TIM LOW'S OPEN TEXTBOOK JOURNEY

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Grantee: Tim Low

Position: Senior Lecturer

Department: Education Development Unit (Commerce), Department of Statistical Sciences

Faculty: Centre for Higher Education Development

Course: Statistics

Degree level: Undergraduate

Title of initiative: Introduction to Probability in isiXhosa

Title of envisioned open textbook: *Introduction to Probability in isiXhosa*

Introduction

In South Africa there is a gap between high school and university-level statistics. There is also a gap (for most students) between the languages they speak at home and the language in which they are taught. Bridging these gaps takes time, care and consideration.

These are some of the concerns that have faced Tim Low, a senior lecturer who teaches mathematics and statistics in the Education Development Unit of the Commerce Faculty at the University of Cape Town (UCT). A former high school maths teacher with research interests in mathematical and statistical education, Tim seeks to support and advocate for transformation through creating greater inclusivity, localisation and multilingualism in the teaching of statistics at UCT.

In recognition of these efforts, Tim was honoured with a UCT Distinguished Teacher Award in 2011 for his contribution to undergraduate teaching, particularly as relates to the use of technology.

In February 2019, Tim was awarded a grant from the Digital Open Textbooks for Development (DOT4D) project to start translating the first-year *IntroStat* textbook from English into isiXhosa. His hope was that, with this experience in hand, he would be able to create an app that can translate statistics terms from English into South Africa's other 10 official languages for first-year university students.

This case study draws on:

- Tim's grant proposal to the DOT4D project.
- Tim's grant report to the DOT4D project.
- Field notes of the DOT4D Publishing and Implementation Manager.

What is the problem Tim is trying to address?

Tim's work supports the UCT Language Policy,[1] which aims to develop multilingual awareness and proficiency at the university. Within this context, his open textbook project addresses the barriers and challenges faced by first-year university students who have English as a second or third language when they learn statistics for the first time at university.

Recognising the disparities between high school mathematics and the new material that students are exposed to when they enter university, the objective of Tim's initiative is to create a localised, openly licensed isiXhosa resource which is a translation of components of the widely used UCT first-year statistics textbook, *IntroStat*,[2] which is also a locally developed open textbook.

> His open textbook project addresses the barriers and challenges faced by first-year university students who have English as a second or third language

Tim's open textbook journey

Original plan

Tim's investment in this process and collaboration with students is driven by the belief that not being able to understand the conversations students have is equivalent to the students not being able to understand him and the language of statistics. It is this disconnect that he is attempting to address.

The aim of Tim's project was to create the start of a possible series of books aimed at isiXhosa-speaking students. By offering examples in the home language of the students, he hoped that they would be able to better understand various statistical concepts by supporting their practice of 'code switching', going back and forth between isiXhosa and English when thinking about and explaining material from the course. He planned to start the process by translating the *IntroStat* textbook, the core resource for the first-year Statistics course at UCT, into isiXhosa.

Authorship approach

Tim adopted a 'content development facilitator with student and colleague co-authors' authorship approach in which he worked collaboratively with UCT's Department of African Languages and Literatures, the Multilingualism Education Project in the Centre for Higher Education Development and well as isiXhosa-speaking statistics students and tutors.

In this way, he envisioned that the students would enjoy the recognition of their home languages and add value to the content creation process.

As the content development process commenced, the envisioned authorship approach shifted as there were fewer students willing to participate in the process than had originally been expected. Tim stated that, 'we were hoping to have about three students and we were going to have three academics so that the three of them in each grouping could be having these conversations to actually help each other and support each other and ensure the richness of the translation. It didn't quite work out as planned.' Thus, the project team ended up consisting of three academics and one student, who largely operated in isolation from one another.

Tim explained that this particular collaborative approach was adopted in order to foster a team effort around the translation work that was to be undertaken, stating that 'the conversation that the individuals have, because they all come from a slightly different perspective because of their own interpretation of the language, actually creates the richness of the translation and helped with the understanding that we produced'.

The content development process and student involvement

In his proposal, Tim envisioned translating two chapters of the *IntroStat* textbook which cover the building blocks of the subject. To do this, the project planned to work with staff from the Department of African Languages and Literatures who were willing to assist with the translations and with students studying statistics who were interested in helping out.

When the project commenced, staff members and students were excited. This enthusiasm was sustained in the course of 2019, but it was clear that trying to complete this activity during the normal academic term was going to be impossible due to a number of challenges.

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[1] http://www.students.uct.ac.za/sites/default/files/image_tool/
    images/328/about/policies/Language_Policy_19-June-2013_Final.pdf
[2] https://open.uct.ac.za/handle/11427/4150

To begin with, the project needed three students, but could only find one dedicated individual. The academic staff were busy with their own research, admin and lecturing commitments. Hence, the team decided to meet at least once a term to discuss the project and keep it focused; beyond this, project work was limited to vacation time. This limitation on time and capacity resulted in the translations for the textbook taking longer than had been assumed by the team.

> Both translations had a similar theme, but as was expected and encouraged, the academic team and the student took very different approaches to their translations

To keep the project moving forward, the team decided to have the translations carried out separately by the academics and the student. After each group had translated a section, the team would meet to discuss whether the work was aligned with their initial visions and to check if the translations made sense. As this was the first time any of them had tried translating mathematics and statistics, the process moved slowly, with particular caution being exercised by the student, who was new to the practice of formally translating work for academic use.

The textbook development process resumed in February 2020 when the project team were able to meet again to discuss the translations of both chapters. Both translations had a similar theme, but as was expected and encouraged, the academic team and the student took very different approaches to their translations.

The linguists took a rather purist approach with literal translations (given that they didn't have mathematical backgrounds), while the student used more colloquial language because of their statistical knowledge and understanding of students' language use.

This divergent outcome from the translation process was encouraged, as they wanted to see what would emerge. Tim explained that, 'the likelihood is, as a student, you're going to come up with translations and explanations which will be different to a theoretical translation that an academic might do. And I encourage that because ... as much as we want the translation to be academically sound, it's going to be used by students. And so the language the student might read and understand is likely to be different to the traditional academic approach or my approach'.

Within this context, Tim expressed that he tried to avoid placing any boundaries on the manner in which the translations were being developed, as he wanted the textbook to be a useful document rather than an academic process in which an existing textbook was merely translated into a different language.

In their February 2020 discussions, the academics wanted to keep the text truer to a formal understanding of isiXhosa, while the student worried that the inclusion of certain (formally correct, but functionally questionable) phrases and terminology would make the text less useful. The team worked through each others' translations, and, through a process of mediation, created one document which was a marriage of the translations. With this, the concluding discussions were that the project's team would try to keep the translations reasonably academic in nature, with the inclusion of a colloquial translation in areas where it might aid the clarity and understanding of the content. In addition, a glossary of terms with both colloquial and traditional terms would accompany the chapters.

Tim expressed that he wanted to continue this content development process for other chapters in the *IntroStat* textbook in the future because he believed that there was a need to create more resources for students in languages other than English. He stated that, with the body of work he was creating, 'the idea is that eventually it will help tie in with my glossary of terms and so eventually it will become a bank of resources one way or the other. And the idea is that it's going to be open source, so it's going to be changed and adapted and improved. And as a group of academics, lecturers and statisticians, we can be improving it'.

Production and publishing

Tim has adopted an 'initiative as self-publisher' approach, in which the project team undertakes the production and publication of the content developed.

Content development and publishing tools

At the end of the content authoring process, both sets of translations were converted into LaTeX. By doing this, Tim endeavoured to type up the varied sets of translations that had been produced by the team and include in them the mathematical formulation of the work. Tim stated that he was 'trying to fit the Xhosa around the current mathematics that's there' as a means to aid the reading of the content and see the similarities and differences in both sets of translations.The LaTeX typesetting approach was also adopted because this was the format in which the textbook content was going to be printed and displayed and which would facilitate the textbook being readable as a PDF.

Copyright and licensing

The original *IntroStat* textbook from which the chapters for translation were drawn is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International licence. The isiXhosa translation chapters are licensed similarly, in line with the ShareAlike principle. Given the fact that the original English resource carries an open licence, no copyright issues were encountered.

Quality assurance and sustainability

The quality assurance process adopted within the project was based on both student and colleague review. Due to the collaborative nature in which the chapters were developed, the review process took place as a brokered conversation between the two groups in order to create content that would reflect both academic rigour and the student perspective. Within this, Tim stated that, 'I'm obviously being bound to a point by the academics. This is meant to be an academic text, so in that sense it needs to be of a reasonable academic rigour. That was my first thought, but it's got to be useful enough for students.'

> The process of brokering academic rigour and student voice within the quality assurance practices of the team raised concerns for Tim about how his textbook would be received beyond the UCT community.

The process of brokering academic rigour and student voice within the quality assurance practices of the team raised concerns for Tim about how his textbook would be received beyond the UCT community. He expressed that, 'there is always a worry that the critique that you're going to receive by putting out something that somebody else says, 'oh, this is not very academic', if it's going to be used in an academic sense is obviously a concern. I think the point is, we see it all the time, that if someone writes something and someone says, 'well, that's not very academically good', but it might be fine for somebody else who is not an academic to understand, it will not receive recognition in the same way as someone who writes something completely academic that nobody follows at all'.

In terms of sustainability, Tim stated that once the current chapters in development were completed, the team would assess how useful they were for students' needs and use that feedback to devise a way forward. He expressed that he was interested in discussing this work with colleagues at statistics departments elsewhere in the country so that they could also play a role in the production of this material. He was also exploring ways of sourcing voluntary participation in the process to foster a sense of doing the work for the greater good.

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Status at grant closure

The outbreak of the COVID-19 pandemic at the beginning of 2020 constrained the progress of the project as everyone involved had to make the adjustment to working remotely. At the point of formal grant closure in March 2020, Tim did however indicate that he and his team had started work on translating the next chapter of the *IntroStat* textbook.

Challenges experienced and lessons learned

The project team faced several challenges during the development of the textbook, but the most important centred on the collaboration process itself.

Collaboration invites coordinating challenges

The academics in the project found that their personal commitments and activities limited the time they could devote to the project. In addition, the student had full-time coursework to attend to (a constraint compounded by the fact that they lost their phone at one point and had limited communication with the team for an extended period of time). As such, the production of the translations took longer than the team members expected.

This resulted in only one chapter's translation being completed in the project's grant period, with the other following shortly after.

With this in mind, Tim highlighted the challenge of coordinating collaborative efforts such as this and stated that, 'someone has to be a driver'.

Balancing academics' and students' perspectives difficult but worthwhile

At the heart of the content creation process was a dialogue between the academics and the student about the best way to present the material in isiXhosa. The academics preferred to take a more formal approach to translation, using the standardised version of the language, while the student argued for a more colloquial, contemporary and spoken version which better approximated students' actual language use. The groups found merits to both approaches and debated the pedagogical implications between them. Rather than seeing this debate as a problem to be solved, Tim sought precisely such a productive tension in this deliberative process, as he believed that it was through such dynamic interaction that a higher quality output was ensured.

Budget

Overview of the original budget submitted to DOT4D as part of 2018 grant application, with actual expenditure.

Budget projected at proposal phase
Specialist translation support: R44,000

DOT4D grant amount: R44,000

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Project actual expenditure
Specialist translation support: R44,000

Total expenditure: R42,000