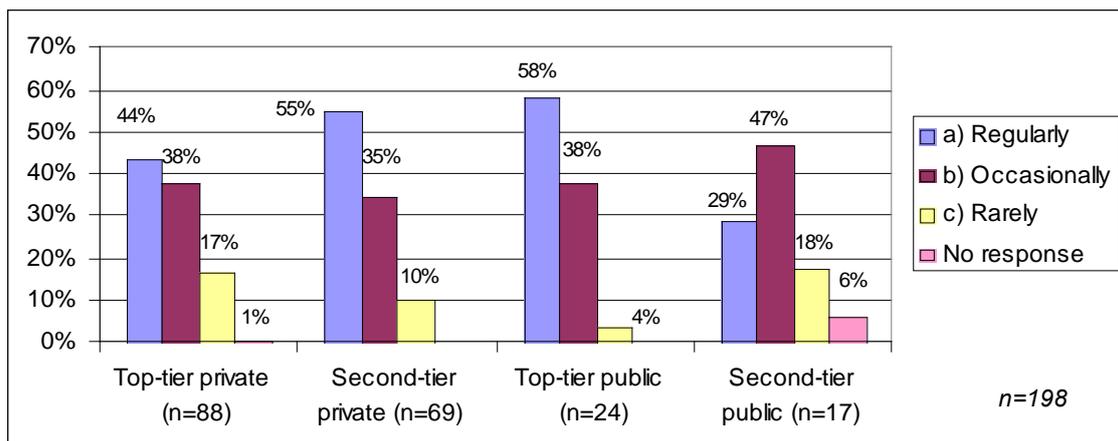

Figure 3. Student assessed online task completion in 2009-2011 by school type.

As was previously discussed, a new online platform was introduced to SmARTS prior to the commencement of the 2010 program. This new platform was relatively easy to use, particularly when compared with the old one. Through it we aimed to avoid any problems caused by a lack of proficiency, and to engage and cater to all students, regardless of their levels of confidence or skill. We therefore expected to see an improvement in students' online participation between 2009 (n = 52) and 2010-11 (n = 146). Our findings were largely in keeping with this expectation.

Examining students' self-assessed online participation by school type, we found that participation had improved in all groups except for second-tier private school students. In this group, the proportion of students who said that they contributed regularly online decreased by four percentage points between 2009 and 2010-11. Second-tier public school students improved the most, by 19.5 percentage points, while top-tier private schools improved by 14 points and top-tier public school students by nine. The fact that the two groups that were the least confident with computers and the internet improved the most suggests that our shift to a simpler online platform may have encouraged less tech-savvy students to participate more frequently online. However, in 2010-11, second-tier public school students' self-assessed online participation still remained significantly lower than other groups', with the proportion of students regularly completing tasks at only 36.5 percent, as opposed to 47 percent for top-tier private school students, 53.5 percent for second-tier private school students, and 59 percent for top-tier public school students. Indeed, second-tier public school students' increased participation was not reflected in tutors' assessments of their online participation, as we discuss below.

Tutors' assessments of students' online participation in 2011 (n = 86) revealed that second-tier public school students performed online tasks less frequently and competently than other students (see Figure 4 below). While top-tier private, second-tier private, and top-tier public schools had similar proportions of "excellent" students (30%, 29%, and 30% respectively), only 11 percent of second-tier public school students were categorised as "excellent". More than three quarters (78%) of these students were classed as either "average", "poor", or "very poor". More data is required, however, particularly for the second-tier public school group, in order to test for the statistical significance of these observed differences.
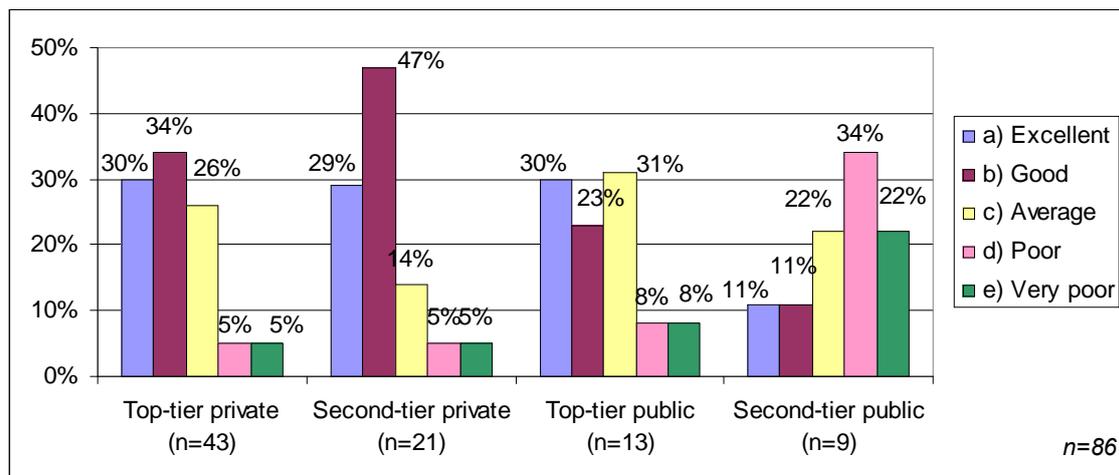

Figure 4. Tutor assessed online participation in 2011 by school type.

Therefore, students' self-assessed computer and internet skills, as well as their self-assessed online contributions, were not always akin to the tutors' assessments. While top-tier private school students reported having the least confidence with computers and the internet, and claimed to complete online tasks with less regularity than most other groups, their tutors judged them to be just as good online as their second-tier private and top-tier public counterparts. This judgement may have been due to the nature of their school education. Indeed, it is possible that although they submitted work less frequently than most other groups, their work was more in keeping with tutors' expectations of academic work, and was assessed accordingly. Top-tier public and second-tier private school students were the most and second most confident with computers and the internet respectively, and also judged their online contributions to be the most and second-most regular. Tutors' assessments of these groups' online participation were similar. Second-tier public school students, however, were given much lower scores by their tutors than were all other groups. This group also judged their online contributions to be the least regular, and they felt the second least confident using computers and the internet.

It therefore appears that top-tier private school students, while somewhat less technologically able, were still using SmARTS' online learning platforms to the satisfaction of their tutors. This outcome was perhaps due to the relatively simple online platform used in SmARTS (an impression supported by differences between students' 2009 and 2010-11 self-assessments). Meanwhile, second-tier public school students appeared to be relatively disadvantaged online, completing fewer tasks on average, and feeling less confident with the technology than most other students. Access may also have been an issue for these students, with a higher proportion of them reporting "sometimes unreliable" internet access. Thus, although this group's self-assessed online engagement improved the most between 2009 and 2010-11, there is still scope for further development.

4.5. On-campus participation and travelling to the university

As discussed in Section 3.2 of this paper, top-tier private schools were often located near the University. In addition, both of the top-tier public schools involved in SmARTS were extremely close to the University. Second-tier schools were generally further away. Given that most students came to the on-campus sessions directly from school, it seems likely that students from top-tier schools would take less time to travel to the University than their second-tier counterparts. This expectation was supported by students' survey responses from 2009, 2010, and 2011 (n=198). As seen in Figure 5 below, top-tier public school students took, on average, the least amount of time to travel to or from the University, followed closely by top-tier private school students. Second-tier private school students took the second greatest amount of time, while second-tier public school students took the greatest. (More data is required, though, to test whether these observed differences are statistically significant). These differences in travel time may have influenced how familiar students became with the campus. Indeed, the authors observed that students attending nearby schools tended to arrive at the University earlier, and that they thus spent a greater amount of spare time there prior to their on-campus workshops and group meetings. This may have led them to feel more comfortable on the University campus.
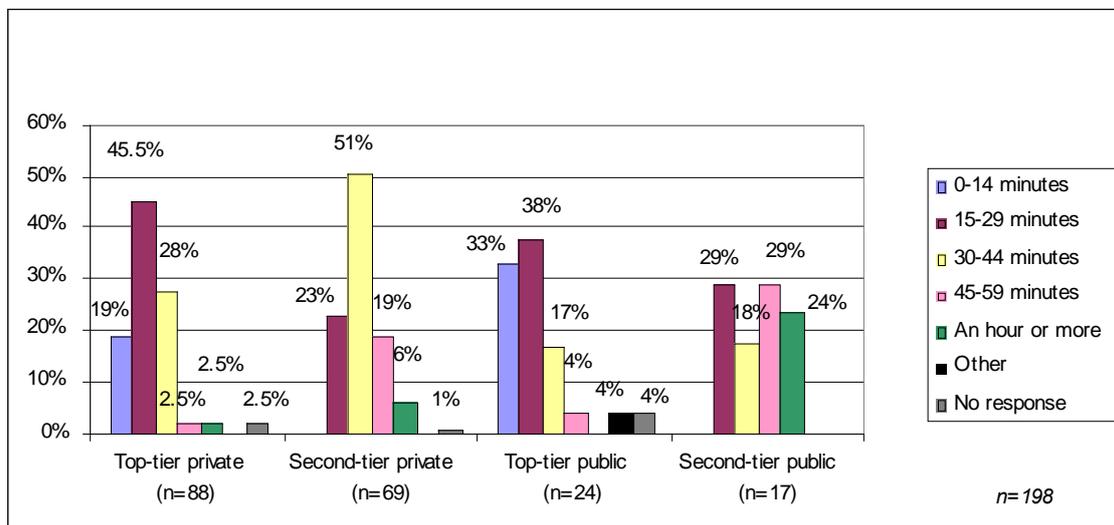

Figure 5. Student assessed travel time to UWA in 2009-2011 by school type.

Students' attendance and participation, in regard to the on-campus sessions, are also of interest. Below, Table 1 examines completing SmARTS students from each school type, documenting the proportion of each group to complete the survey. As no students refused to complete the survey, this table reveals the percentage of each group that was present during the on-campus session when the survey was conducted. Our findings reveal that top-tier public schools had the highest proportion of students that completed the survey (92%), followed by second-tier private schools (84%), top-tier private schools (81%), and, finally, second-tier public schools (77%).

Our analysis was substantiated by students' self-assessed on-campus attendance from 2009, 2010, and 2011 (n = 198). Ninety-six percent of top-tier public school students said that they attended the on-campus sessions regularly, followed by 88 percent of second-tier private school students, and 85 percent of both top-tier private and second-tier public school students. Thus, top-tier public school students' on-campus attendance and participation was more frequent than other groups'.

Table 1. Surveys completed by school type, 2009-2011.

	Surveys completed	Surveys not completed	Total students
Top-tier private	92 (81%)	22 (19%)	114 (100%)
Second-tier private	65 (84%)	12 (16%)	77 (100%)
Top-tier public	24 (92%)	2 (8%)	26 (100%)
Second-tier public	17 (77%)	5 (23%)	22 (100%)
Total	198 (83%)	41 (17%)	239 (100%)

Perhaps one reason for the slightly lower than expected attendance rates of top-tier private school students, who generally attended schools close to the University's campus, was the nature of their extra-curricular commitments. In 2011, we were often contacted by top-tier private school coordinators whose students were attending camps or events when on-campus meetings were scheduled. What seems clear is that their occasional absences had little impact on their performance, both overall (as discussed in Section 4.3) and on-campus (as discussed below).

Differences between school types were found in 2011, in tutors' assessments of completing students' on-campus participation (n = 86), as seen below in Figure 6. According to tutors, top-tier private, second-tier private, and top-tier public school students participated more than second-tier public school students. Forty-six percent of top-tier public school students' on-campus participation was considered to be "excellent" and 31 percent was "good", while 46.5 percent of top-tier private school students' on-campus participation was "excellent" and 28 percent was "good". Forty-three percent of second-tier private school students were judged to be "excellent", and 47.5 percent to be "good". Second-tier public school students' on-campus participation was judged the least favourably, with 33.5 percent being "excellent", and only 11 percent being "good". Furthermore, 33.5 percent were categorised as "average", and 22 percent as "poor". (More data is required, however, especially in the public school categories, in order to test for the statistical significance of these results.)
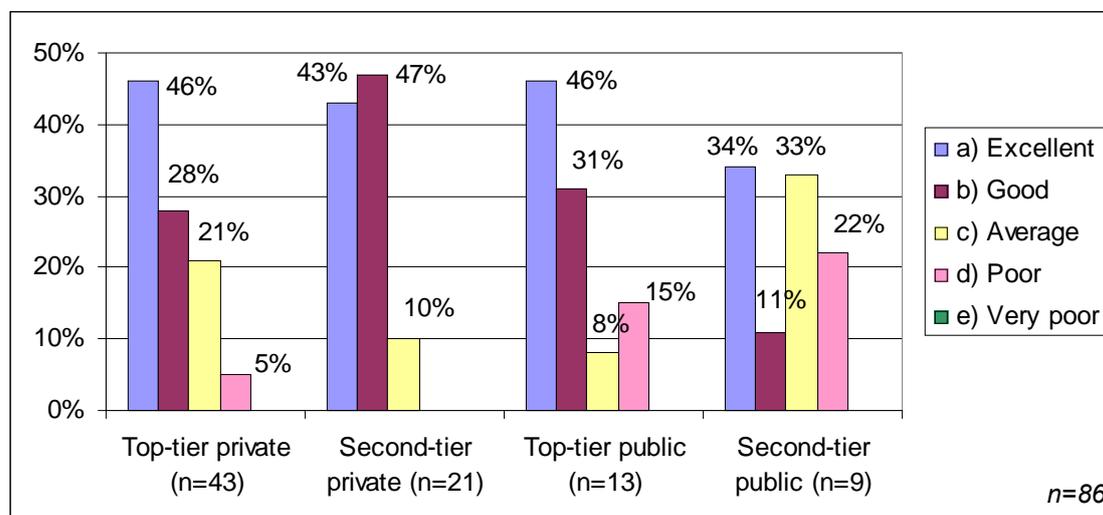

Figure 6. Tutor assessed on-campus participation in 2011 by school type.

Therefore, related to students' on-campus attendance and participation is the fact that top-tier public school students appeared to take the least time to travel to the University, while second-tier public school students took the most. In regard to on-campus participation (observed through students' survey completion rates, their self-assessed on-campus participation, and tutors' assessments of their on-campus participation), top-tier public school students again received the highest scores and second-tier public schools the lowest.

Some tutors suggested that second-tier public school students may have been intimidated by their private school and top-tier public school counterparts, which may help to explain their lower levels of participation on-campus (as well as online and overall, as was discussed in Sections 4.4 and 4.3 respectively). It may also explain this group's high drop-out rate (see Section 4.2). Although tutors were aware of some differences between students based on school type, greater awareness of such issues would no doubt be desirable. It was clear that tutors found it easier to teach students who were confident and poised (and that such students frequently came from top-tier schools). Students with such qualities would also have performed better during the Presentation Evening, and were probably more likely to take on leadership roles within their group (and to be rewarded for doing so). Engaging students from second-tier public schools, on the other hand, often required a greater effort by tutors. It would therefore be advisable to educate tutors on inclusive teaching practice, so that they respect students' different learning styles, experiences, and backgrounds, as well as their various strengths and weaknesses (Griffiths, 2010, p. 8). Such a teaching approach would benefit all students (Devlin, Kift, Nelson, Smith, & McKay, 2012, p. 5; Devlin & O'Shea, 2011, p. 5), and prevent tutors from problematising those from particular backgrounds.

One reason behind second-tier public school students' lower levels of on-campus participation may be that they felt uncomfortable around students from private schools. In our 2011 interview, one tutor, Colin, spoke about the dynamics of one of his groups, which contained six female top-tier (private and public) school students as well as two male second-tier public school students. The latter students, he explained, had been hesitant to speak up during on-campus sessions. He said:

> [T]hese guys were actually really nice … it was nothing like … them being rude or immature it was … maybe an intimidation thing. I guess I'm not sure whether it's a gender thing or socio-economic … difference, but I definitely think that they were intimidated to speak to the girls (Tutor group interview, September 6, 2011).

Another tutor, Helen, from 2011 related a similar experience involving two female, second-tier public school students. However, she also said that, in her other group, two of the male, second-tier public school students had contributed well during the on-campus sessions. Thus, although there may have been differences between students based on their school types, individual differences were also likely to have played a role.

There were, however, some signs that second-tier public school students gained more generic academic skills from the SmARTS program than did those from other schools. For instance, when students were asked in 2011 (n = 73) whether they had gained or improved in their critical thinking skills as a result of the program, second-tier public school students were the most likely to say they had (83%), followed by top-tier private school students (63%), second-tier private school students (62%), and top-tier public school students (36%). This outcome was most likely the result of the "skills workshops" that were implemented from 2010, amongst them being a workshop that focused on critical thinking. Similar patterns were evident in regard to computer and internet skills, as well as group work, research, writing, editing, referencing, and oral-presentation skills. These skills were taught through group meetings and on-campus workshops, as well as through online tasks to a lesser extent. In regard to the eight skills that students were asked about, second-tier public school students claimed to learn the most in five of them, with top-tier public school students learning the least in seven of them.

This outcome suggests that the SmARTS program, and the university context more generally, may have facilitated the academic development of second-tier public school students *to some degree*. However, we also found that students who took longer to travel to the University

attended fewer on-campus sessions. From this observation (and others previously discussed), we predict that differences related to school type are not likely to be entirely eliminated once students enter university. This is of interest in light of research that has shown that students from private schools and affluent public schools obtain lower marks during their first year of university than do those from less affluent public schools (Birch & Miller, 2006; Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005). One reason why the former groups may struggle to achieve high marks in university could be that they are not educated to be resilient, independent learners. While reducing school-based inequalities between students remains our priority, we also hope to develop these academic skills in *all* students.

5. Conclusion

It is clear that top-tier public and top-tier private school students were the highest achievers in the SmARTS program, having low drop-out rates, gaining individual recognition from tutors and peers, and having high overall online, and on-campus participation rates. Second-tier public school students, however, appeared to be the lowest achievers in these areas, while second-tier private school students consistently came in second or third. Yet there were positive signs for second-tier public school students, with this group improving their online participation following the changes made to the online platform in 2010, and also strengthening their academic skills through the program more than any other group. This improvement in the experiences of second-tier public school students is encouraging, and something that the program can build on in 2012 and into the future.

So, what changes could be made to minimise the disadvantages experienced by second-tier public school students? Many of the circumstances that impacted students, such as travel time and skill-levels when they entered the program, are beyond our control. Perhaps the most we can do, then, is to attempt to balance out some of the inequalities between students through "skills workshops". Yet students' attendance at and engagement during these workshops is necessary in order for them to have such an effect, and for this to occur it is important that they are not designed in ways that advantage students of higher socio-economic status. Relatedly, we feel that all future tutors and coordinators should be educated in inclusive teaching, enabling them to better observe and resolve issues of inequality. Furthermore, in measuring students' achievements, greater emphasis could be placed on the degree to which students have improved. This approach is in keeping with Bonnor and Caro's (2007, pp. 72-73) proposition that:

> [M]easuring the extent to which student learning improves at school is much fairer than comparing raw test scores of students in different schools … The irony about value-added data is that it sometimes shows schools in the most disadvantaged areas making the greatest impact on student progress.

Due to time constraints at on-campus meetings (and inequalities in who are able to attend such meetings), workshops could never hope to undo the various inequalities that exist between students. Yet, perhaps more time might be spent teaching students skills through group meetings and online tasks. This would enable tutors to adjust how they taught their groups, in order to cater to different learning styles and address students' strengths and weaknesses. Furthermore, individual improvement might be included in tutors' assessments of students so that we could gain greater insight into what second-tier public school students learn through SmARTS, and how this might be improved.

Another possible way in which differences based on school type might be minimised is through an increase in the proportion of public school students, particularly those from second-tier schools. If, as was suggested by some tutors, these students were uncomfortable around students from private schools, increasing the proportion of second-tier public school students may help to minimise drop-outs and increase students' engagement in the program. Although SmARTS is open to all schools in the Perth metropolitan area, more needs to be done to facilitate the participation of second-tier public schools. It is also worth noting that these schools often enrolled a small number of students, making it difficult for students to share transport to the

University's campus. Thus, greater enrolments within individual schools should be encouraged where possible.

Finally, a major objective of the SmARTS program is to encourage students to attend university. We hope to encourage students from second-tier public schools, in particular, to do so. It is our belief that SmARTS and similar programs could assist lower socio-economic status students in making a successful transition to university. In studying inequality in programs such as SmARTS, it is possible to examine how disadvantage might affect performance. Indeed, we would suggest that, as the program we have evaluated already endeavours to minimise inequality (by making improvements and changes each year to the online and on-campus components), our own findings regarding disadvantage and advantage underestimate the degree to which these might be present in similar programs where such issues have not been closely considered. It is through such examinations that teachers and institutions are able to remain aware of and to help reduce inequalities in future university cohorts.

In light of this, we propose that programs such as SmARTS provide tutors with the training and assistance to deal with and identify school-based inequalities, to teach in an inclusive way, and to promote greater awareness of diversity and difference. This recommendation is of relevance beyond SmARTS and UWA; in fact, given the Federal Government's emphases on social inclusion, widening participation, and increasing participation of target groups (such as students from low socio-economic backgrounds), we hope that our findings and suggestions are beneficial and timely for universities across the country, which are experiencing an expansion in numbers of students from traditionally under-represented groups that are transitioning to university (Bradley, Noonan, Nugent, & Scales, 2008; Department of Industry, Innovation, Science, Research and Tertiary Education, 2012; Department of the Prime Minister and Cabinet, 2009).

In this paper, we have taken SmARTS as a case study in order to uncover how students' transitions to university were influenced by their school types. While most prior research has focused solely on students' marks (ABS, 2006, p. 107; Birch & Miller, 2006; Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005), here we have examined their performances, engagement, and experiences. In our analyses of these factors, it has become clear that there existed a great deal of inequality between students from different school types, and that these inequalities did not simply disappear when they arrived at the University, or when they took part in online tasks. Thus, it seems necessary to look beyond analyses of first-year university students' marks when investigating how inequalities endure and play out in tertiary education. Indeed, while the democratising potential of education is so often spoken about, discussions tend to ignore evidence that suggests that inequalities are perpetuated by our educational institutions (Carr-Chellman, 2005, p. 1; Holland & Eisenhart, 1990, p. 27). It is our hope that, through our own research and practice, we might help to measure and minimise these inequalities before students enter university. This would enable us, and others, to understand the needs of future university cohorts, and to create pathways for traditionally under-represented groups.

Acknowledgements

References

Australian Bureau of Statistics. (2006). *Australian social trends 2006* (No. 4102.0; D. Trewin). Retrieved December 29, 2011, from http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/178044E4F02B2490CA2571B0001A6078/$File/41020_2006.pdf

Australian Bureau of Statistics. (2008). *Census of population and housing: Socio-economic indexes for areas (SEIFA), Australia – data only, 2006 (State suburb code, data cube*

only, 2006) (No. 2033.0.55.001). Retrieved January 6, 2012, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012006?OpenDocument

Australian Bureau of Statistics. (2009). *Household use of information technology 2008-9* (No. 8146.0; B. Pink). Retrieved December 16, 2011, from http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/9B44779BD8AF6A9CCA25768D0021EEC3/$File/81460_2008-09.pdf

Australian Bureau of Statistics. (2011a). *Population estimates by statistical local area, 2001 to 2010* (No. 3218.0). Retrieved December 16, 2011, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3218.02009-10?OpenDocument

Australian Bureau of Statistics. (2011b). *Schools, 2010* (No. 4221.0; B. Pink). Retrieved December 16, 2011, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4221.02010?OpenDocument

Birch, E. R., & Miller, P. W. (2006). Student outcomes at university in Australia: A quantile regression approach. *Australian Economic Papers, 45*, 1-17. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8454.2006.00274.x/pdf

Birch, E. R., & Miller, P. W. (2007). The influence of type of high school attended on university performance. *Australian Economic Papers, 46*, 1-17. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8454.2007.00302.x/pdf

Bonnor, C., & Caro, J. (2007). *The stupid country: How Australia is dismantling public education*. Sydney: New South.

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian higher education: Final report*. Canberra: Department of Education, Employment and Workplace Relations.

Carr-Chellman, A. A. (2005). Introduction. In A. A. Carr-Chellman (Ed.). *Global perspectives on e-learning: Rhetoric and reality* (pp. 1-16). Thousand Oaks: Sage Publications.

Crawford, N., & McKenzie, L. (2011). E-learning in context: An assessment of student inequalities in a university outreach program. *Australasian Journal of Educational Technology, 27*, 531-545. Retrieved from http://www.ascilite.org.au/ajet/ajet27/crawford.html

Department of Industry, Innovation, Science, Research and Tertiary Education. (2012). *Higher education participation and partnerships program*. Retrieved November 11, 2012, from http://www.innovation.gov.au/HigherEducation/Equity/HigherEducationParticipationAndPartnershipsProgram/Pages/default.aspx

Department of the Prime Minister and Cabinet. (2009). *A stronger, fairer Australia: Reducing social disadvantage and increasing national prosperity.* Canberra: Commonwealth of Australia.

Devlin, M., Kift, S., Nelson, K., Smith, L., & McKay, J. (2012). *Effective teaching and support of students from low socioeconomic status backgrounds: Resources for Australian higher education.* Retrieved December 11, 2012, from http://www.lowses.edu.au/assets/ALTC LSES Final Report 2012.pdf

Devlin, M., & O'Shea, H. (2011). *Teaching students from low socioeconomic backgrounds: A brief guide for university teaching staff.* Retrieved March 25, 2012, from http://www.deakin.edu.au/herg/assets/resources/Resources/teaching-lses.pdf

Dobson, I. R., & Skuja, E. (2005). Secondary schooling, tertiary entry ranks and university performance. *People and Place, 13*(1), 53-62. Retrieved from http://arrow.monash.edu.au/vital/access/manager/Repository/monash:64054

Forsey, M. (2007). *Challenging the system? A dramatic tale of neoliberal reform in an Australian high school*. Charlotte: Information Age Publishing.

Griffiths, S. (2010). *Teaching for inclusion in higher education: A guide to practice.* Retrieved March 25, 2012, from http://www.qub.ac.uk/directorates/AcademicStudentAffairs/CentreforEducationalDevelopment/CurriculumDevelopment/Inclusion/

Holland, D. C., & Eisenhart, M. A. (1990). *Educated in romance: Women, achievement, and college culture*. Chicago: The University of Chicago Press.

Holmes-Smith, P. (2006). *School socio-economic density and its effect on school performance*. Retrieved December 27, 2011, from http://www.mceetya.edu.au/verve/_resources/SES_Report.pdf

James, R. (2009). *Implications of the Bradley review's recommendations for student equity groups. Paper presented at Student Equity in Higher Education: What We Know. What We Need To Know*. Adelaide: National Centre for Student Equity in Higher Education. Retrieved November 11, 2012, from http://w3.unisa.edu.au/hawkeinstitute/ncsehe/student-equity-forum-2009/ncsehe_fp_final.pdf

Organisation for Economic Co-operation and Development. (2004). *Learning for tomorrow's world: First results from PISA 2003*. Retrieved December 27, 2011, from http://www.oecd.org/dataoecd/1/60/34002216.pdf

Organisation for Economic Co-operation and Development. (2011). *PISA 2009 results: Students on line: Digital technologies and performance (Volume VI)*. Retrieved December 27, 2011, from http://www.oecd.org/dataoecd/46/55/48270093.pdf

Pegrum, M. (2009). *From blogs to bombs: The future of educational technologies in education*. Crawley: UWA Publishing.

Ryan, C., & Watson, L. (2004). *The drift to private schools in Australia: Understanding its features*. Retrieved December 29, 2011, from the Australian National University Digital Collections https://digitalcollections.anu.edu.au/bitstream/1885/42681/2/DP479.pdf

Sherington, G. (2004). Public commitment and private choice in Australian secondary education. In R. Aldrich (Ed.). *Public or private education? Lessons from history* (pp. 167-188). London & Portland: Woburn Press.

Win, R., & Miller, P. W. (2005). The effects of individual and school factors on university students' academic performance. *The Australian Economic Review, 38*, 1-18. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8462.2005.00349.x/pdf