RECOGNISING PRIOR LEARNING

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How online analytics test assumptions about admissions policies.

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INTRODUCTION: WHY UNDERSTANDING PRIOR LEARNING MATTERS

For any selective university, a fair admissions decision is one that reasonably predicts that a candidate will benefit from a programme of study and is sufficiently prepared to be able to graduate. While summative High School examinations are universally used for making evidence-based admission systems to college programmes, it is also widely recognised that they are inappropriate proxies for college preparedness for candidates who have not followed conventional educational pathways and – particularly – for those who have been in work and are returning to education. Such alternative entry streams are broadly grouped as RPL "Recognition of Prior Learning" or APEL "Accreditation of Prior Experiential Learning (Andersson and Harris 2006; Cooper and Harris 2013; Betts 2010; Dyson 2005; Hargreaves 2006).

But although RPL, APEL and equivalent systems are widely used, there have been few systematic evaluations of their efficacy in comparison with the widespread and conventional use of school leaving examinations for college and university admissions. This is because it has been difficult to set up situations in which the performance of RPL and non-RPL learners can be compared through a programme of study in order to identify when, and for what kinds of tasks, formally accredited prior learning confers advantage and where, in contrast, experiential knowledge from work and life is more useful for successfully completing a learning task.

This is a particularly important issue for education in South Africa, where a long history of extreme inequality and racially-based discrimination has excluded large cohorts of able learners from the quality of formal schooling they could expect in other countries (Hall 2012, Jansen 2009; Saniei-Pour 2015). National policy for the use of RPL in higher education admissions is set by the South African Qualifications Authority (SAQA 2013) as well as by individual universities (UCT 2004).

At the same time, it is increasingly acknowledged that summative examinations and tests taken at the end of compulsory education may not be secure predictors of preparedness for higher education and the assurance that a candidate for admission can be expected to successfully graduate. For example, one of a number of large studies conducted in the US has shown that the SAT is a very weak predictor for successful graduation; GPA scores, which include more subjective assessments of emotional intelligence, are a better predictor (Bowen, Chingos and McPherson 2009). For South Africa, Yeld's work in developing alternative admissions tests based on contextual scaffolding acknowledges that the South African Senior Certificate examination, taken at the end of compulsory schooling, is only a useful proxy for university preparedness for its upper levels of grading (Yeld 2001). It is clear, then, that the range of proxies available for making admissions decisions is fluid and that comparative efficacy is often untested. This issue will grow in significance as the pace of change in the world of work continues to accelerate, as educational opportunities diversify further, and as in-work professional education becomes essential as already-qualified





people require access to high quality courses in new fields of expertise. While summative qualifications that are gained at the end of compulsory education will remain important, the significance of experiential assessment systems in which learning through work is evaluated will grow in significance.

Here, courses that are offered wholly online hold particular promise. This is because, when appropriately designed, the online presentation of a course or module can record the digital footprint of each learner across the curriculum, allowing the comparative success of learners with different profiles to be compared. Such micro-longitudinal studies are part of the rapidly growing field of Learning Analytics – the study of learner behaviour and learning environments with the objective of ensuring continual improvement (Higher Education Commission 2016; Jisc 2016; SoLAR 2016).

In January 2015, the University of Cape Town (UCT) and GetSmarter collaborated to deliver the first online presentation of "Foundations of Project Management" – the first of four topics making up UCT's Advanced Diploma in Business Project Management. This provided the opportunity of comparing in detail the performance of students admitted with traditional prior qualifications with those who had been admitted through the SAQA/ UCT RPL policy. The results of this study are set out in detail in the paragraphs that follow, raising a number of broader implications that are also discussed.

FOUNDATIONS OF PROJECT MANAGEMENT: STUDENTS' LEARNING TRAJECTORIES

Given UCT's commitment to promoting student access and success, the requirement for appropriate RPL admission and support for the new Advanced Diploma was integral to the course design. The UCT policy requires that RPL mechanisms are context-sensitive and adapted to the specific requirements of the qualification that is under development. Accordingly, university Faculty designed a two-week course and assessment delivered online by GetSmarter. Following this, applicants were required to submit a final essay that incorporated the course content into an analysis related to their own personal and professional situation. This outcome was then evaluated as the basis for an admission decision to the course and to the Advanced Diploma programme as a whole.

This treatment of admissions resulted in a class of 266, of whom 52 (20%) had taken the prior two-week online course and had been enrolled in terms of UCT's RPL admissions policy. This is an unusually high proportion, since the university has a guideline that the proportion of RPL learners in any specific class should not normally be more that 10% of total enrolments. It is also important to note that, subsequent to admission to the Advanced Diploma, there was no streaming or differential treatment. All learners were treated equally and their formal work was assessed without knowledge of their individual admission status.





In designing online courses, GetSmarter works to a high level of definition, mapping and specifying every stage of the learner's progression through the module. This results in a rich sequence of touch points, where every learner leaves a digital footprint through some form of activity. Categories of touch points are:

- Accessing the relevant learning resources within each work unit (for example, course notes, infographics, presentations, interactive videos, practice quizzes).
- Reading and/or posting comments to the discussion forums (for example, class-wide and regular discussion forums).
- Completing and submitting weekly assessments (for example, activity submissions, assessment quizzes, wikis).

Where relevant, student activities are further defined as having a "completed" or "not completed.

Depending on the type of learning activity, different conditions need to be met in order for the "completed" status to be achieved; these are detailed in Table 1.

	Didactic Instruction	Student Must:		
ER ACTIVITY TYPE	Case Book	View		
	Glossary	None		
	Infographic	View		
	Notes	View		
	Presentation	View		
	Reading	View		
	Resources	None		
	Video	View		
٩.	Interactive Application	Student Must:		
NS OF "COMPLETION",	Activity Submission	Submit		
	Assessment Quiz	Receive a grade		
	Class-wide Forum	None (SC) View (PG)*		
	Class Test	Submit		
	E-Learning	N/A		
	Interactive Video	View		
	Live Tutorial	View*		
	Online Activity Submission	Submit		
	Ongoing Project	Submit		
	Optional Activity	None		
2	Peer Review Activity	Receive a grade*		
DEFINIT	Practice Quiz	View		
	Research Task	View		
	Small Group Discussion Forum	Post discussions or replies: (1)		
	Web Resource	View		
	Wiki	Make edits: (1)		

TABLE 1: Conditions for completing learning activities.





***Class-wide Forum:** Postgraduate courses use a page resource in the learning path named "Class-wide forum: Title" to seed a discussion question. This resource links to the class-wide forum which students must "Post discussions or replies: (1)" to complete. Stats come from the activity named "Module X: Discussion forum".

*Live Tutorial: This is simply a page that displays the meeting room URL for that tutorial group. The meeting room is outside the reach of the VLE and attendance is tracked using the Adobe Connect reports.
 *Peer Review Activity: This applies to both graded and non-graded workshops. The grading strategy for non-graded workshops is set to "Comments" and a graded submission has received the necessary reviews.

This system of contact points and digital traces provided the basis for following each student on their journey through the thirteen weekly modules that comprised Foundations of Project Management. For each weekly module, student activities are first summarised in tabular form, for the class as a whole, and for both RPL and non-RPL students. This same information is then graphed to allow easy comparison. This is demonstrated in the activity table and graph for introductory module for Foundations of Project Management (Table 2 and Figure 1).

INTRODUCTION MODULE SUMMARY TABLE ACTIVITY COMPLETION	RPL Students Completing Activity		Non-RPL Students Co	ompleting Activity	Total Students Completing Activity	
	No.	%	No.	%	No.	%
Video	46	88.46%	162	75.70%	208	78.20%
PDF: Topic 1 Outline	46	88.46%	180	84.11%	226	84.96%
Infographic	45	86.54%	169	78.97%	214	80.45%
PDF: Topic 1 Calendar	44	84.62%	173	80.84%	217	81.58%
TOTAL NUMBER OF INTRODUCTION MODULE STUDENT PARTICIPANTS	52		214		265	





FIGURE 1: Introduction Module: RPL and non-RPL completions compared.





The activity tables and graphs showing comparative student performance over the full twelve weeks of successive modules are provided in the Appendix to this report. Indeed, the trends that will become apparent over these successive weeks are already reflected in the data for the Introductory Module. For each of the four tasks required in this first week, a greater proportion of RPL students met the relevant "completed" criterion specified in Table 1. Although care needs to be taken with comparative proportions, given the different sample sizes for RPL and non-RPL students registered for Foundations of Project Management, this difference in student behavior is about 7%.

Turning now to the activity tables and graphs that are provided in the Appendix, Module 1 saw a continuation of the trends that emerged during the introductory week. Now that the course was fully underway, there was a richer and more diverse log of activities. The Module 1 graph comparing RPL and non-RPL learners reflects this. Here, the week is broken down into units – the microcomponents of the learning design. This brings out clear differences, in particular showing RPL students completing unit two tasks at a rate that was 13% higher than those students with conventional prior qualifications. This included engagement in a class-wide discussion, in which 90% of RPL students participated, in comparison with 78% of non-RPL students.

During Module 2, the gap steadily widens between RPL and non-RPL learners over the first three units, with the difference in engagement rising from 5% to 10% before narrowing back to 4% at the end of the week. There are three assessment exercises in the course of this week; for the first, the RPL students do slightly better than their counterparts and this lead increases during the week. Similar patterns continue through Module 3 and Module 4, with RPL students consistently recording higher activity completion rates than their peers.

By the halfway point of Foundations of Project Management, each of the course's 266 students has left about 75 record points that, together, make up their distinctive digital footprint. From here, the aggregate distinction between RPL and non-RPL patterns of learning become especially pronounced. Whilst the average proportion of RPL students who access each of the learning activities remain relatively consistent, non-RPL student activity completion rates start to dwindle. This widens the gap between RPL and non-RPL activity completion rates, with differences as high as 17%, and not lower than 12%. Differences in assessment performance, though, are insignificant. This pattern continues in Module 7 and Module 8.





Interestingly, after 3 modules of especially large activity completion gaps between RPL and non-RPL students, we see that in Module 9, it starts to narrow again to what we were accustomed to seeing in earlier modules (i.e. a 5% difference for two of the units, and 13% for another). That said, differences in average assessment performance continue to remain nominal (i.e. between 1–3%), however it is still RPL students who outperform their peers in the majority of cases. As the end of the course approaches, the pattern becomes even more distinct, with the difference in engagement between RPL and non-RPL students reaching 24% by the final unit in Module 10.

Despite being less engaged in course activities, non-RPL students with conventional academic backgrounds had managed at this point to match their RPL peers in assessed activities. However, they begin to lose this advantage in Module 11, with RPL students outperforming traditionally prepared students by 11% and 3% in the module's two assessments. Finally, as the course comes to an end, there is an average 12-point percentage difference throughout Module 12 for learning activity completion rates; differences in assessment performance are again slight, with both groups of students achieving similar results.

The detailed activity tables and graphs included in the Appendix are summarised for the course as a whole in Table 3 and Figure 2. Table 3 provides the average activity completion rate across activities in each module, and for all 12 modules that constitute the curriculum for Foundations of Project Management. Table 3 also shows the corresponding average assessment performance. Figure 2 provides this same information as a graph. While there was an overall and steady decline in student engagement through the twelve weeks of the course as a whole, the decrease in participation by non-RPL students is more marked. Interpreted another way, Figure 2 is a striking testimony to the strong level of engagement by students admitted to the course via the RPL route. In almost all cases (that is, barring three instances) RPL students outperformed their non-RPL peers in assessment activities.

ALL MODULES SUMMARY TABLE ACTIVITY COMPLETION	RPL Students Completing Activity		Non-RPL Students Completing Activity		Total Students Completing Activity	
	Nb.	%	Nb.	%	No.	%
Module 1 Average Activity Completion	49	95.09%	188	88.01%	238	89.39%
Module 1 Average Assessment Performance	1	69.60%		66.69%		67.26 %
Module 2 Average Activity Completion	48	92.31%	183	85.65%	231	86.95%
Module 2 Average Assesment Performance	-	70.22%	-	68.85 %		69.14%
Module 3 Average Activity Completion	44	85.19%	172	80.14%	216	81.13%
Module 3 Average Assessment Performance		68.48%		68.92%	-	68.83%
Module 4 Average Activity Completion	46	87.98%	170	79.32%	216	81.02%
Module 4Average Assessment Performance	-	76.11%	-	75.39%	-	75.53%
Module 5 Average Activity Completion	45	87.42%	169	78.91%	214	80.58%
Module 5 Average Assessment Performance	-	80.25%	-	78.49%	-	78.84%
Module 6 Average Activity Completion	46	89.23%	166	77.45%	212	79.75%
Module 6 Average Assessment Performance	-	75.74%	-	75.12%	-	75.25%
Module 7 Average Activity Completion	46	89.34%	167	78.02%	213	80.23%
Module 7 Average Assessment Performance		77.12%		76.62%	-	76.89%
Module 8 Average Activity Completion	47	89.90%	165	76.90%	211	79.44%
Module 8 Average Assessment Performance		73.18%		73.45%	-	73.40%
Module 9 Average Activity Completion	45	87.42%	176	82.11%	221	83.15%
Module 9 Average Assessment Performance		77.21%		76.22%	24 C	76.42%
Module 10 Average Activity Completion	47	91.28%	168	78.49%	215	80.99%
Module 10 Average Assessment Performance	-	68.84%	15	67.61%	17	67.86%
Module 11 Average Activity Completion	46	87.79%	166	77.69%	212	79.67%
Module 11 Average Assessment Performance		76.21%	-	69.21%	-	70.73%
Module 12 Average Activity Completion	46	89.02%	166	77.63%	213	79.90%
Module 12 Average Assessment Performance		73.83%		74.56%	-	74.41%
Total No. of Module 12 Participants	52		214		266	

TABLE 3: All modules summary of activity completion.







FIGURE 2: All modules RPL and non-RPL completions compared

A further source of information about students' online learning behaviour – now well established within the field of Learning Analytics – is patterning in posting in online discussion forums. The data collected for the Foundations of Project Management course shows both differences from module to module through the twelve weeks of the course, and also between students who were admitted to the Advanced Diploma with conventional qualifications and those who joined the course via the RPL route.

Two types of posting behaviour are considered. Firstly, students are able to create new discussion threads, initiating and leading a thought or observation in the context of the course's subject matter. Secondly, students can post to existing discussion threads, following the lead of others who launched the topic.





ALLMODULES SUMMARY TABLE DISCUSSION FORUM ACTIVITY	RPL Students		Non-RPL Students		Total Students	
	Nb.		No.	%	No.	%
Module 1 New Discussions Greated	12	18.18%	17	8.67%	29	11.07%
Module 1 No. of Students Creating New Discussions	9	17.31%	16	7.48%	25	9,40%
Module 2 New Discussions Created	18	27.27%	36	18.37%	54	20.61%
Module 2 No. of Students Creating New Discussions	11	21.15%	26	12.15%	37	13.91 %
Module 3 New Discussions Created	5	7.58%	16	816%	21	8.02%
Module 3 No. of Students Creating New Discussions	5	9.62%	12	5.61%	17	6.39%
Module 4 New Discussions Created	2	3.03%	18	9.18%	20	7.63%
Module 4 No. of Students Creating New Discussions	2	3.85%	10	4.67%	12	4.51%
Module 5 New Discussions Created	3	4.55%	13	6.63%	16	6.11%
Module 5 No. of Students Creating New Discussions	3	5.77%	12	5.61%	15	5.64%
Module 6 New Discussions Created	4	6.06%	13	6.63%	17	6.49%
Module 6 No. of Students Creating New Discussions	4	7.69%	11	5.14%	15	5.64%
Module 7 NewDiscussions Created	6	9.09%	18	918%	24	916%
Module 7 No. of Students Creating New Discussions	6	11.54%	14	6.54%	20	7.52%
Module 8 New Discussions Created	6	9.09%	27	13.78%	33	12.60%
Module 8 No. of Students Creating New Discussions	6	11.54%	18	8.41%	24	9.02%
Module 9 New Discussions Created	4	6.06%	7	3.57%	11	4.20%
Module 9 No. of Students Creating New Discussions	2	3.85%	5	2.34%	7	2.63%
Module 10 New Discussions Greated	1	1.52%	12	6.12%	13	4.96%
Module 10 No. of Students Creating New Discussions	. 1	1.92%	9	4.21%	10	3.76%
Module 11 New Discussions Greated	1	1.52%	10	510%	11	4.20%
Module 11 No. of Students Creating New Discussions	1	1.92%	9	4.21%	10	3.76%
Module 12 No. of Students Created	4	6.06%	9	4.59%	13	4.96%
Module 12 No. of Students Creating New Discussions	3	5.77%	5	2.34%	8	3.01%
TOTALS	52	66	214	196	266	262
		Total No. New Discussions	Tatal Na. of Non-RPL	Total No. New		Total No. New
	Total No. of RM. Students.	Created	Students	Discussions Created	Tatal No. of Students	Discussions Created

TABLE 5: All modules: Discussion Forum – total numbers of posts made.



FIGURE 3: All modules. Creation of new discussions: RPL and non-RPL completions compared.

Table 4 provides an overview of new discussion threads created across the twelve modules of Foundations of Project Management, and Figure 3 presents this as a graph, distinguishing RPL from non-RPL students. From this information it is clear that discussion initiation rates were low for all students. However, 48% of the RPL students did initiate a new discussion topic at least once in the course as a whole. In contrast, only 32% of the non-RPL students initiated new discussion topics.







FIGURE 4: All modules: Discussion Forum. Total number of posts made – comparison of RPL and non-RPL students.

Table 5 and Figure 4 provide comparable profiles of student contributions to existing discussion threads. Here, the differentiation between RPL and non-RPL students is pronounced. From the start of the course at Module 1 to its conclusion at Module 12, a significantly greater number of RPL students join existing discussion topics, with differences between the two groups as high as 21%. Further, all but one of the RPL students contributed posts, with an average of 12.6 posts per RPL student. In contrast, 85% of non-RPL students contributed to existing discussion forums, and 33 non-RPL students were "silent" throughout the twelve weeks of the course. Non-RPL students contributed an average of 8.5 posts each, about a third lower than their RPL counterparts.

WHAT THE LEARNING ANALYTICS TELL US

Patterns are not explanations. The results of tracking students' digital footprints across the twelve successive weeks of the Foundations of Project Management reveal – unequivocally – that students admitted via the University of Cape Town's Recognition of Prior Learning policy are more actively engaged in all aspects of the curriculum than their peers with conventional prior qualifications. The Learning Analytics also show that this additional expenditure of energy does not bring an equivalent premium in formal measures of success; rather than beating their less engaged counterparts in quizzes and other assessment instruments, they match them. This shows that RPL students have to work harder to keep up. However, the data recorded and described here does not reveal why there are these differences.





This points, in turn, to the primary value of the rich digital data that can be assembled from any online course that is provided to the technical qualities of the Online Campus. Patterns such as these serve to define a set of precise questions for further exploration. For example:

- Given that the RPL students were required to have prior work experience that could be deemed equivalent to formal academic qualifications, what were the elements of this work experience that encouraged and enabled them to have consistently high levels of engagement across all modules?
- Did the required two week RPL course and assessment, that only the RPL students undertook, specifically prepare them with skills that they then deployed successfully from Module 1 onwards? If so, what were those skills?
- Given that the non-RPL students matched their RPL counterparts in performance in formal assessment activities but with less effort in course engagement, did their greater academic experience prior to the course give them an advantage?
- Following from this, and if this was the case, are now-standard online assessment techniques such quizzes and multiple choice tests measuring proficiency or mastery, or test-taking ability?
- Why was the rate of creation of new discussion forum threads (innovation) uniformly low across the course? Conversely, why did most students prefer to be "followers" rather than "leaders" within the dynamics of the online discussions?

Using Learning Analytics in this way to create a directed agenda for pedagogic research contributes to a consistent, research-led environment of improvement in the comparatively new world of online education. It also has significant implications for improving face-to-face education. This is because the diversity of background found across the students registered for UCT's Foundations of Project Management course is matched by the diversity of students joining a face-to-face class. Further, behaviours such as leading and initiating versus following, as well as very varied levels of personal engagement, are as familiar to those teaching face-to-face classes as they are online. Addressing and answering questions such as these will have value across all modes of education delivery.

More particularly, and of specific relevance to the University of Cape Town and to other universities in South Africa, the ability of the 20% of students who joined Foundations of Project Management via SAQA and UCT's RPL policy to match the formally assessed performance of their peers has significant implications for admissions policies.





A fair admission decision is not a reward for prior educational success. It must rather be based on a professionally-informed assessment of the candidate's potential to benefit from, and successfully complete, the course for which they are applying (Schwartz 2004). The proxies that are used for making this assessment will vary according to the nature and level of the qualification. While the National Senior Certificate – South Africa's summative examination for compulsory education – may be a good proxy for an undergraduate programme, it may be less appropriate for a postgraduate Advanced Diploma, where a record of prior work experience may be more appropriate.

The outcomes of the research reported here show that, for an Advanced Diploma such as this, the recognition of prior learning is at least as good a proxy for making a fair admissions decision as an undergraduate degree. Given this, there can be no justification in denying an applicant who has met RPL requirements a place on an Advanced Diploma Course in preference for a degree-qualified applicant. In addition, it is likely that, given South Africa's history of unfair discrimination and high levels of inequality, an applicant following the RPL admissions route will have had fewer education opportunities than an applicant already holding a degree. Given that the evidence discussed here shows – unequivocally – that an RPL student has at least an equal chance of success, any fair admissions decision must treat all RPL and non-RPL applicants equally.

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