

Students and Learning Advisors connecting? Does our practice affect student retention and success?

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Abstract

One of the problems with working in the Learning Advisory sector is that it is very difficult to show that accessing Learning Advice for students has a positive impact on their retention and success. There is no evidence to suggest that any research has been conducted concerning the core work of Learning Advisors (LAs) in a tertiary context over a whole academic year. This study addresses this gap in the research as it considers the results of a year's cohort (2012) at the Wellington Institute of Technology (WelTec), New Zealand. The rationale in choosing to capture a whole year was to ensure that a reasonable amount of data was available. Previous research has tended to focus on individual study programmes which although report their individual success are unlikely to accurately illustrate the day to day core work of Learning Advisors within a tertiary institute. Therefore this report shows how successful students are in their courses with or without learning advice, using quantitative data to demonstrate the possible effectiveness of learning advice for enhancing students' retention and success. The results of this study indicate that Learning Advice in 2012 did appear to have a positive impact on both student retention and success. However, overall results of statistical analysis reached only marginal levels of significance; therefore further investigations could be conducted to confirm such impact.

Introduction

The motivation for this research study initially started with an extension of business as usual in WelTec's Learning Commons, with the collation of student statistics relating to the work of Learning Advisors. However, a major influence regarding this project was the work completed by Carole Acheson in 2006 based on her 2005 ATLAANZ conference presentation at New Plymouth. In her paper 'Finding evidence that learning support makes a difference' she states that:

One of the pleasures of teaching in learning support is the conviction that learning advisors play a significant part in helping students achieve their academic goals, and as a happy consequence, help their institutions retain students and therefore funding.... On the other hand, hard evidence that learning support makes a difference to student retention and completion rates is difficult to find ... In the face of the constant need to justify funding, the question arises whether it is possible to prove on a quantitative basis that learning support makes a difference to student achievement (Acheson, 2006, p. 222).

Since 2005, there have been a number of studies that have looked at Learning Advice, which provided the ‘hard’ evidence that Acheson talked about in her paper. Many of these studies have considered the effect of individual study skills programmes (Henning & Manalo, 2012; Manalo, Marshall & Fraser, 2009; Manalo, Wong-Toi & Henning, 1996), and the effect of tertiary preparatory courses (Manalo, 2006). This study supplements the ‘hard’ quantitative evidence that has been produced from these studies and answers the question that Acheson talks of in her paper, i.e. as to whether it is possible to show that learning advisory sessions can have a positive impact on student success and retention.

Background

There has been some quantitative research regarding the effectiveness of the tertiary Learning Advisory sector in New Zealand, however much research in the area is qualitative or mixed methods (See Fraser & Simpson, 2011; Jayawardane & Askew, 2010; Silvester, 2007; and Melhop, 2006 as examples). The latter studies investigate individual student perspectives of the advisory process, or consider the effects of study skills courses rather than the core work of Learning Advice. Such core work would include students being helped on a one to one basis or in small groups by Learning Advisors with their approach to an assignment or with specific academic reading, writing or course related work. The study skills that are covered in these sessions tend to be embedded within the work that students bring to the sessions. Additionally, quantitative studies that have occurred tend to focus on ‘one-off’ initiatives or study skills courses in institutions. Moreover, the one large scale quantitative study in a New Zealand university setting did not show conclusively that learning advice had a positive effect on student outcomes (Acheson, 2006). These findings were in contrast to findings from an American study which focussed on tertiary students with learning disabilities (Troiano, Liefeld & Trachtenberg, 2010). In this study, attendance at learning centres in addition to classes was shown to have a positive effect on student retention and success.

Troiano et.al’s (2010) study was conducted in North America, so may be less pertinent to a New Zealand context. However, this study has been repeated in a New Zealand context, where Manalo, Ede and Won-Toi (2010) reported similar retention and success statistics for students with learning disabilities and other forms of ‘hidden disabilities’ at the University of Auckland. However, even though the above studies show that students who attend for learning advisory sessions did achieve higher grades, it does not show that it is participants’ attendance that caused that greater performance. For example, an alternative explanation for these studies’ results could be higher motivation that participants may have exhibited, which translated into larger amounts of study time and ‘on task’ behaviour rather than just attendance for learning advice. It must be remembered that even though a correlation may exist between attendance at learning advisory sessions and higher grades, this does not equate to a causal connection. We will attempt to go some way to addressing this issue in this study by utilising aspects of the chi-square test to develop a tool to measure the effectiveness of learning advice. This tool will be outlined in more detail later in the paper, together with its use with a whole year’s polytechnic cohort. The decision to use a whole year’s cohort and not a sample of students from certain programmes and levels of study

students was to provide a stronger argument if there was a correlation between students that accessed learning support and expected pass rates.

One aspect of the Troiano (2010) and Manalo et. al. (2010) studies that does resonate with us, is the researchers' emphasis that it is the relationship between advisors and students with ability issues that had the largest impact on academic performance. However, further research, perhaps of a qualitative nature, may be required to elucidate these behavioural dimensions. Aspects of the literature do indicate a mixture of factors that may provide successful student outcomes (Prebble et.al., 2004), as well as outlining some individual one-off programmes that have enabled students to succeed (Bail, Zhang & Tachiyama, 2008). As mentioned previously, it could be argued that students who use Learning Advisory services are those who are keen to achieve and are therefore more successful. For example, help seeking has been seen as a valuable component in successful students' approach to their study (Karabenick & Dembo, 2011; Karabenick, 2001). However there is still a lack of published research to validate that learning advisory services taken across a whole year's cohort either in a university or institute of technology and polytechnic (ITP) setting in New Zealand has a positive effect on student retention and success. Additionally, no quantitative method, specific to the learning advisory context, has been developed which individual institutions could utilise to assess the impact of learning advice on cohorts of students. This study addresses these issues to some extent, and outlines an assessment tool to chart the effectiveness of learning advice in a tertiary context.

Methodology

We chose a quantitative approach for this study specifically because we felt it would answer the research question we were asking, i.e. 'to what extent does learning advice affect retention and success in an ITP?' and additionally because we were keen to supplement previous quantitative studies in the Learning Advisory research literature in Aotearoa, New Zealand.

During the course of the research process the data was anonymised, which reduced, if not eliminated the possibility of harm to participants. Only the two members of the research team had access to individual student results in the context of the study.

Furthermore, we developed a quantitative tool to measure the effectiveness in terms of student grade outcomes for those students who attended Learning Advisory sessions. This method was developed from aspects of the Chi Square test, which is a test of proportions.

Below is an example of how the tool can be applied. The learning advisory grades indicate the passes, fails and withdrawals of students that accessed learning support and the Non Learning Advisory Grades report the same results from those students that did not access learning support.

Table 1: *Actual and expected results of students on a fictional WelTec Diploma programme*

Students/Results	Passes	Fails	Withdrawals	Totals
Learning Advisory Grades	25	2	1	28
Non Learning Advisory Grades	38	7	6	51
Totals	63	9	7	79
Expected Result				

In this example there were 25 passes and 2 fails from those students who attended Learning Advisory sessions. Similarly, there were 38 passing grades and 7 failing grades from those students who did not have any Learning Advisory sessions. To see if this is a positive result, an expected figure for each category needs to be calculated. This method has been developed from the first part of the Chi-squared test, an established statistical technique. This is a widely used reliable calculation for measuring expected results from nominal data, hence why it has been chosen to form a part of this research. How this is calculated is illustrated in the next table.

Table 2: *Illustration of expected figure*

Students/Results	Passes	Fails	Withdrawals	Totals
Learning Advisory Grades	25	2	1	28
Non Learning Advisory Grades	38	7	6	51
Totals	63	9	7	79
Expected Result				

To calculate the expected number of passes on this diploma programme, multiply the total number of passing grades by the total number of learning commons grades, and then divide by the total number of grades. In this case, the calculation is:

$$63 \times 28 \div 79 = 22.3$$

So, in this case the expected number of passing grades from students who attended Learning Advisory sessions was 22.3. This is shown in table 3 below. Since the actual number of passing grades was greater, then Learning Advice could be seen to have had a 'greater than expected' effect.

The third table in this example shows the expected result for each other aspect, i.e. fails and withdrawals.

Table 3: *Actual and expected results of students*

Students/Results	Passes	Fails	Withdrawals	Totals
Learning Advisory Grades	25	2	1	28
Non Learning Advisory Grades	38	7	6	51
Totals	63	9	7	79
Expected Result	22.3	3.2	2.5	

Once the expected value for 'passes', 'fails' and 'withdrawals' was calculated, the differences between these expected figures and the actual results was calculated to show whether the effect of learning advice was positive or negative.

Table 4 below illustrates that not only were there 2.7 more passing grades than expected, but also 1.2 fewer failing grades and 1.5 fewer withdrawals than expected given the total number of grades undertaken in this diploma programme. In this case it could be claimed that the presence of learning advisory sessions was the variable that helped to produce this effect.

Table 4: *Actual and expected results of students*

Students/Results	Passes	Fails	Withdrawals	Totals
Learning Advisory Grades	25	2	1	28
Non Learning Advisory Grades	38	7	6	51
Totals	63	9	7	79
Expected Result	22.3	3.2	2.5	
Differences	+2.7	+1.2	+1.5	+5.4

In this example the number of passes was 25 with an expected figure of 22.3. Since the actual result was greater than the expected effect, then this constitutes a positive result. Also, since the expected number of fails exceeded the actual number, then this also constitutes a positive result. A similar result occurs for the number of withdrawals.

Once the differences were calculated, then they were aggregated to provide a positive, negative or zero total result. A positive result was classified as a 'greater than expected' effect, a zero result as a 'neutral' effect and a negative result as a 'less than expected' result.

Having calculated whether learning advice had a 'greater than expected', 'neutral' or 'less than expected' effect, we then performed a full Chi Square test to see whether these results were statistically significant or not.

Methods

This research was undertaken in 2013 and considered a whole year's (2012) cohort at the Wellington Institute of Technology (WelTec) to show how effective students were in their courses with and without learning advice. It considered the core work of the learning advisor service at WelTec and produced quantitative data regarding the impact of this service during 2012. The core work included one-to-one and small group sessions with students, which consisted of study skill sessions, assignment support, time management, literacy and numeracy development and supplementary instruction.

The method used to collect the data for this study was the collation of anonymised student results from 623 students who attended learning advisory sessions and 9591 students who did not. The students who attended learning advisory sessions consisted of 105 students from the School of Health and Social Services; 31 students from the School of Hair, Beauty and Exercise Science; 6 students from the School of Creative Technologies; 167 students from the School of Engineering; 53 students from the School of Hospitality and Tourism; 23 students from the School of Construction; 116 students from the School of Business; 96 students from the School of Information Technology and 26 students from the School of Foundation Studies.

The process of data collection and collation was labour intensive, as each result had to be manually extracted from WelTec's online student database systems, namely Artena and APlus+. From here, the above quantitative technique was used to calculate an expected figure using data from students who did and did not attend learning advisory sessions in 2012. The results were then analysed and the impact of learning advice assessed using the method outlined in Examples 1 and 2 above. The statistical significance of the results was then calculated using a Chi-squared test.

Findings

Overall in 2012, WelTec employed the equivalent of six full-time Learning Advisors who supported 623 students over 61 programmes. These students achieved 2043 passing grades, having received 2760 one-to-one or small group sessions from the Learning Advisors. The majority of students who attended for learning advice sessions were self-referrals who wanted help with an upcoming assignment. In this case, although there is no documented explicit link between learning advisory sessions and final grade outcomes for these students, we hypothesize that those students who did attend sessions were able to achieve better final outcomes than if they had not attended. Students who worked with Learning Advisors had a success rate of 80.9% and a retention rate - students who did not withdraw in 2012 - of 98.7%.

The findings from this study have been further categorised by level of study. Specifically, they have been partitioned according to certificate, diploma, degree and graduate diploma qualifications.

Certificate

During 2012 Learning Advisors supported 208 certificate-level students over 847 sessions. These students achieved 870 passes in their courses. Overall certificate level students did not perform as well as expected, as the number of unit standard completions was lower and the number of non-completions higher than expected. These figures are shown in table 5 below.

Table 5: *Actual and expected results of students on certificate programmes*

Students/Results	Completions	Non-Completions	Withdrawals
Learning Advised Students	870	231	3
Non Learning Advised Students	8412	1473	460
Expected Results from Learning Advised Students	895	164	45

During 2012, 208 students from 32 certificate programmes at WelTec accessed the learning advisory service. Of these, 92 students in 14 programmes exhibited 'greater than expected' results, 34 students in 5 programmes exhibited 'as expected' results and 82 students in 13 programmes exhibited 'less than expected' results. 327 sessions were given in certificate programmes where students exhibited a 'greater than expected' effect, and 204 sessions were given in certificate programmes where an 'as expected' effect occurred. These two categories were contributed to by 60% of certificate students, whereas the 'less than expected' category consisted of 40% of the total number of certificate students. Overall, there was a 'less than expected' effect when the certificate student numbers were aggregated, which was significant at the 99.5% level, i.e. $p < 0.05$.

Diploma

Learning Advisors supported 196 students studying for diploma qualifications during 2012. These students attended 988 sessions. Nine diploma programmes exhibited a 'greater than expected' effect, where the students in question had 906 sessions. Overall, learning advisory sessions resulted in 'greater than expected' results for grades A and B on the diploma programmes offered in 2012. Additionally, learning advice at diploma level at WelTec also produced a greater than expected result in the prevention of Non Completes and Withdrawals from papers. The details of individual grades are exhibited in Table 6.

Table 6: *Actual and expected results of students on diploma programmes*

Students/Results	A	B	C	Fail	Non-Completions	Withdrawals
Learning Advised Students	126	159	216	55	47	4
Non Learning Advised Students	669	867	1504	307	343	52
Expected Results from Learning Advised Students	111	143	240	51	54	8

Overall, there was a ‘greater than expected’ effect when the diploma student numbers were aggregated, which was approaching significance at the 90% level, i.e. $p < 0.10$.

Degree

Learning Advisors supported 189 students from the 8 degree programmes offered during 2012. Of these, 132 students exhibited a ‘greater than expected’ result from the Learning Commons sessions they received and 57 achieved a ‘less than expected’ effect. No students exhibited an ‘as expected’ effect. However, overall degree level students achieved an ‘as expected’ effect from their learning advisory sessions. The details of individual grades are exhibited in Table 7 below.

Table 7: *Actual and expected results of students on degree programmes*

Students/Results	A	B	C	Fail	Non-Completions	Withdrawals
Learning Advised Students	183	265	181	45	68	26
Non Learning Advised Students	1399	1998	1183	235	624	149
Expected Results from Learning Advised Students	191	273	165	51	34	21

Overall, there was an ‘as expected’ effect when the degree student numbers were aggregated, which was approaching significance at the 90% level, i.e. $p < 0.10$.

Graduate Diploma

WelTec offered five graduate diploma programmes during 2012, with 35 students achieving a ‘greater than expected’ effect, and two students with an ‘as expected’ effect. No students achieved a ‘less than expected’ effect. Table 8 below summarises the results for

Graduate Diploma students who received learning advice compared to those who did not during 2012.

Table 8: *Actual and expected results of students on graduate diploma programmes*

Students/Results	A	B	C	Fail	Non-Completions	Withdrawals
Learning Advised Students	29	42	75	4	6	0
Non Learning Advised Students	62	93	105	6	7	16
Expected Results from Learning Advised Students	32	47	63	4	5	6

Overall, there was a 'greater than expected' effect when the graduate diploma student numbers were aggregated, which was marginally significant at the 90% level, i.e. $p < 0.10$.

Learning Advisory Effect

The relationship between students who attended learning advice sessions and the academic results of the 2012 cohort was calculated by comparing it to the number of students from the same subject areas who did not receive learning advice. If the expected number exceeded the learning advisory figures, then a negative result was concluded. Conversely, a positive effect was concluded if the learning advisory figures exceeded the expected figure. Parity resulted in an as expected result (see Examples 1 and 2 above). The overall results have been summarised in Table 9 below.

Overall

The following table shows the number of sessions, number of grades, average number of sessions per paper and learning advisory effect by level of qualification for the whole 2012 cohort of students.

Table 9: *Sessions, Number of Grades, Average number of sessions per paper and Learning Commons Tutor Effect by level of qualification*

	Sessions	Grades	Average number of sessions per paper	Calculated Learning Commons Effect
Certificate	847	1104	0.77	Less
Diploma	988	607	1.63	Greater
Degree	762	768	0.99	As
Graduate Diploma	156	155	1.01	Greater

Here, diploma students seemed to come to see Learning Advisors more often for fewer paper grades, whereas certificate students saw Learning Advisors less often for more paper grades. It seems to be the case that where the number of grades covered is approximately equal to the number of sessions, then an ‘as expected’ result occurred.

Discussion

This section will consider each level of qualification in turn.

Certificate programmes

At first sight it might seem that the learning advisory service at WelTec was not effective for students who were studying at certificate level. It is certainly the case that given the number of students on courses and the number of students who attended learning advisory individual or small group sessions then more completions would have been expected. However, it must be remembered that 208 students who had learning advice did achieve 870 passing grades on their courses. This result could be because of factors beyond the specific learning advice sessions in question, but the possibility remains that learning advisory sessions played some role in those students’ success. In order to verify this, qualitative research would have to be undertaken, in order to verify the results of this quantitative study. However, there are a number of qualitative studies in the area of learning advice, all pointing to the positive effect that learning advice and learning advisory programmes have on student outcomes (Hobbs, 2009; Manalo, Marshall & Fraser, 2009; Fraser, Manalo & Marshall, 2010; Johnson, Haines & Gera, 2012; Ross, 2012). It is a possibility, which needs to be verified by a qualitative study, that the 208 students who achieved competency at their certificate programmes did so because of the input of learning advice.

More concerning is the 256 student grades where competency was not achieved in specific subject areas, despite having learning advisory sessions. One possible explanation for this is the nature of competency based certificate programmes at WelTec. While it is feasible for a Learning Advisor to effect aspects of a student’s work such as literacy and numeracy

or the theoretical facets of the work that a student has to undertake, most of the assessments on the competency framework that WelTec undertakes are practical. It is often not possible for Learning Advisors to help a student make a lemon meringue pie, or replace the cam belt in an engine's drive shaft. These activities are more often than not the province of the course tutor in the training kitchen or automotive workshop, where tertiary learning advisors - unless they were co-teaching - would have less of an effect. Consequently, it may be possible for a student to be unsuccessful in a course element because of the need to develop a practical rather than a study skill.

The number of withdrawals from certificate students who received learning advice sessions is the most encouraging statistic at this level. The expectation, using the applied tool, was that the students that accessed learning support would result in 48 withdrawals, however, the actual number of students that withdrew was only three. More research would need to be conducted to ascertain the reasons for this effect. However, it may be the case that having a learning advice session may help students realise that they can complete their studies, and consequently continue in them. Alternatively, it could be argued that students who attend learning advice sessions are in fact highly motivated, and consequently would continue in their studies anyway. Again, more research would be required to illuminate this issue.

Diploma programmes

The results from the diploma programmes seem to indicate that learning advisory services have had a positive effect in moving students who might just pass courses to become those who do better, i.e. gain higher grades. This would explain the higher than expected frequencies for grades A and B, and the fewer than expected effected frequencies for grade C.

However, the learning advisory service produced a less than expected result with those students who failed their papers with 55 fail grades as opposed to an expectation of 51 given the size of the sample. The reason for this could be because of the greater number of students who continued with their studies, rather than leave their courses. That is to say, at this level of study non completions and withdrawals were less than expected possibly because, although more Diploma students remained at WelTec, they were not able to reach a pass grade, even with the addition of sessions from Learning Advisors. Further research would need to be conducted to elucidate this situation. This may be one case where contextualising the retention and success statistics may throw more light on the effect that the Learning Advisory Service had in 2012.

Degree programmes

At degree level, learning services had a marginally statistically significant greater than expected effect on the 2012 degree programme results. However, this effect was differently distributed compared with the diploma programmes. At this level, learning services seemed to have more of a positive effect on helping students to pass their courses with a greater

than expected effect with grade Cs and fails. This may be because of the complexity of the degree programmes compared to the diploma programmes at WelTec. Unfortunately, non-completions and withdrawals were more than expected. Again, this could be because of the complexity of the course content for which staff was required to provide learning advice. So, for the degree programmes, learning services were able to effect pass grades, but not at the highest levels.

Graduate diplomas

The pattern of effectiveness from the degree student cohort reappeared at graduate diploma level during 2012, with the learning advisory service having a positive effect on grade Cs, but not at grades A or B. Again, this indicates that a limited positive effect was produced in that students managed to pass their course with learning advice, but that this did not translate to students achieving higher grades. However, the number of fails and non-completions at this level were better than those of the degree programmes. Additionally, there was a greater than expected result for withdrawals, with no students leaving graduate diploma programmes during 2012.

Overall

It would seem that where the average number of sessions per paper was less than one, then the overall learning advisor effect was 'less than expected', whereas where it was greater than one, the effect appears to be 'greater than expected'. If the average number of sessions per paper equalled one, then an 'as expected effect' occurred.

Limitations

There are several limitations to this study and it has proven difficult to show a direct connection between students' retention and success and the work of Learning Advisors. Previous studies have shown that the work conducted by Learning Advisors have contributed to student success and retention. However, there are many contributing factors that have not been discussed or considered in this research, such as student capability, motivation and preparedness. Students that access learning support may display differing levels in each of these factors which may or may not contribute to their success or lack of it.

The method by which we calculated the Learning Advisors' effect in 2012 could be seen to be fairly harsh in that there appears to be more opportunities for negative rather than positive results. This was deliberate, as we wanted to represent the worst case scenario regarding the results for this research project. This model has the opportunity to be transferred to other groups, such as student mentors as well as other organisations not just Learning Advisors.

Conclusions

Generally in 2012 the learning advisory services at WelTec had an as expected level of effect on the grades of students who attended for learning advice sessions. Students who attended learning advice sessions achieved a total of 2068 passing grades which amounted to 11.4% of the total pass grades that WelTec students achieved in 2012. The Learning Advisors achieved, through one-to-one and small group work, a success rate of 80.9%, which was on a par with WelTec's wider success rate. This success rate was calculated as a percentage of students achieving passing grades divided by the total number of students who attended learning advice sessions. Learning Advisors also achieved a retention rate of 98.7%, which was by far in excess of the wider WelTec statistic of 66% (WelTec, 2012). The pattern regarding retention and success was replicated throughout all the Schools at WelTec, with the retention percentage being larger than the success percentage in each school.

We have found completing this research project enlightening, rewarding, as well as frustrating. However, we are both very keen to continue this study using data that has been continuously collected as business as usual. In the future, we hope to be able to collaborate with other institutions in trialling this tool, and produce a reference guide for other tertiary organisations.

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