

- Mills, G. E. (2011) **Action Research: A Guide for the Teacher Researcher**, Pearson, Boston, 4th edition.
- Ministry of Higher Education, Saudi Arabia (2011) **The Current Status of Higher Education in the Kingdom of Saudi Arabia**, <https://www.mohe.gov.sa/en/Ministry/General-administration-for-Public-relations/BooksList/stat7eng.pdf>.
- Morrison, B. (2008) **The Role of the Self-Access Centre in the Tertiary Language Learning Process**, *System*, Vol. 36, No. 2, 123-140.
- Morosanu, L., Handley, K., O'Donovan, B. (2010) **Seeking Support: Researching First-Year Students' Experiences of Coping with Academic Life**, *Higher Education Research & Development*, Vol. 29, No. 6, 665-678.
- Nelson, K. J., Smith, J. E., Clarke, J. A. (2012) **Enhancing the Transition of Commencing Students Into University: An Institution-Wide Approach**, *Higher Education Research & Development*, Vol. 31, No. 2, 185-199.
- Neuman, W. L. (2014) **Social Research Methods: Quantitative and Qualitative Approaches**, Pearson, Boston, 7th edition.
- Pargetter, R. (2000) **Transition: from a School Perspective**, *Journal of Institutional Research*, Vol. 9, No. 1, 14-21.
- Perry, C., Allard, A. (2009) **Making the Connections: Transition Experiences for First-Year Education Students**, *The Journal of Educational Enquiry*, Vol. 4, No. 2.
- Pitkethly, A., Prosser, M. (2001) **The First Year Experience Project: A Model for University-Wide Change**, *Higher education research and development*, Vol. 20, No. 2, 185-198.
- Tinto, V. (1987) **Leaving College: Rethinking the Causes and Cures of Student Attrition**, University of Chicago Press, Chicago.
- Tinto, V. (1998) **Colleges as Communities: Taking Research on Student Persistence Seriously**, *The Review of Higher Education*, Vol. 21, No. 2, 167-177.
- Vygotsky, L.S. (1978) **Mind in Society: the Development of Higher Mental Processes**, Harvard University Press, Cambridge.
- Vygotsky, L. (1986) **Thought and language**, MIT, Cambridge.
- Wertsch, J. V. (1991) **Voices of the Mind: A Sociological Approach to Mediated Action**, Harvard University Press, Cambridge.
- Yushau, B., Omar, M., Al-Attas, H. (2006) **The Effects of Preparatory Year Courses on Students' Performance in First Calculus Courses at University: The Case of KFUPM**, Proceedings of the 2nd Annual Conference for Middle East Teachers of Science, Mathematics, and Computing, Abu Dhabi, 43-51

References

- Alamri, M. (2011) **Higher education in Saudi Arabia**, *Journal of Higher Education Theory and Practice*, Vol. 11, No. 4, 88-91
- Alharbi, K. (2012) **The Performance Level of Secondary School Graduates in Saudi Arabia on the General Aptitude and the Basic Cognitive Skills**, National Center for Assessment in Higher Education.
- Almoallim, H., Aldahlawi, S., Alqahtani, E., Alqurashi, S., Munshi, A. (2010) **Difficulties facing first-year medical students at Umm Alqura University in Saudi Arabia**, *Eastern Mediterranean Health Journal*, Vol. 16, No. 12, 1272-1277
- Alotaibi, B. (2010) **Knowledge, Skills and Trends the Higher Education Needs from the Secondary Stage Graduate**, *Journal of the King Saud University - Education Sciences & Islamic Studies*, Vol. 22, No. 3, 657-680
- Als Salman, S. (2011) **Learning Resources Centers**, Proceedings of Global Learn, Vol. 1, 91-91
- Campbell D.T., Stanley J.C. (1963) **Experimental and Quasi-Experimental Design for Research**, Rand McNally, Chicago.
- Conley, D. (2008) **Rethinking College Readiness**, in Barefoot, B. **The First Year and Beyond: Rethinking the Challenge of Collegiate Transition**, Jossey-Bass, California.
- Creswell, J.W. (2012) **Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research**, 4th edition Pearson, Boston.
- Daniels, H. (2016) **Vygotsky and pedagogy**, Routledge, New York.
- Doolittle, P. E. (1997) **Vygotsky's Zone of Proximal Development as a Theoretical Foundation for Cooperative Learning**, *Journal on Excellence in College Teaching*, Vol. 8, No. 1, 83-103.
- Durak, H., Törün, S., Sayiner, A., Kandiloglu, G. (2006) **Description and Evaluation of an Innovative Course on Learning and Study Skills for the First year Medical Students**, *Tohoku Journal of Experimental Medicine*, Vol. 210, No. 3, 231-237.
- Gallimore, M., Stewart, J. (2014) **Increasing the Impact of Mathematics Support on Aiding Student Transition in Higher Education**, *Teaching Mathematics and its Applications*, Vol. 33, No. 2, 98-109.
- Gill, O., O'Donoghue, J. (2007) **Justifying the Existence of Mathematics Learning Support: Measuring the Effectiveness of a Mathematics Learning Centre**, <http://www.mathcentre.ac.uk/resources/uploaded/alm14olivia.pdf>.
- Goggin, T., Rankin, S., Geerlings, P., Taggart, A. (2016) **Catching Them Before They Fall: a Vygotskian Approach to Transitioning Students from High School to University**, *Higher Education Research & Development*, Vol. 35, No. 4, 698-711.
- Gorard, S. (2010) **Quantitative methods in educational research: The role of numbers made easy**, Continuum International, London.
- Green, M., Milbourne, L. (1998), **Making Learning Support Work**, *FE Matters*, Vol. 2, No. 6, 1-58.
- Inkelas, K. K., Daver, Z. E., Vogt, K. E., Leonard, J. B. (2007), **Living-Learning Programs and First-Generation College Students' academic and social transition to college**, *Research in Higher Education*, Vol. 48, No. 4, 403-434.
- Kift, S. M., Nelson, K. J. (2005) **Beyond Curriculum Reform: Embedding the Transition Experience**, Proceedings of the 2005 Higher Education Research and Development Society of Australasia Incorporated Conference, 225-235.
- Kift, S. M. (2008) **The Next, Great First Year Challenge: Sustaining, Coordinating and Embedding Coherent Institution-Wide Approaches to Enact the FYE as "Everybody's Business."**, Keynote Address Presented at the 11th Pacific Rim First Year in Higher Education Conference, "An Apple for the Learner: Celebrating the First-Year Experience." Hobart, Australia.
- Lowe, H., Cook, A. (2003), **Mind the Gap: Are Atudents Prepared for Higher Education?**, *Journal of Further and Higher Education*, Vol. 27, No. 1, 53-76.
- Matthews, J., Croft, T., Lawson, D., Waller, D. (2013) **Evaluation of Mathematics Support Centres: a Literature Review**, *Teaching Mathematics and Its Applications*, Vol. 32, 173-190
- McLean, P., Surtie, F., Elphinstone, L., Devlin, M. (1995) **Models of learning support in Victorian universities: Issues and implications**, *Higher Education Research and Development*, Vol. 14, No. 1, 75-86.
- McInnis, C. (2001) **Researching the First Year Experience: Where to from Here?**, *Higher Education Research and Development*, Vol. 20, No. 2, 105-114.
- Merisotis, J. P., Phipps, R. A. (2000) **Remedial Education in Colleges and Universities: What's Really Going on?** *The Review of Higher Education*, Vol. 24, No. 1, 67-85.
-

It is plausible that a limitation that may have influenced the results obtained in this study was the selection threat that resulted from the lack of randomisation in the design. It is possible that low achieving students who used the learning support centre were more engaged than the cohort of low achievers who did not use the centre? And, if so, this higher level of engagement may have contributed to the more positive academic outcomes observed for this group. Future studies could be improved by addressing this potential selection bias and controlling for variables such as engagement levels.

In addition, the evaluation methodology employed in the study was heavily quantitative and focused on the short-term impact of the learning support centre. However, as argued by Matthews et al. (2013: 5) “evaluation after a short space of time may fail to show effects which are significant at a later date”. As such, for future research, more rigorous qualitative evaluation methods that focus on the long-term impact of the centre on low achieving students would significantly strengthen the credibility of the study’s findings.

A central aim of action research, such as this study, is to improve education settings (Mills, 2011). As a result of conducting the research, two recommendations for improvement emerged and are proposed for the centre, and others like it, for the upcoming academic years. Firstly, to improve the take-up of the centre’s services amongst low achieving students, it is recommended that each year’s orientation/induction week be used to raise awareness of the centre to all students. In addition, registration details such as mobile numbers and emails should be shared with the learning support centre to enable targeted communication when required.

Secondly, to enable early identification of potential low achievers across all courses, a referral process should be developed soon after the start of the academic year along with diagnostic tests to help course representatives identify students who would benefit from the centre’s support. Whilst low achievers in this study were identified through mid-term exam results, diagnostics tests would allow these students to be identified much sooner. Gallimore et al. (2014: 4) found that one of the advantages of diagnostic tests was that they avoided “the pitfall of assessing to a threshold where only students falling below some particular score level receive targeted support.”

The issue of enhancing first-year student success has proven to be an enduring challenge. Higher education institutions are themselves adjusting and making changes to continually meet this challenge for each new generation of students. This study has shown how one initiative, namely the use of an institutionally-supported learning support centre, may offer some useful perspectives on student success. It recognises the assessment from Nelson et.al (2012) that first-year experience initiatives may take years to embed, and as such the authors look forward to sustaining studies in this initiative, and those like it, in the years ahead.

Whilst equal variances was assumed for the science track, equal variances was not assumed for the health and engineering tracks as the significance level of Levene's test for these two tracks was less than 0.05. Using the t-test for independent samples, the null hypothesis for this study was rejected and it was concluded that a significant difference was found between the final exam results of low achieving students who attended the learning support centre and those who did not across all tracks: a. health track: $t(198.181) = 6.995, p < 0.05$; b. science track: $t(299) = 2.898, p < 0.05$ and c. engineering track: $t(124.398) = 3.408, p < 0.05$.

3. Discussion

The story of the learning support centre at Imam Abdulrahman Bin Faisal University is an example of how one university has attempted to enhance first-year student success. The findings confirm that following its launch after the mid-term exams the centre has been successful in positively impacting the academic performance of low achieving preparatory year students. The null hypothesis was rejected and it was shown that there was a statistically significant difference between the final exam results of low achieving students who attended the learning support centre and those who did not.

The findings from this paper share several similarities with an empirical study conducted by Gill et al. (2007) for a mathematics learning support centre in the UK. In their study, they discovered that at-risk students who attended their learning support centre consistently recorded numerically higher results for the end of term exams as compared to those who did not.

In the case of this study, the specific intervention within the centre was a timetabled face-to-face tutorial service that was provided to students on a voluntary drop-in basis. There were several factors about this type of intervention that contributed to its success in helping improve the academic performance of the students in the preparatory year.

Firstly, building on Vygotsky (1978) theory of the zone of proximal development, the tutorial model adopted at the centre seemed to recognise that students needed help in becoming independent learners. The role of the tutor in the centre appeared to be facilitative, where students defined the problems and tutors employed several scaffolding strategies mentioned in the literature such as "leading questions, demonstrations and modelling, dialogic problem-solving and direct instruction" Goggin et al (2016: 704) to help students explore those problems.

Secondly, the concept of facilitative learning appeared to be more possible in the learning support centre as opposed to the classrooms where students were receiving their course instruction. This was mainly because the learning support centre was not governed by pacing schedules and discreet patterns of instructions in the same way that courses were. As a result, tutors were able to focus on understanding the topics that were beyond the capacity of the learners and working with them to create possibilities for development. As argued by Daniels (2016: 61), this type of instruction is effective as it entails a "transfer of control to the learner".

Finally, another critical success factor for the learning support centre was the institutional support that it received. Drawing on a decade of research in Australia, Kift (2008) demonstrated that whilst universities have various excellent initiatives for supporting students during the transition, they are often disparate and sustained by individuals. In the case of this study, a great deal of good-will existed amongst all the participating courses, a willingness to support the centre, and a desire to help mobilise faculty. A key enabler for this was sponsorship at the highest levels within the deanship and the appointment of course-specific learning support centre coordinators, all of whom had a sense of ownership of the centre.

4. Conclusion

What can be done to further improve student success in the first-year? This study has sought to add to the body of literature pertaining to this question by sharing the experiences of one initiative, namely the use of an institutionally-supported learning support centre at a university in Saudi Arabia. The results of a quantitative quasi-experimental study were presented to answer the question "to what extent does the support received at the learning support centre affect students' academic performance?". The answer suggested a positive relationship where a statistically significant difference was established between the final exam grades of low achieving students who attended the learning support centre versus those who did not.

Vygotsky (1978) theory of the zone of proximal development was used as a lens to explain some of the observed successes of the centre. Key factors that emerged was the importance of recognising that students, particularly those transitioning into university, needed help in becoming independent learners and the realisation that the informal setting of learning support centres were better placed than formal classrooms in allowing tutors to explore development possibilities for students at a pace that students could control.

Table (12). Health Track Independent Samples Test for the Final Exam.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
GPA	Equal variances assumed	36.789	.000	5.229	341	.000	16.67443	3.18880	10.40223	22.94663
	Equal variances not assumed*			6.995	198.181	.000	16.67443	2.38386	11.97344	21.37542

*Equal variances not assumed.

Table (13). Science Track Descriptive Statistics.

	AttendedLSC	N	Mean	Std. Deviation	Std. Error Mean
GPA	Yes	26	50.8846	15.08198	2.95782
	No	275	38.9345	20.49095	1.23565

Table (14). Science Track Independent Samples Test for the Final Exam.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
GPA	Equal variances assumed*	3.776	.053	2.898	299	.004	11.95007	4.12295	3.83639	20.06375
	Equal variances not assumed			3.728	34.392	.001	11.95007	3.20555	5.43835	18.46179

*Equal variances assumed.

Table (15). Engineering Track Descriptive Statistics.

	AttendedLSC	N	Mean	Std. Deviation	Std. Error Mean
GPA	Yes	66	53.4091	15.34223	1.88850
	No	277	45.7653	20.14043	1.21012

Table (16). Engineering Track Independent Samples Test for the Final Exam.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
GPA	Equal variances assumed	5.903	.016	2.889	341	.004	7.64375	2.64604	2.43913	12.84837
	Equal variances not assumed*			3.408	124.398	.001	7.64375	2.24295	3.20447	12.08303

*Equal variances not assumed.

The descriptive statistics from SPSS show that students who attended the learning support centre were associated with GPA scores that were numerically higher than those who did not attend the LRSC for all the tracks that were tested. To test the hypothesis that there is no statistically significant difference between the final exam results of low achieving students who attended the learning support centre and those who did not, the results from the independent samples t-test were studied.

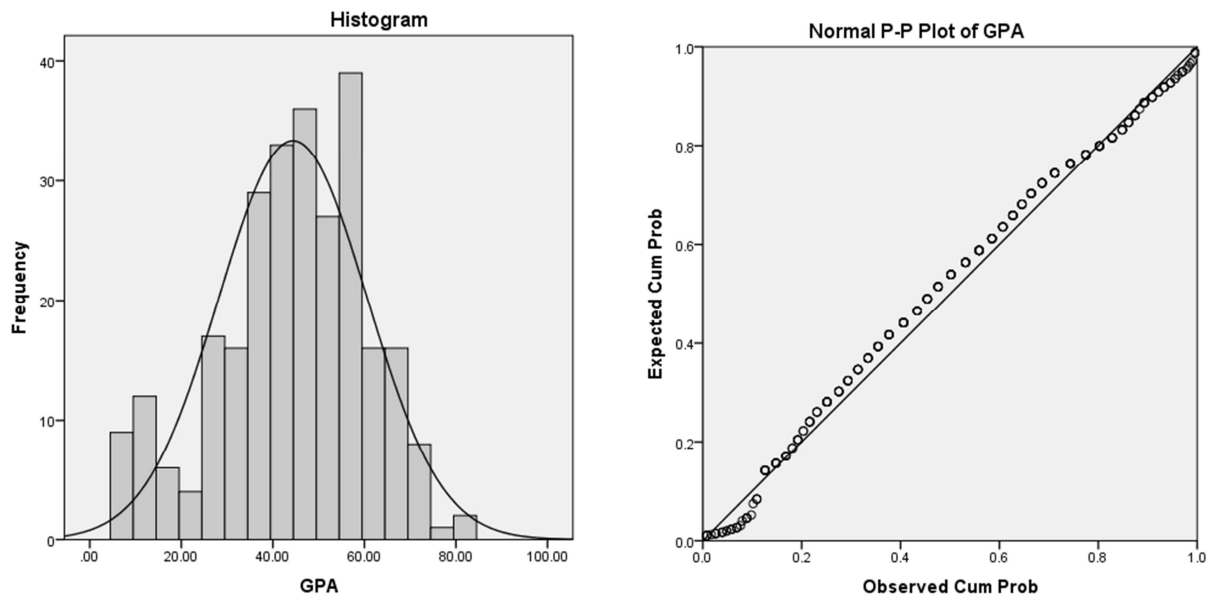


Figure (12). Science Track Histogram and P-P Plot of Final Exam Grades.

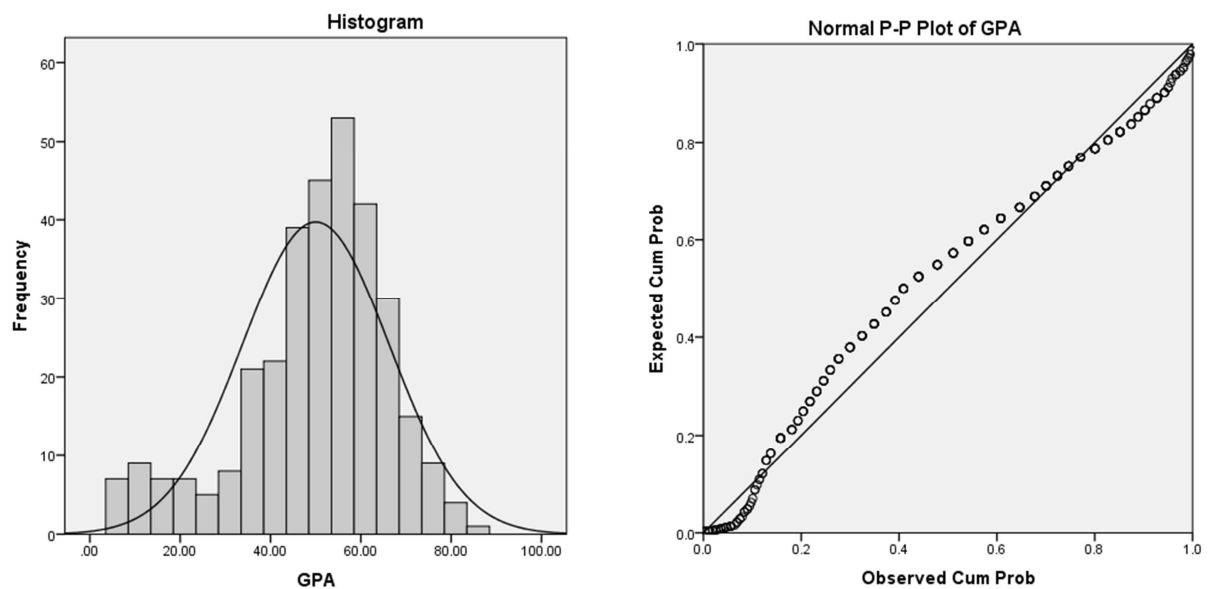


Figure (13). Engineering Track Histogram and P-P Plot of Final Exam Grades.

It can be concluded from the charts that the distribution of grades across all the tracks were normal. This is further supported by the P-P plots which show most of the data points falling within the theoretical normal straight line.

Having established the normality of the data, the t-test of independent samples was conducted and resulted in the following outputs:

Table (11). Health Track Descriptive Statistics.

	AttendedLSC	N	Mean	Std. Deviation	Std. Error Mean
GPA	Yes	73	57.0411	15.20913	1.78009
	No	270	40.3667	26.05375	1.58558

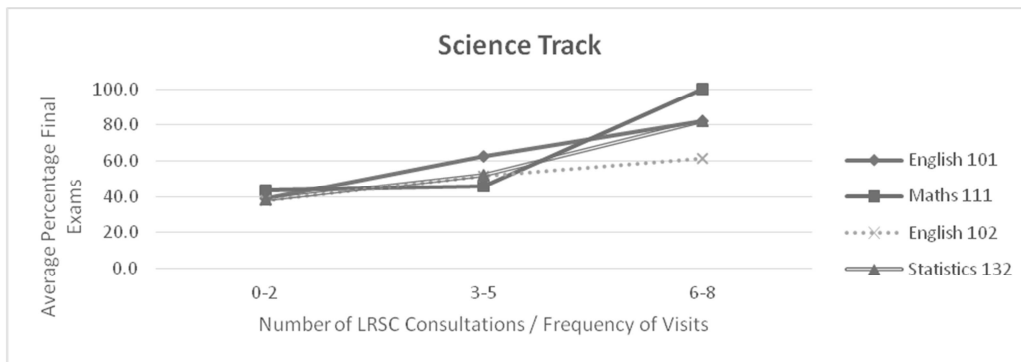


Figure (10). Science track average low achiever final grade by number of consultations.

The extent of the difference for the two data points that existed for all the tracks, namely 0-2 visits and 3-5 visits, ranged from an average of 10.3% for the engineering track to 13.2% and 13.6% for the health and science tracks respectively. The data not only revealed a positive correlation between the frequency of visits and improved academic performance of low achieving students, but it implied that students valued the centres positive effect on their overall academic learning as evidence by their repeat visits.

2.5 Statistical Significance

To determine the statistical significance of the observed variances in academic performance between low achieving students who attended the learning support centre (group 1) and those who did not (group 2), a t-test of independent samples was performed in the SPSS® 20 software by track for their final exam grades after the groups were matched by track i.e. Health Track Before applying the t-test, the normality of the dataset from each track was determined. The charts below show the histograms for the final exam grades for students who used the support of the learning support centre and those who did not along with the normal P-P Plots.

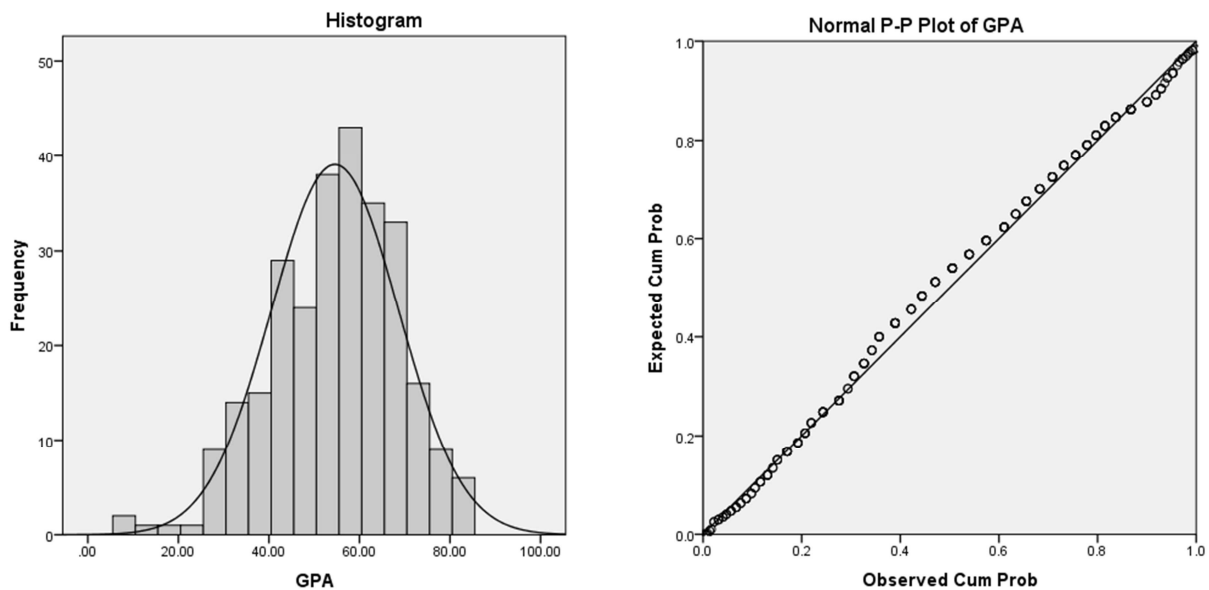


Figure (11). Health Track Histogram and P-P Plot of Final Exam Grades.

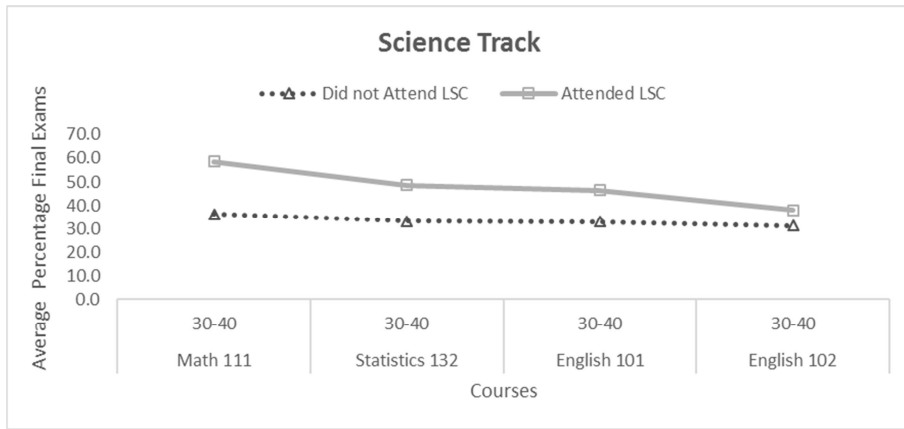


Figure (7). Science track final grades of low achievers (only those who registered a score between 30-40 percent in the mid-term exams) who attended/didn't attend the learning support centre.

Apart from Math 111, in the Engineering track, the low achieving students who registered a score between 30-40 percent in the mid-term exams and did not attend the learning support centre, on average, scored a similar grade in the final exams. In contrast, similar to the results from the wider sample, the low achieving students who attended the learning support centre both outperformed their colleagues who did not attend and showed improvements from the 30-40 percent grade they registered in the mid-term exams.

2.4 Frequency of Visits to the Centre

In relation to the second research question, when frequency of consultations was analysed, a positive trend emerged across all tracks that showed an increase in the average final exam grade for those who repeatedly returned to the learning support centre for more tutorial support. These results, by track, are charted below:

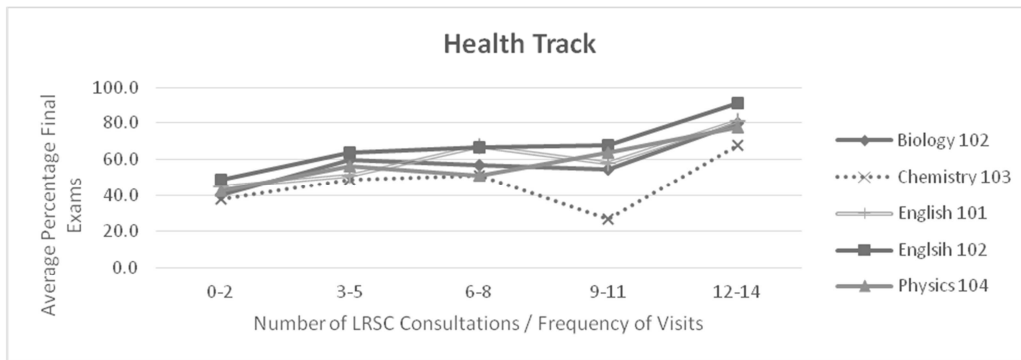


Figure (8). Health track average low achiever final grade by number of consultations.

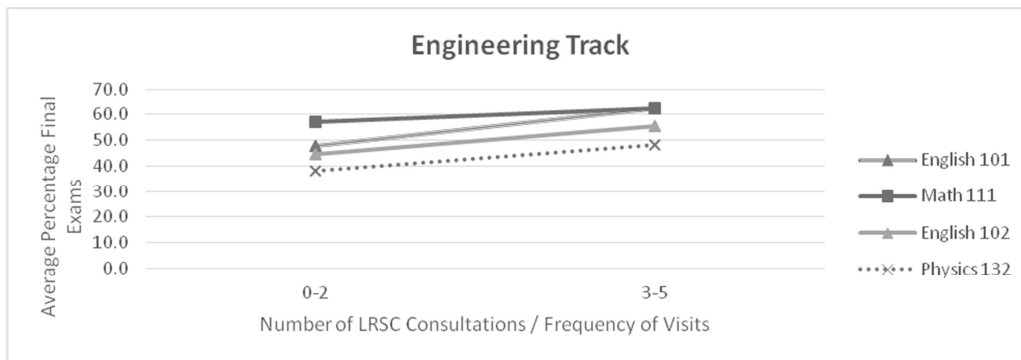


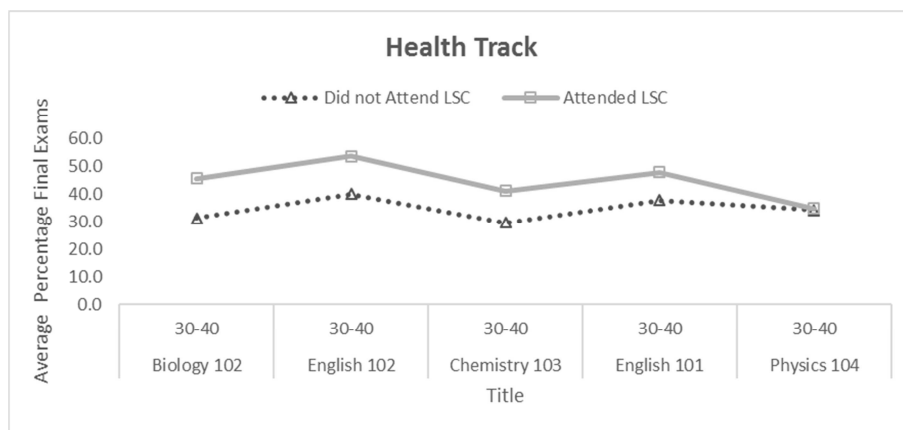
Figure (9). Engineering track average low achiever final grade by number of consultations.

Table (10). Number of low achievers who did not attend the centre grouped by mid-term exam percentage range.

Attended the Learning Support Centre?	No	
Mid-Term Exam Percentage Range	# of Students	% of Total
10-20	7	1%
20-30	52	6%
30-40	179	22%
40-50	584	71%
Grand Total	822	100.00%

Most of the low achieving students in both the experimental and comparison groups were those who registered a score of between 40-50 percent in one of their mid-term exams, and approximately 20% were those between the 20-30 percentage range. By comparing the low achieving students who registered a score within the same mid-term exam percentage range, the authors could enable a quasi-experimental comparison of students with similar backgrounds.

One of the key aims of the learning support centre is to facilitate mobility in academic performance for those in greatest need. With this in mind, the following charts show the outputs of the final grades analysis of the low achievers who attended/didn't attend the learning support centre, but only for students who registered a score between 30-40 percent in the mid-term exams from both the control and experimental groups.



Figure(5). Health track final grades of low achievers (only those who registered a score between 30-40 percent in the mid-term exams) who attended/didn't attend the learning support centre.

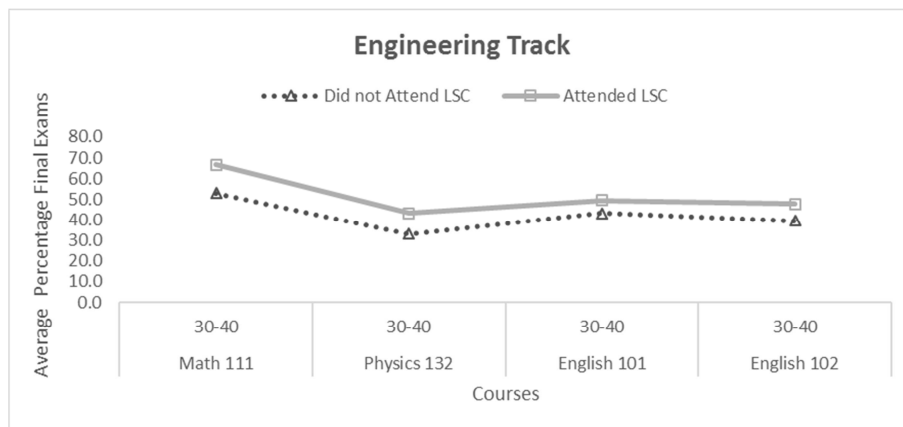


Figure (6). Engineering track final grades of low achievers (only those who registered a score between 30-40 percent in the mid-term exams) who attended/didn't attend the learning support centre.

The Effectiveness of Learning Support Centres on Student Success: a Study of Low Achieving...

The results demonstrate a consistent improvement in grades amongst the low achievers who attended the learning support centre versus those who did not attend. The table below helps highlight the extent of the improvement.

Table (7). Average positive percentage difference in the final grades of students who attended the learning support centre vs. those who didn't.

	Average Positive % Difference in Grade
Health Track	16.7%
Engineering Track	7.6%
Science Track	12%

It shows that the average positive percentage difference in the final grades of low achieving students who attended the learning support centre versus those who did not, across all the courses that were analysed, was 16.7%, 7.6% and 12% for the health, engineering and science tracks respectively.

One contributing factor that might explain why the health track experienced the largest positive percentage difference amongst its low achievers was the frequency of repeat consultations and visits. As previously shown by table 2, of all the 350 students that used the services of the learning support centre, 165 students were low achievers. The following table provides both a breakdown of those 165 students by track and the number of consultation those students received.

Table (8). Number of low achievers and consultations attended by track.

	Track			
	Health	Science	Engineering	Grand Total
Number of Unique Low Achievers	74	25	66	165
Number of Consultations Attended	214	49	95	358

It is clear that the health track had the largest number of consultations for its low achievers (i.e. 214 consultations). While the number of consultations in the centre appeared to be a factor in students improved performance in the health track, based on the statistics from the science and engineering tracks, it was not the only factor. Whilst the engineering track had a larger number of consultations for its low achievers (i.e. 95), as compared to the science track (i.e. 49), the average positive percentage difference observed amongst its low achieving students was 7.6% versus 12% for the science track. This could reflect the relative difficulty of the two tracks, and raises opportunities for further research in relation to track-specific factors.

The analysis within this section has thus far compared all 165 low achieving students who attended the learning support centre versus all 822 who did not. The authors repeated this analysis, but this time matched students from the experimental and comparison groups based on their mid-term exam results. As mentioned earlier in the paper, the definition of low achieving students were those on the preparatory year that registered a score of 50% or less in any exam prior to the final exams. The following tables group the students based on percentage ranges (i.e. how many students registered a score of 40-50% in any exam prior to the final exam, or 30-40%, or 20-30% etc.)

Table (9). Number of low achievers who attended the centre grouped by mid-term exam percentage range.

Attended the Learning Support Centre?	Yes	
Mid-Term Exam Percentage Range	# of Students	% of Total
20-30	3	2%
30-40	31	19%
40-50	131	79%
Grand Total	165	100.00%

group of students before and after the launch of the centre. The next section addressed this problem through the use of a comparison group.

2.3 Final Exam Grade Results: Experimental and Comparison Group

To enhance the robustness of the findings, a further measure that was used to assess the effectiveness of the learning support centre was to treat the 822 low achievers who did not attend the centre as a separate comparison group and to contrast the average of their final exam grades with the average final grade of the 165 low achievers who did attend the centre. The results are shown below:

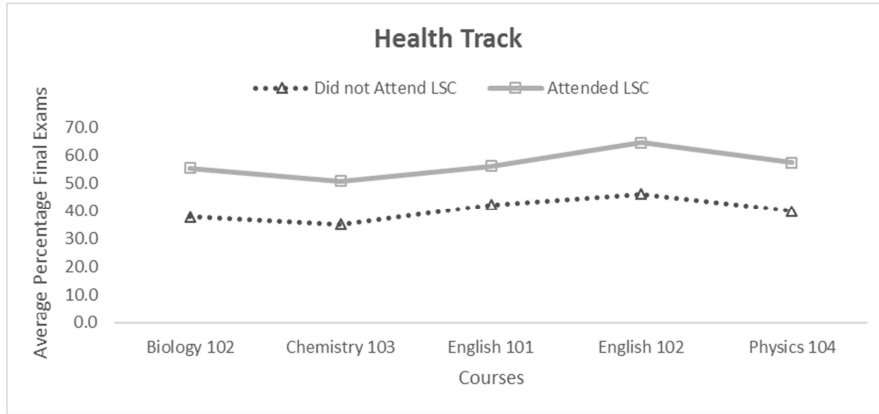


Figure (2). Health track final grades of low achievers who attended/didn't attend the learning support centre.

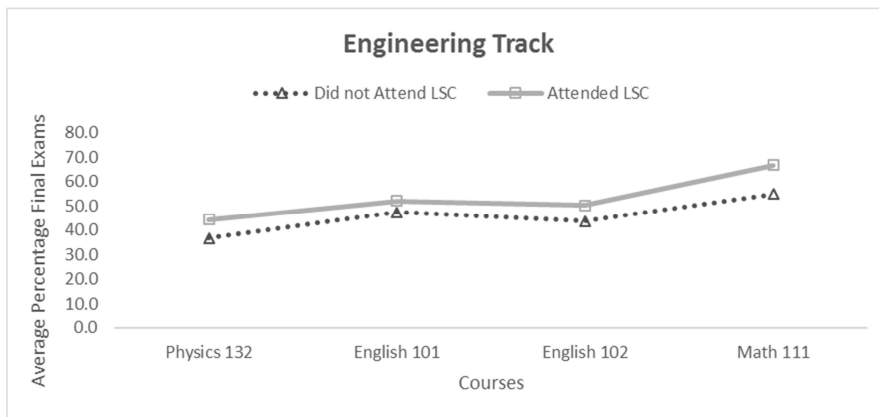


Figure (3). Engineering track final grades of low achievers who attended/didn't attend the learning support centre.

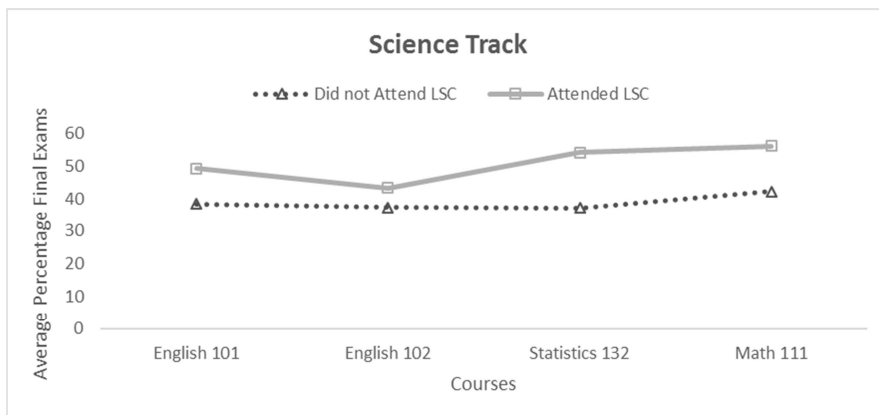


Figure (4). Science track final grades of low achievers who attended/didn't attend the learning support centre.

The Effectiveness of Learning Support Centres on Student Success: a Study of Low Achieving...

Of the 350 students who attended, the following table outlines the proportion of those students that were high and low achievers by track.

Table (2). Number of unique attending high and low achievers by track.

Student Type	Track	Science	Engineering	Grand Total
	Health			
Higher Achiever	118	20	47	185
Low Achiever	74	25	66	165
Grand Total	192	45	113	350

The health track had the largest number of students who used the centre (192). This was followed by the engineering track (113) and science track (45) respectively. Unlike the health track, interestingly most of the students who used the learning support centre for the science and engineering tracks were low achieving students (i.e. 25/20 and 66/47 respectively).

Whilst the health track had a larger number of low achieving students attending the learning support centre (i.e. 74 students) as compared to the science and engineering tracks, the data highlighted that actually they constituted only 39% (i.e. 74/192) of the overall number of unique students who used the centre. This could reflect the highly competitive nature of getting into medical school and the desire of the more able students to not just pass but achieve excellence.

Given that this study was principally aimed at assessing the impact that the learning support centre was having on the academic performance of the low achieving students, attention was given to tracking their attendance. The table below shows the number of low achievers who were identified after the mid-term exams, across all tracks, versus the proportion of those students who attended the centre and used its services ahead of the final exams.

Table (3). Total number of low achievers versus those who attended the centre.

	2015/16
Number of Identified Low Achievers	987
Identified Low Achievers who Attended the centre	165
% of Identified Low Achievers who Attended the centre	17%

2.2 Pre-Post Implementation Exam Grade Results

When the results of the final exams and mid-term exams were compared for the 165 low achieving students who attended the learning support centre, noticeable improvements were observed.

Table (4). Health track pre-post implementation grades comparison (Base = 74).

	Biology 102	Chemistry 103	Physics 104	English 101	English 102
Number of Low Achievers with Improved Performance	40 out of 74	9 out of 74	40 out of 74	20 out of 74	38 out of 74
Average Positive % Difference Between Exams	13%	7%	14%	17%	12%

Table (5). Engineering track pre-post implementation grades comparison (Base = 66).

	English 101	English 102	Physics 132	Math 111
Number of Low Achievers with Improved Performance	38 out of 66	18 out of 66	25 out of 66	51 out of 66
Average Positive % Difference Between Exams	12%	13%	14%	20%

Table (6). Science track pre-post implementation grades comparison (Base = 25).

	English 101	English 102	Statistics 132	Math 111
Number of Low Achievers with Improved Performance	19 out of 25	6 out of 25	19 out of 25	11 out of 25
Average Positive % Difference Between Exams	12%	19%	22%	12%

The results showed that where students had improved, the average extent of the positive difference in percentage terms, between the mid-term and final exams, ranged from 7% to 22%. Although the improvement in grades was a positive indication of the favourable impact of the learning support centre, it was based on an analysis of the same

The findings include graphs and tabulations that compare both the mean of students' grades pre and post implementation of the learning support centre. In addition, in terms of statistical significance, the exam scores were coded into the SPSS® 20 software and the hypothesis were tested using a t-test of independent samples. The t-test was considered appropriate for the study as the following assumptions from Muijs (2004) were valid: the dependent variable is continuous, two groups are compared, and normality in data is established. The t-test of independent samples was conducted using $p < 0.05$ as the level of significance and the mean and standard deviation was reported for both the students who attended the centre and those who did not.

1.6 Validity and Reliability

To ensure that inferences drawn from research are true or correct it's important to consider factors that may threaten the validity and reliability of the study. Creswell (2012) outlines two primary threats: internal validity and external validity. An inherent threat to internal validity for quasi-experimental research based on a pre-post test methodology is the selection threat that is introduced due to the non-randomised nature of participants being selected (Creswell, 2012). Despite this, however, quasi-experimental methodologies are widely used in education research and allow for participants to be selected from more natural groupings within the population (Neuman, 2014). Thus, although it may have a lower general internal validity than classical experimental designs the "external validity (relevance to real life) is probably greater." (Gorard, 2010: 144).

Two groups were used for this study: an experimental group of low achieving students that used the services of the learning support centre (n=165) and a comparison group that did not (n=822). When random assignment is not possible, threats to validity and reliability can be minimised by attempting to "compensate for the differences between the nonequivalent experimental and control groups by the procedure of matching" (Campbell & Stanley, 1963: 49). The following steps were followed in this study to compensate between the different groups: 1. Only first-year students within the preparatory year were included in the study, 2. Students were matched based on their specialisms i.e. health students were matched with other students only from the health track, and 3. Students were matched based on their mid-term academic performance.

2 Findings

2.1 Attendance Statistics

The number of unique students, described as service users, who attended the learning support centre during the post implementation period between the mid-term and final exams was 350. The following charts display the observed growth in the number of unique students over the period of study. It is based on data from the centre's daily student register.

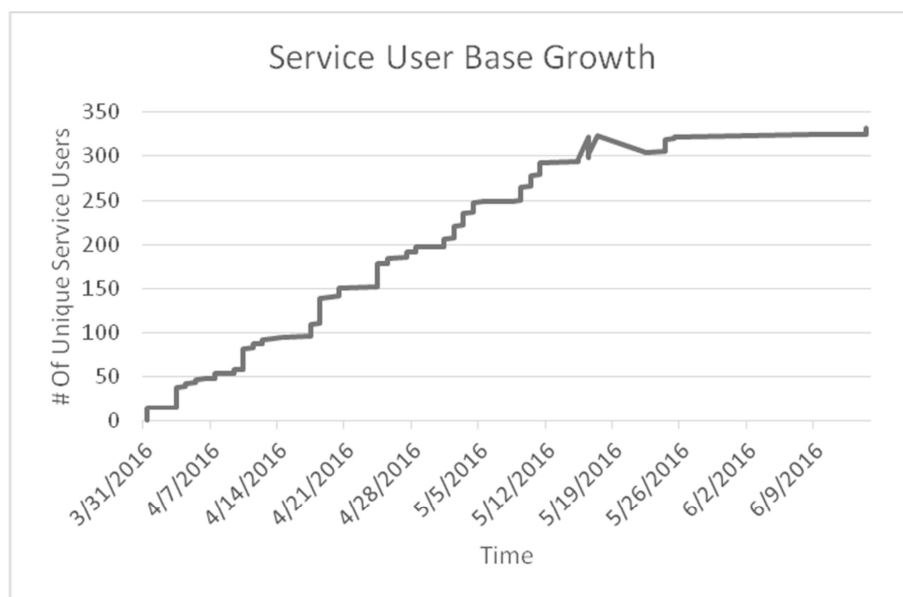


Figure (1). Growth in service user base over time.

To enable all courses to have a sense of ownership of the centre, the Deanship of Preparatory and Supporting Studies, appointed a faculty member from each supported course as a learning support centre coordinator. One of their first tasks was to create a timetable, that included all faculty members from the supported courses. Faculty were requested to allocate a proportion of their office hours to support tutorial services within the learning support centre. Once a timetable was finalised for all courses, this was communicated to students through posters, the university's virtual learning platform (Blackboard) and via social media such as WhatsApp. Further, one dedicated administrative resource was assigned to each centre to meet and greet students, educate students on the support available and to manage the data collection and reporting from the centre.

1.3 Research Design

This study employed an action research design based on a quantitative pretest-posttest quasi-experimental methodology (Creswell, 2012) to examine the effectiveness of a learning support centre that was launched at Imam Abdulrahman Bin Faisal University after the mid-term exams. The primary data that informed the study was planning documents that outlined how the centre was launched and implemented, official exam scores and attendance records from the centre.

Creswell (2012) asserts that of all the research designs, such as experimental design, correlation design, survey design etc., action research is the most practical and applied type of design. According to Mills (2011), action research involves the application of systematic procedures to gather information and subsequently improve an education setting and the student learning within that setting.

As randomization in the assignment of participants was not practical due to the desire of the learning support centre to be open to all students, a quasi-experimental methodology was deemed to be the most suitable structure for the study. Care was taken to track the students who attended the centre to ensure that a mechanism existed to demarcate low achieving students who attended the centre versus those who did not. One of the advantages of the quasi-experimental methodology is that it can help test for causal relationships, when the classical experimental design is difficult, in a more natural environment (Neuman, 2014).

1.4 Research Questions and Hypothesis

The principal research questions the paper aimed to address in the context of effectiveness were:

(1) To what extent does the support received at the learning support centre affect students' academic performance?

(2) To what extent does frequency of visits to the learning support centre correlate with the academic performance of low achieving students?

The associated hypotheses for the study were:

H_{10} = There is no statistically significant difference between the final exam results of low achieving students who attended the learning support centre and those who did not.

H_{1a} = There is a statistically significant difference between the final exam results of low achieving students who attended the learning support centre and those who did not.

For the purposes of the hypothesis tests above, two types of variables were measured: student attendance and academic performance. The student attendance at the centre constituted the independent variable while academic performance, evidenced by way of examination scores, constituted the dependent variable for the study.

1.5 Data Collection and Analysis

The core data for this study was collected from official exam scores and metrics generated internally by the centre, such as attendance sheets. Whilst the examination scores were collected after the mid-term and final exams, attendance records were collected daily. The attendance records were based on the learning support centre's student register, which is a daily record of students' presence at the centre.

Based on the data collected, the study employed quantitative analysis to:

(1) Compare the post-implementation examination scores, from the final exams, with those pre-implementation in order to provide insights on what extent the support received within the learning support centre affected academic performance.

(2) Assess variances in the academic performance between the low achieving students who attended the centre versus those who did not and the statistical significance of these variances.

(3) Determine if there was a positive correlation between the frequency of visits to the centre and low achieving students' academic performance.

Alharbi (2012) found that the level of performance of many secondary school graduates in English language, mathematics, biology and chemistry is still low. Also, Almoallim et al., (2010) observed some learning difficulties and challenges that prep year students faced in their first year of study at the university. The challenge for Saudi higher education institutions is to provide learning support service that help these students succeed during the transitional first year.

As argued by Kift et al. (2005), successfully managing the transition process requires higher education institutions to engage with students as learners, to recognise that all the students are on a journey in becoming self-directed and to develop environments where active learning can occur. To facilitate this, many universities globally have invested significant resources in the provision of support units (McLean et al. 1995) and college-wide learning support centres (Green et al., 1998).

The idea of learning support centres is not new to the Saudi setting. In Saudi Arabia, the concept of learning support centres became established largely from 1997 when the Ministry of Education initiated a project entitled the learning resources centres project. This was a project to convert the country's school libraries into learning centres that more actively supported the educational curriculum and the process of developing self-directed student learners (Als Salman, 2011). However, like the idea of self-access centres (Morrison, 2008) the focus of many of the initial Saudi learning support centres was very much resource based (Als Salman, 2011) where students were provided materials to access in a self-directed way.

As shown by Perry et al. (2003), an important need that students have during the transition into university, and that perhaps resource-based learning support centres fail to fully satisfy, is the building of relationships between students, their new peer groups and the wider academic community. The importance of this social dimension in learning is long established within educational research (Vygotsky, 1978; Wertsch, 1991; McInnis, 2001). Support initiatives that have proven to be effective in the literature have been underpinned by a sense of student community-building and a sense of integrated, coordinated and institution-wide partnerships (Kift, 2008; Pitkethly et al., 2001; Tinto, 1998; Nelson et al. 2012).

1.2 Context and Participants

The primary intervention that was researched in this study was the introduction of the learning support centre and its tutorial-based support programme, after the 2015/16 mid-term exams. The university where the study was based, Imam Abdulrahman Bin Faisal University, which admits approximately 4000-5000 students into its preparatory year programme, established the learning support centre within the Deanship of Preparatory and Supporting Studies as part of an institution-wide drive to enhance student retention, student development and student success. The centre was created exclusively for students in the preparatory year, and was given a mandate to work collaboratively with all the supported preparatory year courses. Whilst the centre's headquarters was in the university's health campus, it also had a branch in the university's science and engineering campus.

Inside the centre, besides seating and table furniture, students and faculty have a variety of high-tech devices at their disposal, such as: internet-enabled computers, printing and copying facilities, educational TV facilities, an electronic podium, interactive projectors and both conventional and electronic whiteboards. The services provided at the centre within the 2015/16 academic year consisted exclusively of tutorial support outside of regular classroom time. It catered principally for two types of students: first, walk-in students and secondly students who visited the centre and made an appointment for tutorial support.

Unlike walk-in students, who were served on a first-come first-served basis, appointment students got priority in shaping the topic of the tutorial session. Subsequent students had the choice of joining and participating in that chosen tutorial topic or making their own subsequent appointment. As a result, all tutorials were for multiple students at a time and the resulting size of the group was at the discretion of the tutor providing the tutorial.

The target students and participants for this study were low achieving students on the preparatory year. Low achieving students were defined as students who registered a score of 50% or less in the mid-term exams. The core courses that the students were able to receive support for are shown, by track, in the table below:

Table (1). Supported courses by track (as of March 2016).

Health Track	Science Track	Engineering Track
English (101 & 102)	English (101 & 102)	English (101 & 102)
Biology 102	Maths 111	Maths 111
Chemistry 103	Statistics 132	Physics 132
Physics 104		

1 Introduction

An underlying theme that is focused on in much of the literature on first-year student success is the difficulties that many students encounter in bridging the gap between high-school and university (Gallimore et al., 2014; Morosanu et al., 2010; Inkelas et al. 2007). These difficulties include students having a lack of connectedness to their new university environment (Perry et al., 2003), being ill prepared for their chosen courses (Lowe et al., 2003) and social difficulties such as loneliness (Pargetter, 2000). Using Vygotsky (1978) theory of the zone of proximal development as the theoretical framework for this study, this paper examines how one university in Saudi Arabia has attempted to address these difficulties through the creation of an institutionally-wide learning support centre.

In higher education, learning support can be defined as “any activity beyond the prescribed 'content' of the college programme, which will contribute to an individual student’s attendance, retention, learning, and achievement.” (Green et al., 1998: 7). As shown by Merisotis et al. (2000), it has many faces. In some instances, particularly within remedial education, learning support activities focus on helping students reach a prescribed competency level before they move onto their university courses. In other instances, learning support is part and parcel of the prescribed university courses and often requires additional contact hours with students.

A prominent theory that has guided research in this area of learning support, has been that of Vygotsky and his theory of the zone of proximal development (Doolittle, 1997). Vygotsky (1978) argues that the process of effective student learning and cognitive development is hinged on social interactions with other ‘more knowledgeable’ people such as peers and adults. Vygotsky (1986) emphasised the notion of internalisation and believed that a learning event could be characterised by a circular zone where the outer end represented what learners could do with the help of others and the inner core represented what learners could do independently.

Learners initially require a lot of assistance in performing a new task that is at the upper end of their zone, and with practice learners begin to internalise the task, move their student zone closer to the core and increasingly be able to do more of the task independently (Doolittle, 1997). In the context of higher education, which is an altogether different learning experience for students compared to high school, how can practitioners leverage this idea of learning and better support it within the university context?

The transition into higher education presents many challenges for students which, if left unaddressed, can lead not only to low academic performance but also impact students desire to persist with their studies (Pitkethly et al., 2001). Durak et al. (2006) argues that for some students these challenges are difficult. Conley (2008: 5) agrees that “the transition from high school to college is one of the most difficult that many people experience during their lifetime.” The suggestion is that higher education institutions need to employ innovative initiatives and approaches to support their students academically and socially.

The main purpose of this paper is to describe how Imam Abdulrahman Bin Faisal University has attempted to supplement its course-based learning, which is currently governed by pre-determined pacing schedules and instruction patterns, with a face-to-face tutorial based learning support centre that aimed to enhance first-year student success. The centre’s face-to-face tutorial programme was timetabled and offered to students on a voluntary drop-in basis. As part of a quantitative action research approach, the paper evaluates the effectiveness of the learning support centre on low achieving preparatory year students, and makes recommendations that could improve the efficacy of the centre, and others like it, for the upcoming academic years.

1.1 Statement of the Problem

Higher education within Saudi Arabia has gone through rapid growth over the last few decades (Alamri, 2011). Since the establishment of the first university in 1957, the number of public and private universities had gone up to 32 by 2010 with an enrolled student body of 903,567, out of a total population of 26 million (Ministry of Higher Education, 2011). Compared to other countries, Saudi Arabia has one of the highest percentage rates of enrolled university students to the total number of young people in the 19-23 age group: 37.8%. This is compared to 24% in Algeria, 23% in China and 59% in the United Kingdom (Ministry of Higher Education, 2011).

With a strong demand on higher education, and the need to prepare students particularly for English-mediated courses, the first-year experience for many students in Saudi Arabia begins with the preparatory year. As a large higher education institution with a student population of over 45,000, the university examined in this paper, Imam Abdulrahman Bin Faisal University, faces many similar challenges in regards to student transition, such as integrating students academically and socially (Tinto, 1987), that other universities around the world also face.

There is some evidence that many first year university students, despite being fully eligible to attend university, are not often ready for academic studies. Several studies have highlighted the huge gap between secondary school and university in Saudi Arabia (Yushau et al., 2006; Almoallim et al., 2010; Alotaibi, 2010; Alharbi, 2012). For example,

أثر مركز دعم التعلم في تحسين الأداء الأكاديمي
للطلاب ضعيفي التحصيل الأكاديمي وتعزيز فرص نجاحهم
في برنامج السنة التحضيرية في جامعة الإمام عبدالرحمن بن فيصل

محمد حاجي

محاضر - قسم اللغة الإنجليزية
عمادة السنة التحضيرية والدراسات المساندة
جامعة الإمام عبدالرحمن بن فيصل
المملكة العربية السعودية

عبد العزيز بن فهد الفهيد

أستاذ مشارك - قسم اللغة الإنجليزية
عمادة السنة التحضيرية والدراسات المساندة
جامعة الإمام عبدالرحمن بن فيصل (جامعة الدمام سابقاً)
المملكة العربية السعودية

ملخص الدراسة

تعرض هذه الورقة البحثية المشروع الأكاديمي الذي قامت به جامعة الإمام عبدالرحمن بن فيصل لتعزيز فرص نجاح طلاب السنة التحضيرية ومساعدتهم في التغلب على التحديات الأكاديمية التي يواجهونها خلال دراستهم في هذه السنة المحورية، وذلك من خلال إنشاء مركز دعم التعلم وقدمت الورقة دراسة هدفها تحديد مدى فعالية وأثر هذا المركز في تحسين الأداء الأكاديمي للطلاب ضعيفي التحصيل في جميع مسارات برنامج السنة التحضيرية، واستخدام الباحث في هذه الدراسة منهجية تجريبية؛ وذلك عن طريق تصميم الاختبار القبلي - البعدي، وتشير نتائج الدراسة إلى وجود تحسن ملحوظ في درجات الاختبار النهائي للطلاب ضعيفو التحصيل الذين زاروا مركز دعم التعلم وحضروا الجلسات التعليمية وأفادوا من الخدمات المتنوعة التي يقدمها المركز مقارنة بأولئك الطلاب الذين لم يفعلوا ذلك إطلاقاً، كما تقدم الدراسة توصيات تسعى إلى تحسين فعالية التعلم وتعزيز فرص نجاح طلاب السنة الأولى الجامعية.

الكلمات المفتاحية: السنة التحضيرية، تجربة السنة الأولى، مركز دعم التعلم، نجاح الطالب، الطلاب ضعيفو التحصيل الأكاديمي.

The Effectiveness of Learning Support Centres on Student Success: a Study of Low Achieving Preparatory Year Students at Imam Abdulrahman Bin Faisal University

Abdulaziz Fahad Alfehaid

Associate Professor - Deanship of Preparatory and Supporting Studies
Department of English Language - Imam Abdulrahman Bin Faisal University (previously University of Dammam)
Kingdom of Saudi Arabia

Mohammed Haji

Lecturer - Deanship of Preparatory and Supporting Studies
Department of English Language
Imam Abdulrahman Bin Faisal University
Kingdom of Saudi Arabia

Abstract

In this paper, I present the way in which one Saudi Arabian university has sought to enhance first-year student success through the creation of an institutionally-wide supported learning support centre. It is grounded in an action research approach and employs a quantitative quasi-experimental methodology using pretest-posttest design to assess the effectiveness of the centre in improving the academic performance of low achieving preparatory year students. The study presents recommendations for university personnel seeking to improve the efficacy of learning support centres in particular, and has the potential to add important diversity to the literature on student success in general.

Keywords: Preparatory year, first year experience, learning support center, student success, low achieving students.

The Effectiveness of Learning Support Centres on Student Success: a Study of Low Achieving Preparatory Year Students at Imam Abdulrahman Bin Faisal University

Abdulaziz Fahad Alfehaid

Associate Professor - Deanship of Preparatory and Supporting Studies
Department of English Language - Imam Abdulrahman Bin Faisal University (previously University of Dammam)
Kingdom of Saudi Arabia

Mohammed Haji

Lecturer - Deanship of Preparatory and Supporting Studies
Department of English Language
Imam Abdulrahman Bin Faisal University
Kingdom of Saudi Arabia