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Ibhuku Lokufundisa Ulimi - Tšenale ya tša Go ruta Polelo
- Buka ya Thuto ya Puo - Jenale ya Thuto ya Dipuo - Ijenali
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Creating "transdisciplinary spaces" for a real-world scenario: a practical teaching collaboration

Abstract

A lack of transfer of academic literacy competencies was identified by academic literacy and Statistics lecturers involved in an extended programme course. This paper reports on one attempt at a workable collaborative solution to this challenge. The collaborative attempt is situated within the academic literacies framework, and is described. Thereafter, student feedback as well as critical self-reflections from participating lecturers are qualitatively analysed in an interpretative framework, to determine how key stakeholders experienced the collaborative intervention. The collaborative attempt was found to be valuable in more effectively achieving the outcomes of both courses, and in helping students see the relevance of academic literacy in content subjects – this is in line with an academic literacies framework which holds that academic literacy cannot be divorced from the contexts in which it is practiced. The primary factors that led to a successful collaboration were a willingness of all partners to participate in the project and regular communication between collaborators. Main problems encountered revolved around miscommunication between lecturers and students, and an insufficiently detailed timetable that resulted in pressure at certain stages.

Keywords: Teaching collaboration, academic literacy, academic writing, English for specific purposes, project work

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1. Introduction

It has been well-documented that the South African secondary school system does not adequately empower students for the rigours of higher education, specifically in terms of students' academic literacy (AL) levels (Higher Education South Africa, 2008; De Klerk, Van Deventer & Van Schalkwyk, 2006; Van Dyk, 2005). As a result, universities across the country have dedicated AL interventions aimed at assisting students to master the academic litercy requirements of higher educaiton. Much of the literature agrees that AL interventions should ideally be interwoven with content subjects (for example Winberg, Wright, Wyrley-Birch and Jacobs, 2013; Black & Yasukawa, 2013; Barkas, 2011; Wingate, 2006; Lehmann & Gillman, 1998; also see Section 3.1). However, due to a variety of factors such as limited human resources and timetable constraints (see, for example, Wingate, 2006), in reality, many AL interventions found in South African universities could be considered "bolt-on" courses (Wingate, 2006). According to Wingate (2006:457), this refers to providing learning support by means of "extra-curricular 'study skills courses, often offered in dedicated learning support centres". One disadvantage of such bolt-on courses is that students often do not transfer what they learn in their AL courses to content subjects (Barkas, 2011; Hosking, Mhlauli & Berhe, 2008).

The purpose of this article is to propose one way in which practitioners in the field could work within the reality of having to facilitate an AL course which does not allow for interdisciplinary options such as team teaching (see Section 3.1), whilst still retaining many of the benefits of AL interventions which are completely interwoven with content subjects. Thus, we propose a "transdisciplinary space" – a phrase borrowed from Carstens (2013) – for a real-world scenario within an academic literacies framework, and reflect on the effectiveness of this effort. In this article, a case study is described in which Statistics and AL lecturers involved in an extended programme course at a South African university decided to look for an efficient collaborative solution to a problem that was observed by lecturers from both subjects, namely that students do not transfer the AL conventions they seem to have mastered in the AL class to their content subjects.

This paper starts by unpacking the theoretical framework, namely academic literacies, in which we situate our argument. Thereafter, the context of the collaboration is discussed, mainly by considering models of collaboration that have been used thus far, and then by describing the adapted model the researchers decided upon. An overview of the collaborative assignment is provided. Thereafter, the paper attempts to answer the following research question: can this type of collaboration be successfully implemented in a real-world scenario in order to facilitate the transfer of AL abilities to students' content subjects? Main themes that are considered under this research question are the challenges experienced in the implementation of the collaboration, how these challenges were addressed, and what the main advantages of the collaboration were. This research question is addressed by considering the perspectives of two key stakeholders in the process: 1) the students and 2) the AL and Statistics lecturers who were involved in the collaboration.

2. Theoretical framework

This paper is conceptually located in the field of academic literacies (Gee, 2008, 2015; Lea & Street, 1998, 2010; Street, 2008). Butler (2013: 76) states that the field of academic literacies "supports a 'social practices' account of academic literacy" and stresses the fact that AL practices cannot be separated from the "norms, values and ways of thinking and behaving in distinct discourse communities". Examples of such discourse communities are the various faculties within universities (for example a Natural Sciences faculty) and the departments and subjects within these faculties (for example Statistics).

From an academic literacies perspective, the cultural conventions of specific discourse communities (for example that of higher education institutions, and specific subjects located in them) are of particular importance (Leibowitz, 2001; Taylor, Ballard, Beasley, Bock, Clancy & Nightingale, 1988). Once students become familiar with these conventions, they can effectively participate in specific academic 'Discourses' (Boughey, 2000). The term 'Discourses' with a capital 'D' was first used by Gee (2008) in the context of academic literacies. Gee (2008: 155) states that a Discourse is:

> composed of distinctive ways of speaking/listening and often, too, writing/reading *coupled* with distinctive ways of acting, interacting, valuing, feeling, dressing, thinking, believing (...) so as to enact specific socially recognizable identities engaged in specific socially recognized activities.

AL interventions, therefore, need to assist students in mastering a thus-far unfamiliar way of communicating for them to be accepted in the culture, or discourse community, they wish to enter, and to eventually even be able to contest power-relations in these cultures (Lea & Street, 2006). Moreover, these interventions need to help students to acquire new ways of thinking about knowledge and the world to truly master academic Discourse. This can be particularly difficult for a bolt-on course (cf. Barkas, 2011; Wingate, 2006), as the AL course is then not only conceptually, but also spatially and temporally (in that AL conventions are taught at a different time and in a different place from students' other subjects) removed from the reality of the Discourse(s) students are encountering in their content subjects.

3. Context of the collaboration

The AL course that is the subject of this article cannot be considered a traditional 'bolt-on' course, as described by Wingate (2006). The lecturers who present the course are located in the Faculty of Natural and Agricultural Sciences, and not in a dedicated learning support centre (cf. Wingate, 2006), even though the course itself is a distinct subject, and not interwoven with the curricula of any of the students' content subjects. Although the course does not focus on the AL conventions of one specific subject (as students in our classes take a range of subjects within the Faculty of Natural and Agricultural Sciences), it has aimed, after consultations with various content lecturers, to adapt its

content and assessments to the context of the natural sciences, with the aim of assisting students to acquire the conventions and means of communicating required by this field. Conceptually, therefore, it is similar to what Black and Yasukawa (2013: 579) refer to as a "social practice" approach, since it "draws directly on the specific [literacy] practices" of the discipline.

Having students see the relevance of an AL course, even when it is discipline-specific, is difficult (Van Dyk & Coetzee-Van Rooy, 2012; Davidowitz, 2009; Nel & Nel, 2009). A study done by Fraser and Killen (2005) indicates that students, especially at first-year level, do not consider their AL levels as having an influence on their academic success and they therefore see no point in a course that teaches what they do not need. Moreover, research suggests that if students have a negative perception of a course, they underperform (Lizzio, Wilson & Simons, 2002).

This, then, is the first challenge for the AL practitioner, who, concerned with student success at tertiary level, must convince students of the value of an AL course. Herein lies a further challenge. AL lecturers must ensure that the academic literacy they teach does, indeed, impart value. The debate around what constitutes a meaningful AL course is ongoing; nevertheless, there does seem to be agreement that the desired success cannot be achieved simply by imparting a set of generic or even subject-specific literacy skills (Black & Yasukawa, 2013; Barkas, 2011; Wingate, 2006); rather, there must be an understanding about "the eventual uses the learner will make of the language" (Gaffield-Vile, 1996: 108), or, in the perspective of academic literacies, the academic cultures students will eventually enter, and the Discourses they will be required to master (Gee, 2008; Wingate, 2006; Leibowitz, 2001; Taylor et al., 1988).

Butler (2013) comprehensively discusses the debate surrounding generic versus discipline-specific interventions. He states that there is "ample recent evidence to suggest that AL interventions are increasingly being situated within disciplinary contexts" in South Africa (Butler, 2013: 77). Advantages to discipline-specific interventions are manifold, and include authentic, relevant and interesting materials and academic activities, the opportunity to teach genres which are appropriate to specific disciplines, exploring closer collaboration between AL practitioners and disciplinary experts, and making tacit the AL conventions that are used in various disciplines (Butler, 2013).

To fully understand what Gaffield-Vile (1996: 108) calls the "eventual uses of the language" and what Butler (2013: 80) refers to as "unlocking discipline-specific AL practices" entails a knowledge that the AL lecturer can only significantly gain when working collaboratively with subject specialists; as Butler (2013: 78) argues, "AL practitioners cannot work in isolation from the disciplines they serve". Even then, as Jacobs (2007: 59) suggests, "sustained interaction" is required before "disciplinary specialists are able to make their tacit knowledge of the literacy practices and discourse patterns of their disciplines, explicit". Butler (2013: 80) agrees: "AL practitioners usually do not have expert knowledge of the other disciplines, and may be required to immerse themselves in such disciplines in order to … understand the complexities inherent in such discipline-specific AL practices and then to make a relevant contribution in the development thereof". Close contact

with subject specialists will eventually allow the AL lecturer insight into the specific AL challenges that the subject-specialists face so that AL teaching becomes dynamic and pragmatic (Van Dyk & Coetzee-Van Rooy, 2012; Marshall, Conana, Maclon, Herbert & Volkwyn, 2011). There is, however, still no guarantee that this insight that the AL lecturer has gained from collaborating with content subject colleagues will assist students in transferring their newly gained AL abilities to their content subjects. It is thus worthwhile to consider models of collaboration that might assist in this transfer.

3.1 Models of collaboration

Many practitioners now agree that a possible answer to these challenges is a collaboration that links AL abilities with the disciplinary subjects for which the abilities are needed (Butler, 2013; Carstens, 2013; Barkas, 2011; Jacobs, 2007; Baik & Greig, 2009; Parkinson, 2000; Snow & Brinton, 1988). However, this solution is not straightforward. Factors such as "the practical difficulty of implementing such interventions successfully in higher education", the "limited numbers of AL practitioners and increasing numbers of students", the question regarding "the degree of specificity of such interventions" as well as the fact that "AL practitioners usually do not have expert knowledge of the other disciplines" (Butler, 2014: 82) all complicate the collaborative effort.

To effectively navigate these factors for different contexts, practitioners use a variety of models. The models or approaches for such collaborative efforts include varied options: from the content lecturer teaching the aspects of academic literacy in the content class – which Van Dyk and Coetzee-Van Rooy (2012) call the "disseminated approach"; to the content lecturer sharing the classroom with the AL practitioner – which is also referred to as team-teaching and collaborative teaching (Black & Yasukawa, 2013; Lehmann & Gillman, 1998); to the AL practitioner teaching subject content (for example Biology) in the AL classroom – some practitioners refer to this last model as the sheltered approach of content-based language instruction (Gaffield-Vile, 1996).

Alternatively, the AL and content lecturers could align their course content to underscore the cross-curricular application of AL abilities, which is another variation of collaborative teaching (Lehmann & Gillman, 1998). Other approaches within the content-based language instruction school (apart from the sheltered approach mentioned previously) are the theme-based approach (Parkinson, 2000) and the adjunct approach (Gaffield-Vile, 1996). The theme that runs through all of these approaches is that AL abilities become the means by which instruction takes place instead of being the focus of the instruction (Parkinson, 2000), so as to ultimately allow students access into the various Discourses (cf. Gee, 2008) of their chosen fields of study.

The array of permutations within the models of collaboration between AL and the discipline-subjects needing support seems to suggest that this desired practice is more easily expressed in theory than put into practice. Probably the greatest problem, inherent in a full implementation of any of the models of collaboration described previously, is impracticality (Butler, 2013; Carstens, 2013). In a time when universities

are taking in more students and fewer staff members, implementing idealised integrative collaboration models between AL interventions and content subjects becomes particularly difficult.

For this reason, the "all-or-nothing" approach has begun to be questioned, at times even by its own adherents. Snow and Brinton (1988: 571), for example, acknowledge that the commitment necessary from faculty and staff for a full implementation of the adjunct model of language instruction might not be feasible and that the model could be "adapted to fit other institutional settings and populations". Similarly, Marshall et al. (2011) recognise the limitations of a resource-intensive collaboration. The next section describes how two subjects, namely AL and Statistics, worked at creating a model that would fit the logistical and institutional demands of their university, whilst still aiming at creating a transdisciplinary space (i.e., between AL and Statistics) in which students would be able to acquire and apply the competencies needed for successful communication within their chosen field of study.

3.2 Developing a collaborative model

While recognising the benefits of collaboration, the AL team at this tertiary institution needed to develop a model that they would be able to implement within the particular limitations that they faced. Availability of manpower and timetable constraints do not allow for the collaborative team being present in every content-based class, as might have been required in many models that use the framework of academic literacies as underpinning. At this institution, there are six AL lecturers in a programme with eleven different content-subject courses. The AL course is taught to sixteen groups of students enrolled for four different academic programmes, of which the natural sciences is one. As Van Dyk and Coetzee-Van Rooy (2012: 21) suggest, it is a question of the "economies of scale" – considering limited resources, decisions must be taken regarding how quality education can still be provided within the limitations of the real-world scenario of the AL intervention.

It was thus apparent that the solution to this situation would have to lie outside a strict adherence to any one of the collaboration models available, and to rather look towards "interventions not satisfying the extreme criteria for collaboration and integration" (Carstens, 2013:121). Indeed, the AL team would have to compromise on what could be achieved instead of limiting themselves to the ideal of what should be done in an academic literacies framework. It was thus in the adjunct model's idea of "mutually coordinated assignments" (Snow & Brinton, 1988: 556) that they saw the possibility of finding a solution to crossing the divide between what students need and what was feasible in the real-world teaching scenario. In following this limited approach, the AL specialists would still be able to work closely with a team of content specialists in a transdisciplinary space, which meant that, in consultations between the partners, the AL lecturers would be able to advise students as to the particular AL requirements of the particular discipline (cf. van Dyk & Coetzee-Van Rooy, 2012) while the content specialist lecturers would take responsibility for content validity.

Of importance, then, was to find content lecturers who understood the benefit of collaboration with the AL lecturers as "both content and language lecturers need to demonstrate … a collective commitment to student success and willingness to change" (Carstens, 2013:123). Jacobs (2010: 236) names "comparable levels of commitment" as one of the factors of successful collaboration (cf. Butler, 2013). Furthermore, a suitable project work assignment was needed on which to collaborate – what Winberg et al. (2013: 101) would refer to as a "potential 'boundary [object]' to facilitate collaboration – a common ground which "encourages 'transgression'… into other disciplinary domains". These objects can "adapt to local needs and constraints of the several parties employing them, yet [are] robust enough to maintain a common identity across sites" (Star & Griesemer 1989: 393).

The AL team started to "actively seek out" (cf. Winberg et al., 2013: 101) a collaboration opportunity by approaching content-subject lecturers from all the other subjects taught in the extended programme in 2013. A connection was made with the Statistics teaching team who was eager to partner with the AL team. As a significant section of the approximately 600 students in the extended programme study Statistics as a subject, this was seen as an ideal course on which to collaborate. For the Statistics and AL lecturers, project work as a specific component of the assessment framework addresses the much desired need to encourage the adoption of a deep approach to learning (Troskie-de Bruin & Otto, 2004; Kreber, 2003) in higher education. According to Kasonga and Corbett (2008: 602),

> [t]he deep learning approach is typically understood as learning characterised by a motivation to seek meaning, understand underlying principles and identify relationships between ideas or concepts (Kreber, 2003). Surface or rote learning [in contrast] is the habit of absorbing information without the intention of processing it mentally.

Guiding students towards deep learning is an objective that both subjects strive towards, thus making them ideal partners in such a collaborative undertaking.

4. Overview of the collaborative assignment

4.1 Preliminary discussions

Extensive discussions were needed to create an integrated project that addressed the outcomes of both the AL and Statistics subjects. The AL course wished to assess the following competencies: structuring assignments based on the conventions of students' content subjects; writing well-structured paragraphs which form a cohesive whole (by using cohesive devices such as discourse markers to structure their argument) within this structure; accessing credible literature within a study field, as well as reading, understanding and reporting on this literature; demonstrating an understanding of

subject content by paraphrasing information effectively; appropriately citing information according to the conventions of content subjects; and typing and producing an assignment that adheres to the format requirements generally expected from their respective subjects. Some competencies, though having been introduced at various points in the semester, were only dealt with in detail in a second semester of the AL course, and were therefore not assessed – these included students' ability to meaningfully integrate visual information into assignments, and to synthesise sources.

The Statistics course, on the other hand, had the following outcomes that they aimed to assess with this project: students' ability to identify, access, formulate and solve real-world problems by being able to meaningfully observe, identify and review literature on such situations; to interpret observations made through implementing proper probability sampling methods and to reach logical conclusions by applying descriptive statistics (including organisation of data into frequency tables and/or cross tabulations, presenting data using bar charts, pie charts, histograms, scatter graphs or box plots and by calculating summary descriptive statistics like means, median, mode, standard deviations, coefficients of variations or five-number-summaries); as well as linking these findings with research from a literature review.

Both subjects had made use of group assignments in the past, firstly because one cross-curriculum outcome of both courses is that students should learn to work in a cooperative environment with other students so as to learn from each other's weaknesses and strengths, and secondly because neither subject could accommodate the marking load of exclusively individual assignments. It was decided to retain this format.

It was also decided to retain the topics that were used previously in the statistics project work assignment (in each class of 50 students, each group of four to five students chose a different topic); however, the requirements of the assignment were altered to accommodate the AL course in that students were required to write coherent paragraphs in all sections, and not simply bulleted lists as are often accepted at first-year level. Furthermore, a basic literature review section (using approximately four sources) was included, and students were required to cite the methodology they used in their project work (using at least two sources), so as to accommodate the need of the AL course for students to show proficiency in research, as well as the related abilities of citing and paraphrasing information appropriately.

In line with the differing requirements, students received separate instructions from the Statistics (Figure 1) and the AL (Figure 2) teams. An agreement was reached as to the division of labour between the two disciplines: the AL team would be responsible for dividing students into groups, providing students with timelines and due dates, and guiding students through the mini literature review and the referencing of sources for the methodology section. They would also facilitate an intermediate peer-review session where groups assessed one another using the AL rubric, and organise oral presentation guidelines for students to present their research to the class using a scientific poster (the guidelines for creating such a poster were also provided by the AL team). Statistics lecturers would be responsible for facilitating the choice of topics by providing detailed

descriptions of the case studies along with populated electronic data, scheduling tutorial time to prepare and formulate proper research questions and describing sampling methods, which would be evaluated and approved by the statistics lecturers. The Statistics team would also guide students through the sampling and data analysis phase of the project, schedule practical time in computer labs for groups to conduct data analysis using Excel software and organise presentation practice time to assist students in refining their efforts.

To further ensure that students saw the interconnection between the AL and Statistics courses, the two subjects decided to coordinate their marking. Both the AL and the Statistics teams marked a copy of the submitted project assignment according to their own rubrics. Each subject then took specific marks from the other subject's rubric: The AL team obtained a content mark from the statistics team, who in turn obtained a mark for the literature review and overall presentation from the AL team. Figure 3 shows which study themes were assessed in the respective rubrics, as well as how the marks were interchanged.

Figure 1: ***Assignment requirements from Statistics***

The following table provides some structural guidelines and the framework for assessment of your project report.

Cover page	Include a descriptive title and clear group details	**10%**
Literature review (research question)	Literature review based on research topic **(evaluated by your academic literacy lecturer)**. Clearly state the research question.	**10%**
Project plan (methodology)	Summary of the research plan. Outline your plan of action from how you are going to sample to the method of analysis.	**20%**
Content	The sampling technique and method of collecting the data. You need to provide evidence of implementing at least one of the probability sampling methods that we have discussed in the theory part of statistics.	**20%**
	Organisation and presentation of data. Decide which presentation(s) will give the most information regarding the dataset.	**30%**
	Describe the data using descriptive measures of centrality and spread for instance.	**10%**
Conclusion	What conclusions can be made? Have the research question been answered?	**10%**
Overall presentation of your project (evaluated by your academic literacy lecturer)		10%

Academic Literacy / Statistics Project

Topic: _____

Your statistics lecturer will finalise your choice of topics next week. You will be required to conduct research on this topic, write a report, and ultimately do an oral presentation on the topic. The report as well as the oral presentation will be assessed by both your academic literacy lecturer as well as your statistics lecturer (you will hand in a copy of the report to both lecturers).

Steps:

- Form a group of four or five students. Your team members must be in your academic literacy class. Create a group name that will be used throughout to identify your group.
- Do research on the topic that you were given. Research should include sources that define and explain the methods you will use in this assignment (for example your statistics prescribed book as well as recommended books) as well as sources that give some more information about national and international trends in the topic you have been given. You must have a minimum of six sources.
- Write a report of approximately 1 200 words on the topic you were given. Your report can contain the following numbered headings. However, alternative headings may be given after you have consulted with your statistics lecturer.

  1. Research Question
  2. Literature Review
  3. Project Plan / Methodology
  4. Results
  5. Conclusion
  6. Bibliography
  7. Appendices

- Add visual representations (graphs or tables) to illustrate your main conclusions. Any additional graphs or primary data may be added as appendices.
- You may not plagiarise other works. Write down important information in your own words. Synthesise references. You must give accurate references (there will be a class on how to do referencing). In the meantime write down all the information you can about the sources (for example books and Internet articles), and also write down the pages you have used for your information (in the case of a hard-copy source).

- Submit your completed report to Turnitin.
- Prepare a 4-minute oral presentation in which your group briefly discusses the research question, methodology, results and conclusions. An A2 poster must accompany your oral presentation. More information about this presentation will be given in class.
- In your assignment include:
    - a cover page (available in your study guide and on ClickUP)
    - appropriate in-text referencing (assignments where this is not done correctly will get zero due to plagiarism)
    - a logical structure – please use headings to organise your work.
    - a bibliography (list of references) on a separate page at the back (note that only credible Internet sources may be used; therefore, Wikipedia, Answers.com etc. may not be used).

Check list:

- Did you remember to add your personal details, like your names, student numbers and team name?
- Did you pay careful attention to grammar, punctuation and spelling?
- Did you use the same font and spacing throughout the document?
- Did you make use of at least six credible sources?
- Is your bibliography correct and in alphabetical order?
- Did you include appropriate visual elements, with appropriate caption and referencing information?
- Does your written assignment conform to the prescribed format, such as word count etc.?
- Does the content of your written assignment provide the information required?
- Did you remember to re-read your written assignment for any mistakes?

Figure 2: ***Assignment requirements from the AL course***

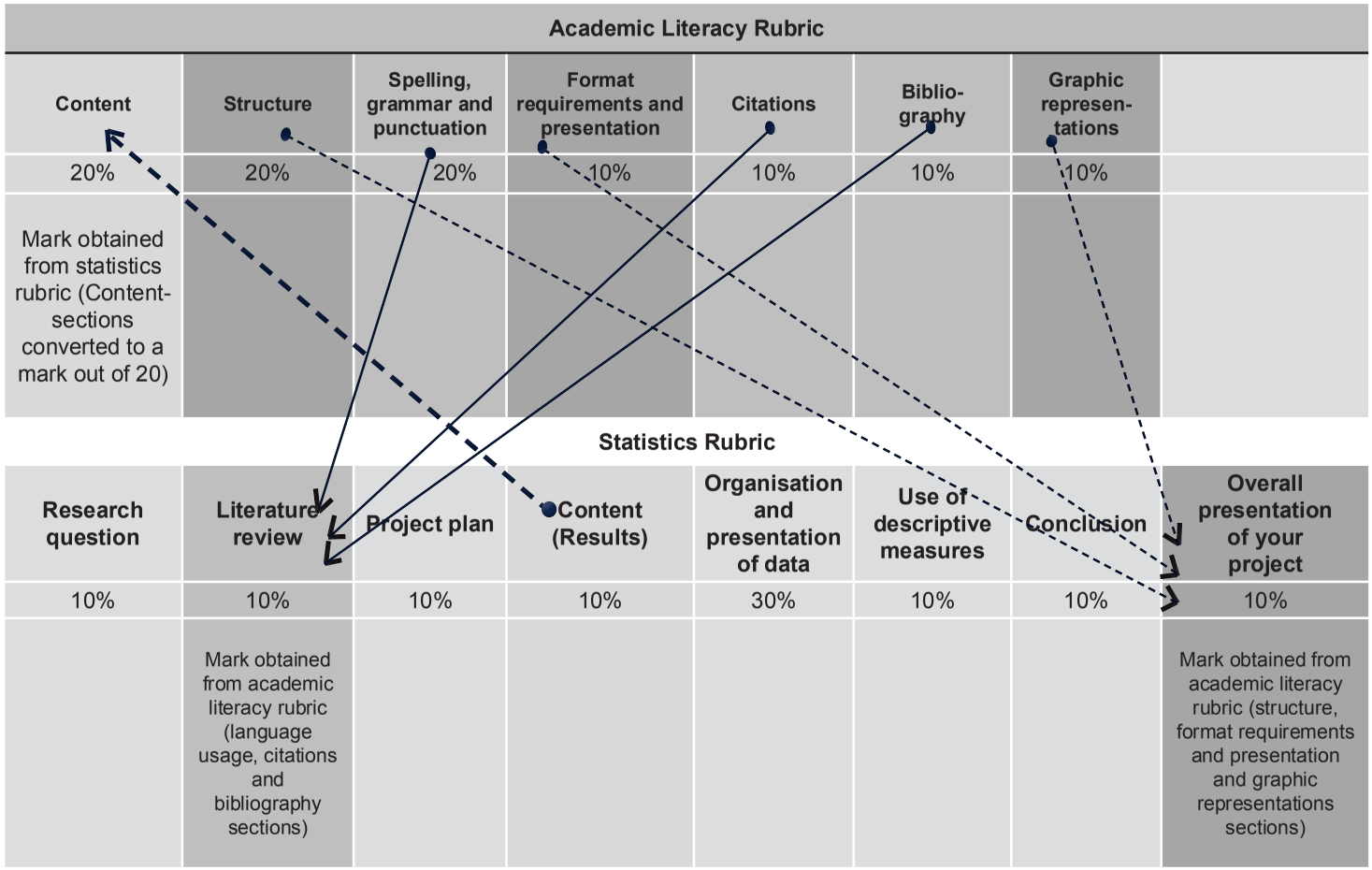

Figure 3: Rubrics for Statistics and the AL course showing how marks were exchanged

4.2 Implementation

The timeline for the project, which stretched over 12 weeks (excluding two weeks' recess), is given in Figure 4. The timeline was negotiated between the AL and statistics lecturers so that the various steps would fit into each subject's curriculum without causing undue disruptions for either subject. At the same time, students' full timetables were considered and various steps were spaced out to ensure that students would be able to spend an adequate amount of time on each step.

	Academic literacy	Statistics
Week 1	The academic literacy team divides students into groups, and sends through group details (names and student numbers) to statistics.	
Week 2		Statistics provides students with topics.
Weeks 3-4		Statistics assesses the research questions and motivation for the research project as well as sampling methods to be used.
Weeks 5-6	The academic literacy and statistics teams continuously remind students about how far they should be in the research process, and in writing the first draft.	
Week 7	The academic literacy team facilitates a peer-review session where groups assess one another's project work assignments in class using the academic literacy rubric.	
Week 8		In the statistics tutorial as well as the practical session, time is devoted to finalization of project work.
Week 9	Each group submits a copy of its assignment to both the academic literacy and statistics teams.	
Week 10	Both the academic literacy and statistics teams hand back marked assignments. Students work on the feedback provided by statistics in preparation for the oral presentations	
Week 11		Students assess each other's posters in the statistics class and engage in subject content feedback and discussions.
Week 12	Students present their revised work orally with the aid of a scientific poster. The presentation is assessed by both the academic literacy and statistics teams.	
	In both the academic literacy and the statistics classes, students assess each group member's contribution to the assignment	

Figure 4: ***Timeline for the project for the Statistics and AL courses showing separate and joint class activities***

5. Methodology

Interpretivism is used as a methodological paradigm for this study. “An interpretivist view of the world allows for subjective values, where individuals are understood to form their own reality of the world in different contexts through interactions with others” (Khan, 2014: 299). According to McKenna (2004: 34), “research in the interpretive paradigm seeks to extend human understanding thereof such that we can exist harmoniously within it”. It is this human understanding which is the focus of this section. The understanding of two key sets of stakeholders in this project, namely that of the students, and that of the lecturers involved, was sought.

5.1 Stakeholder 1: The students

Students’ perceptions of the collaborative project were obtained by means of open-ended questions in questionnaires. A total of 271 students completed the questionnaires. Questions centred around what they believed they gained from the project, what they liked (or disliked) about the project, and how they thought the project could be improved. Student responses were analysed thematically, and are discussed under the following broad themes: (1) The collaboration; (2) Learning experiences; and (3) Group work.

5.1.1 The collaboration

Students’ perceptions of the collaborative effort by the two departments included views indicative of improved understanding of either or both Statistics and AL because of the real-world application – thus, the collaboration would seem to facilitate transfer of competencies between the two subjects. As one student indicated, “The integrated assignment was a great initiative by the relative departments as it taught us to use some of the skills learned in another module, especially ones learned in [AL] in terms of presenting our subsequent assignment[s]”. Other comments included: “Statistics taught us how to calculate and represent data in diagrams and [AL] helped us interpret the data into words to give it meaning and make it have sense to people that don’t do statistics” and “[AL] helped us present our data and results in a manner that is clear and concise. Without [AL] we would not be able to produce analytical work that is readable and of use to any of our peers”.

Positive experiences specifically commented on included expressions of improved communication between the respective modules as the project proceeded and understanding how to apply what was taught in the respective classes due to committed efforts by the respective lecturers. Negative views of the collaboration centred around experiencing instructions as not always being clear, lack of communication between Statistics and AL in terms of conflicting feedback from the different modules at times and different expectations from the different modules that led to underperformance. More than half of students commented on problems regarding submissions and

making deadlines. Some students even felt that the project should not be collaborative, which perhaps indicates a misunderstanding of the aim of the project, and a need for making this clearer from the start. Another frequent suggestion was that regular feedback should be given by lecturers. These recommendations seem to be supported by lecturer feedback, as discussed in Section 5.2.

5.1.2 Learning experiences

Students were aware of improved understanding of AL abilities after having completed the project, as indicated by this quotation: "The collaboration was for me a good idea. It taught me to also focus on the language side of any assignment. We treated the project as serious as any other project work, but with more effort put in. We were able to apply the LST conventions we had learned as well as not missing the whole point of the project." More than a third of students specifically indicated that they had gained an improved understanding of referencing, as indicated by statements such as this: "referencing in terms of the Harvard reference system taught in [AL] help with bibliographies and how all projects must be referenced in future", again indicating that students are aware of the importance of transfer of competencies to their future studies. Other abilities that students frequently mentioned as having improved are academic writing skills, the use of cohesive devices such as discourse markers, paragraph and sentence structure, and grammar skills such as punctuation. Almost a fifth of students noted that they had a greater understanding of the genre of the formal report, of which the significance had become clearer because of the transdisciplinary real-world application of the project. As this student says,

> next year [the] majority of the people in the mathematics group wish to branch into actuarial science or statistics and with such projects being done, these candidates are able to present their work professionally and according to the required standard. The advantage is that we learn how to merge mathematics with English.

Learning experiences reported with respect to Statistics involve mastering of module specific content – more than a quarter of students specified that this was because of having to write about the application of concepts. Students also frequently commented on the fact that they had learned to better employ Microsoft Excel for Statistical application. Communication problems and unclear instructions were however reported as impacting negatively on learning experiences as well. Students generally acknowledged the task as challenging and initially difficult to understand; however, they did comment on "improving understanding at a later stage" as they learnt to communicate more effectively, improve their time management and, most importantly (as commented on by more than three quarters of the students), consult their team members, including both peers and their respective lecturers.

The benefit that the collaborative project work had is possibly best encapsulated by this student comment:

> ...we could make use of the concepts that we learned from both departments and built them both socially and professionally. We also experience a real-life scenario that was organized from the two departments in which we had to make studies and write a well-organized, structured report. So I believe that from that our confidence grew and maturity as well.

These observations are aligned with experiences reflected on by the lecturing staff discussed in Section 5.2.

5.1.3 Group work

With regards to group work, students specifically commented on their experiences of producing a good end product, participating in the oral presentation and being part of a well-functioning team. In fact, it would seem that the dynamic within teams was generally a specific indicator of a student's satisfaction with the final product and enjoyment of the project.

Positive experiences of group work included learning from group members (with almost half of all students commenting on this), equal contributions by group members (possibly facilitated by an evaluation that was built into the project work where students had to evaluate each other's participation – marks were worked out accordingly) and understanding each other well. Good teamwork seems to have been the main reason for positive experiences of the oral presentations. Student comments included: "I got time to meet new people and they helped me know more about myself and what I can do to be even better", and that "it was a learning curve for me both academically and mentally. Because I met new people and I had to open up to them and trust them". The concept of effective learning through bonding with group members is echoed in this comment: "The most enjoyable part for me was toward the end when most of us pulled together as a group and worked hard and productively, as that was what I wanted from the start. That part was fun, amusing and enjoyable and for me it created bonds with group members".

In direct contrast, the primary source of negativity (with slightly less than a third of students commenting on this) seems to have been poorly functioning teams which resulted in a poor experience of all aspects of the project, as indicated by comments such as this: "There was no part I enjoyed in this project, because non-participation of group members puts pressure on the members who participate to do their tasks" and "The least enjoyable part was dealing with the group conflicts and politics". Aspects indicated were group members not contributing equally, logistical problems, and personal conflicts in groups. Many suggestions were directed at team formation: larger groups would be preferable, or smaller groups would be preferable; it should be an individual assignment; and lectures should form teams (as opposed to students choosing their own team members) and dictate small-group meeting times.

5.2 Stakeholder 2: The lecturers

All six lecturers (three AL and three Statistics lecturers) who were involved for the duration of the project discussed in this study were asked to provide a written critical self-reflection on the project, its successes and its challenges. The six reflections were subsequently qualitatively analysed. Responses were coded and common themes were extrapolated. Lecturers' responses are discussed under five broad themes: 1) Reflections on why a collaborative assignment became necessary; 2) Challenges at the beginning of the collaboration; 3) Solutions to these challenges; 4) Ultimate advantages; and 5) Remaining challenges.

5.2.1 Reflections on why a collaborative assignment became necessary

The first theme that emerged from lecturers' self-reflections was why the collaborative assignment was deemed necessary in the first place. Several lecturers reflected on the various challenges that students in the extended programme face, for example "very full time-tables, feelings of possibly being over-assessed and logistical challenges in terms of meeting in teams" for different subjects' assignments and being "overwhelmed" by all of this. One lecturer indicated that it was the responsibility of lecturers to assist students with these challenges, and that one way of doing this was to reduce their workload by combining assignments, while still assessing all the required outcomes of both modules. This lecturer also felt that this solution assisted with the "manpower restrictions amidst growing student numbers", as co-marking assignments reduced the workload slightly.

One AL lecturer said that the student body in the extended programme had changed over the years, and that the programme itself had changed from one focused on remediation to a programme with a more diverse student body. According to this lecturer:

> It soon became apparent that the original course was no longer suited to this changing student body. The [assignment that had been done in the past], in particular, was found to focus on general academic abilities and not on what was deemed necessary for subject-specific application. The assignment was therefore seen by students as irrelevant to their studies, and the academic literacy course pointless.

Another AL lecturer noted that students were simply not "motivated to engage in the [previous AL-only] assignment".

From the perspective of Statistics lecturers, the main theme that came through was that before the collaborative assignment, students had difficulty communicating their statistical knowledge. As one Statistics lecturer states:

Before the collaboration I got the impression that the students had trouble communicating their statistical findings to an audience or in a way that demonstrated an understanding

of the work or methods employed. The reports compiled by students consisted mostly of equations and data output with very unsatisfactory or vague explanations. The literature reviews … seemed to be disconnected from the students' main and secondary research questions.

This was echoed by other Statistics lecturers, who felt that in the past, "the quality of the submitted reports presented [a] challenge as students struggled to articulate their results", and that "the lack of knowledge transfer increased our workload when assessing written reports".

5.2.2 Challenges at the beginning of the collaboration

The greatest challenge that was experienced at the beginning of the collaboration would seem to be communication, both "between [AL and Statistics] lecturers as well as lecturers and students". One lecturer said that "course coordinators of the two subjects used to meet fairly regularly, and would then communicate information to their respective staff members. However, there were often misunderstandings in this process, resulting in anxiety on the part of lecturers and, consequently, students". This was echoed by several other lecturers. These challenges in communication influenced the students as well. As one lecturer noted, "students often played lecturers off against each other, insisting that either they had not received necessary information in the other subjects' class, or misrepresenting such information (for example, that of due dates)". The lecturer added that "students still did not see the two subjects as forming a single team for this particular assignment, and thus tried to get away with a lot". Another lecturer commented that "student feedback indicated that the coordination of tasks between the two departments confused them. Clearly, the collaboration effort needed refinement". This experience is indeed echoed by student feedback, as indicated in Section 5.1.

Another challenge experienced by lecturers was the planning of the assignment. "The initial planning for the combination of this assignment was very work intensive. Both subjects spent quite a bit of their in-class time on the assignments" – this was particularly a challenge because both subjects already had very full curricula. In addition, "working out an initial work plan to ensure that both subjects discussed the appropriate aspects of the assignment at the appropriate times was much more difficult than anticipated".

In addition, "on the part of [AL], lecturers … became anxious because they suddenly had to present an assignment on a topic that they, quite frankly, did not understand. Although this would have been the ideal, it is not realistic to expect that academic literacy experts should be experts in statistics". Not being a specialist in science-related subjects can indeed be intimidating, and might be a reason why many AL courses shy away from real-life, discipline-specific assignments.

Two additional challenges that lecturers believed students initially experienced were highlighted. Firstly, one lecturer stated that students "did not understand why there had to be a clear, structured, detailed report of the process they had followed in [the

Statistics module]. Students needed much guidance on exactly what should be done". Interestingly, students themselves did not pick up on this challenge significantly (see Section 5.1), possibly indicating that lecturers managed to provide sufficient guidance. Furthermore, students struggled working effectively in teams, which regularly led to frustration on behalf of students, and "often [had] a negative effect on students' learning". This is supported by student feedback in Section 5.1.3.

5.2.3 Solutions to these challenges

This section reports on ways in which aforementioned challenges have been dealt with and implemented in the 2016 round of project work. It should be noted that student comments only reflect feedback from earlier years. As mentioned in the previous section, communication between lecturers, and between lecturers and students, was possibly the greatest challenge experienced in this collaborative project. It seems participating lecturers feel that this has been largely addressed in subsequent rounds of the project, for example by including everyone in meetings. This is a theme picked up in most lecturers' self-reflections, but possible best encapsulated by this comment:

> Meetings now include all lecturers, and not just course-coordinators, to try to ensure that information is clear to everyone, and to attempt to clarify misunderstandings there and then. Finding meeting times that suit everyone is often near to impossible. The effort, however, is worthwhile, as this certainly does assist in reducing misunderstandings of the process and anxiety amongst lecturers.

The gap in communication between lecturers and students seems to have been addressed by presenting a more "united front" to the students. "Joint sessions between the two departments and the students" have been implemented, so that everyone "can be on the same page". This is echoed by another lecturer, who commented that:

> The assignment is also now introduced during one class by both [AL] and Statistics lecturers, so that students from the beginning understand that the two subjects form a unified team. The roles of the various subjects' lecturers is explained at this point as well. Students seeing us as a team has significantly reduced miscommunications between students and lecturers.

As far as challenges concerning planning the project work was concerned, several themes came to the fore. Firstly, "we embarked on a more scaffolded approach to project work during the second semester of 2015". Secondly, "a complete and formal project guide and supplementary handouts" were also compiled in 2015, to assist students in a scaffolded and transparent approach to the project work. Another lecturer felt that "through our reflective practice, as well as efforts to refine the [collaboration], project work assessment has evolved into a more structured, phased process in 2015, which was successfully adapted and further refined for the 2016 implementation". Though it cost a lot of initial time in planning and implementing, this "complete printed project work guide" has provided students with "detailed guidance … regarding procedures

and assessment criteria", as well as clearly emphasising cross-critical outcomes. Furthermore, "[t]he quality of project work has reached new standards more recently and anecdotal evidence from student feedback seems to support this". The project plan and lecturers' respective schedules have been refined over the past three years, and lecturers "stick to these religiously; the process is now run with military precision, which often puts quite a bit of pressure on both lecturers and students, but this has been the only way to ensure that the process runs smoothly". This initial planning has resulted in fewer misunderstandings, and more effective project work later on. However, a lecturer notes, "[t]here are still some chronological problems at times, but this process certainly works better at the moment than it did in the past".

The challenge of students working in teams has been addressed by requesting the help of "student support experts on campus", who now present "a workshop on group work … at the beginning of the year". This has, according to another lecturer, assisted "in addressing these teamwork and communication skill problems" – an observation supported by the mainly positive experiences that students expressed about group work in Section 5.1.3.

5.2.4 Ultimate advantages

All lecturers who completed the critical self-evaluations agreed that the ultimate advantages of the collaborative project overshadowed all the challenges that were faced in the process.

Firstly, an AL lecturer noted that "despite the challenges, the collaboration assignment provided students with a glimpse of the role of [academic literacy] in their academic journey". This was echoed by another AL lecturer who indicated that "the collaboration assignment is a valuable task and emphasises the necessity of students being academically literate for success in their other modules". Collaborating with a content-subject would also seem to "validate the academic literacy course", since "Statistics is regarded as an important subject by the students and a Statistics assignment [is seen] as an opportunity to bolster their marks. They therefore apply themselves to the assignment". This lecturer adds: "the application of academic reading, writing and research abilities to produce a competent final product shows the relevance of the academic literacy course". As a result, students "become aware of the importance of applying what was taught in the course to their other subjects in order to present their work in a professional manner and to obtain good marks". This concept of transfer is supported by student feedback in Section 5.1.1.

Similarly, Statistics lecturers felt that "students wrote more clearly and communicated better in their project than they had previously. Since Statistics is an applied science by nature, collaborating between the two fields gives students the opportunity to experience the value of what they are taught at university". Another Statistics lecturer agreed: "we observed a definite improvement in the holistic quality of the final reports compared with previous years" with the "integration of skills with content [becoming]

much more explicit" and "[s]tudents' ability to articulate their results in written report format [improving] significantly" (also see Section 5.1.2 for similar student experiences). One Statistics lecturer reflected that the Statistics team "became increasingly surprised by the standing value that the literature review [which was added to the project so that it also addressed the AL subject's outcome requirements] (and other practical aspects) added to students' abilities to defend and justify their inferential results, as well as the links made between theory, practice and real life". The lecturer further indicated that these advantages seemed to "roll over from the collaboration of the first semester" to an "independent second semester assignment". The lecturer added that "the higher-order thinking and developmental skills that students are able to develop during enquiry-based activities will assist in critical thinking skills that are transferable to other subjects and their mainstream encounters". The concept of transference of AL abilities due to the collaboration with a content-subject (and the validity this subject brings) thus seems to be the main advantage of this collaborative assignment.

Of course, the collaboration occurred not only between subjects, but also in the small groups who had to work together effectively across the two subjects. A Statistics lecturer reflected that "the collaboration created structured opportunities for learners out of the Statistics class". Further, students had to "develop skills to work collaboratively and cooperatively as part of a multidisciplinary team by attempting to organise and manage themselves and the activity responsibly and effectively". Students had to "overcome 'work'-related challenges, such as group dynamics, devise ways to improve their own performance and take responsibility for decisions" – student feedback regarding group work (Section 5.1.3) strongly reflect these observations. As one lecturer notes:

> The collaborative task itself requires learners to consider (respect and nurture) diversity - be it due to synchronising achievement of outcomes for two different modules. Trust needs to be built with and among peers across two different contexts (departments). Acquiring ease of sharing ideas with one another around language and science contexts simultaneously challenges core skill development as well as group dynamics on another level. In deciding about a topic and formulating a proposal as a prominent shared phase of the project, the development of cross curricular critical thinking is truly addressed.

Lecturers also observed further benefits to students. These include students communicating "effectively using visual, mathematical and language skills" in both oral presentations and written reports, a "more professional oral presentation style", and "quality of project work [reaching] new standards". Another lecturer felt that the project built students' "confidence and self-efficacy", as well as their time management skills. In addition, "true authentic learning, … as we observe with our students, takes place".

The collaboration also held advantages for lecturers. It "split the load of teachers in the sense that attention could be narrowed to more discipline-specific aspects of the task". A statistics lecturer indicated that certain parts of the project assignment (literature review, structure and layout etc.) are now assessed exclusively by the AL department, not only for language proficiency, but also for relevance to the actual study". This

worked towards alleviating the possible anxiety of lecturers, as they were not required to assess aspects in which they did not specialise, whilst retaining the advantages of authentic learning.

5.2.5 Remaining challenges

Despite the clear advantages of the project, several challenges remain for which we continue to look for answers.

One lecturer felt that the project was very ambitious this early in students' academic careers, that "we need to consider that some of the goals may not be easily achieved without prior instruction and explanation", for which little additional class time is available. Another lecturer added that "[i]t is unfortunately quite often necessary to rush the introduction of key concepts during lectures due to project work requirements". Yet another lecturer commented that "far more input is … required of the lecturers as the work is more intensive". These lecturers believed that clearer goals should be set regarding what both subjects wished to achieve from the project and that the curriculum might have to be adapted so as to allocate additional class time for the assignment.

Moreover, "there are persistent indications that the coordination of tasks between the two departments confuse students, despite efforts by Statistics to compile a complete and formal project guide together with supplementary handouts as required". Thus, more work could potentially be done towards "synchronisation of a feasible collaborative time frame", using a more "integrated … project guide, perhaps in timeline format, indicating more clearly to students the what, when and where of project requirements".

A major theme that came across under the challenges of the collaborative work is that it is "time consuming and manpower intensive in nature". "In an environment filled with operational challenges, the implementation of project work is experienced as a daunting exercise". One lecturer felt that the "[c]onstant communication between the two collaborating courses" that is required "not to 'drop the ball' … at times leads to strained relationships amongst lecturers". Another lecturer concurs that the "process is … far more stressful than the previous assignment". "Skilled teamwork is … a requirement as the task is too immense for a single lecturer", but this teamwork in itself can evidently cause strain on lecturers.

Additional challenges for students include "very full time tables … and logistical challenges in terms of meeting in teams". Further, despite measures being in place to account for students' individual contribution to the project, doing so effectively "remains a challenge. In this regard the collaboration perhaps still needs refinement and/or alignment of mark allocation procedures". Another challenge is that students do not always "implement feedback given during [the] statistics session [where students prepare for the oral presentation]" to the oral presentations that occur during the AL timeslots. Some challenges regarding transfer therefore remain.

6. Discussion

Lecturers' reflections on why a collaborative assignment became necessary (Section 5.2.1) echo the argument of proponents of an academic literacies framework – academic literacy cannot be seen as a discrete, compartmentalised subject with a set of skills that students will automatically transfer to a wide variety of contexts (see Barkas, 2011; Hosking, Mhlauli & Berhe, 2008; Wingate, 2006), each with different Discourses (cf. Gee, 2008) and expectations (Leibowitz, 2001; Taylor, et al., 1988). At the same time, it is not always realistic to implement theoretically ideal solutions (as suggested by, for example, Wingate, 2006) to real-world scenarios. This should not, however, deter the AL practitioner from exploring ways in which the competencies focused on in the AL class can be integrated with the discourses of various subjects. Incorporating a collaborative assignment in an AL course, potentially even an otherwise generic AL course, could assist in remedying one of the main criticisms against generic AL courses, namely that AL abilities are not necessarily transferred to students' mainstream subjects (cf. Butler, 2013: 82). As can be seen in Section 5.1.1, student feedback seems to indicate that the collaboration does, indeed, facilitate conscious transfer. As one student notes, "It was good to see that the subjects that we [are] doing connect in every way".

It is encouraging that most of the student respondents felt that the collaboration between Statistics and AL enabled them to apply the theory learnt in those modules; as one student notes, "I believe the collaboration of these two departments had a positive influence on our project work as through the use of newly learnt skills from AL…, we were able to present a product which met worldwide academic standards.". However, it is problematic that many of them felt that instructions were not clear and that information received from both sides was conflicting. It is interesting that some of the challenges indicated by the lecturers (Section 5.2), namely that students did not always understand the need for the collaboration, and furthermore did not see the point of a written report for a Statistics assignment, did not feature in any significant degree in students' responses (Section 5.1). However, as has been seen, teamwork did indeed have a major influence on the attitude of students towards the project.

One theme that has come across very strongly is that it is not sufficient to simply implement a collaborative assignment. This might create a situation where the collaborative partners still act as separate entities, trying to delineate responsibilities to such an extent that no one is sure who is responsible for what (cf. Barkas, 2011), causing frustrations for both lecturers and students. As one of the lecturers in this project noted, "[s]killed teamwork is therefore a requirement". Indeed, the main factors that have led to the success of the collaboration thus far have been a willingness of all partners to participate in the project, and regular communication between collaborators. This is in line with Butler's (2013: 82) statement that "the quality of the working relationship between academics from different disciplines" is integral to the success of such interventions. This will hopefully result in students seeing a unified front from the participating disciplines which will truly result in an effective transdisciplinary space. The fact that Statistics lecturers experienced a second semester project (which was not done in collaboration with the AL subject) as still showing evidence of improved and transferred academic literacy competencies

would imply that an effective transdisciplinary space has indeed been created with this collaboration.

7. Conclusion and further research

This article has described the collaborative effort between a formal science discipline, in this case a Statistics course, as well as an AL course, to create a transdisciplinary space in a real-world scenario, with all of the challenges that accompany this reality. The collaborative effort was aimed at increasing disciplinary transfer between the two subjects and to ultimately improve the quality of students' work. By empirically analysing student feedback as well as lecturers' critical self-reflections, the challenges and successes from the perspectives of these two stakeholders are reported on. This type of detailed critical self-reflection is rare in the literature (see, for example, Butler [2013:83]), and it is hoped that it will assist other practitioners in the field with designing similar collaborative projects. Furthermore, we believe that other researchers could learn from the challenges we faced and the steps that we took to overcome these challenges.

The collaborators had set out to find a feasible collaborative model for our particular circumstances that would assist us in adhering to the principles of an academic literacies framework whilst taking into account the structural limitations of our specific institution that prevent the type of wholly integrated teaching that is strived for within the academic literacies framework. Based on the feedback from primary stakeholders, namely students and lecturers, we believe that the research question has been answered affirmatively: this type of collaboration can indeed be successfully implemented in a real-wold scenario in order to facilitate the transfer of AL abilities to students' content subjects. Experiences from both students and lecturers reported on in this article have confirmed our commitment to and belief in the value of collaboration for authentic AL teaching.

We consider ongoing research to be of great importance in furthering the discussion on the subject of practical collaboration in higher education. Alternative methods of collaboration, and their success (or lack thereof) need to be reported on to a greater extent for the benefit of other practitioners in this field. Specifically, the performance of students, students' perceptions, and possibly even a staff-cost-benefit analysis could be considered for future research.

To conclude, despite the challenges experienced in the past and present, we believe the integration of this collaborative project to have added value to both of our subjects. This is best expressed by a final quotation from one of the participating lecturers, which echoes the need to guide students in mastering the Discourse(s) (cf. Gee, 2008) of the institution in which students wish to succeed:

> Our passion is directed not only to the activity of teaching but also to its outcome: to allow students the opportunity to make their own way through the process of learning in terms of an early introduction to the research-intensive reality of modern university studies.

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