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2016-17 Pilot project
supporting the international
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**Supporting the academic and
cultural challenges facing
international students studying
biosciences
Queens University Belfast**



Supporting the academic and cultural challenges facing international students studying the biosciences

Queens University Belfast

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1. Introduction: beginning of a journey

When international students start their degrees in UK universities, they find themselves learning not only new ideas, but also new ways to discuss these ideas. They are asked to write assignments or give class presentations in English, which in most cases is their second (or third) language, and they need to learn how to complete these tasks in a short period of time. These are considerable challenges to overcome.

In the Faculty of Medicine, Health and Life Science (FMHLS), Queen's University Belfast (QUB), the impact of these challenges has become more and more apparent as numbers of international students increase. In recent years the number of undergraduate and postgraduate international students in biomedicine has grown significantly – at present over 70 postgraduate students come from overseas – and it is expected to do so in the future. Yet the increase of international students also puts new demands on the faculty in different areas, including academic development.

2. Project aims

The aims of the present project were twofold: first, to support FMHLS international students with academic discourse; and second, to learn more about the challenges faced by this cohort of students in their academic learning. Importantly, the project was not a 'proof-reading service'. It went beyond grammar by approaching texts (both written and spoken) as culturally-based constructs which can only be learned by instruction and practice (Cook, 1989; Paltridge, 2006; Juez, 2009).

3. Motivation for project

Academic staff at FMHLS had long ago detected the difficulties experienced by international students with academic discourse. Yet no research had been carried out at faculty level to understand these challenges, and very little was known about best practices in this area.

This lack of knowledge became apparent in a pilot project funded by the Queen's Annual Fund (awarded to a number of small-scale projects that benefit QUB students, campus and community) and implemented in the academic year 2015-16 at the Centre for Biomedical Science Education, QUB. The project, which consisted of a series of workshops with students and academic staff, showed that international students may arrive to FMHLS with high IELTS scores, or may receive extensive pre-sessional training (eg, INTO courses), but may still struggle with biomedical academic discourse. The findings of the pilot project made it clear that further investigation was required.

4. Key outcomes

The present project revealed insightful information about the difficulties of FMHLS international students with academic discourse. In brief, the project showed that:

- The main challenges for international students are related to a) comprehension of coursework guidelines, b) comprehension of scientific articles, c) academic writing, and d) critical approach to literature.
- Written coursework guidelines were not always clearly developed. This negatively impacts on the understanding and completion of academic tasks.
- Postgraduate (international) students would benefit from a faculty service specialised in academic learning.

- In terms of academic learning, engagement with international students can be a challenge.

5. Background information: beyond grammar

Many international students come from academic traditions which differ significantly from the Western tradition of "constructing knowledge" (Canagarajah, 2014). As research in applied linguistics has demonstrated (Blue, 2011; Liyanage and Walker, 2014), differences between academic traditions may cause tensions in the way in which scholars and students from different backgrounds conceptualise texts and discuss academic matters.

International students are particularly vulnerable to these differences. Having spent most of their academic lives approaching texts in a particular manner, once enrolled on programmes in UK universities they need to master new ways of, for instance, reading a scientific article or writing about a technical subject (Braine, 2002; Bitchener and Basturkmen, 2006; Seviour, 2015; O'Boyle, 2015). Use of sources (eg, quotes, paraphrasing) and so-called 'critical thinking' are two well-known examples of how differences between traditions may cause confusion among international students in English-speaking universities (Skyrme, 2010; Hirvela and Du, 2013; Cumming et al. 2016).

In addition, training for the new academic environment is not always adequate. In many cases the preparation of international students concentrates on English proficiency exams (eg, IELTS) and the scores required by universities. Although most exams claim that they are academic-oriented, research clearly indicates that preparation for English proficiency exams has little effect on long-term learning (Cheng, 2008; Hulstijn, 2011). Also, it is unclear to what extent

pre-sessional training courses are effective in preparing international students for their new learning experience as there is a scarcity of research evidence in this area (Terraschke and Wahid, 2001; Storch and Tapper, 2009).

6. Methods and analysis

To meet the project aims, the authors designed two types of activities: first, a student workshop to advise participants on biomedical academic discourse; and, second, a number of data collection activities (including surveys, focus group discussions, interviews, and workshops with academic staff) to complement the information gathered in the workshop.

Importantly, the approach was interdisciplinary as experts from three different areas of knowledge (including biomedicine, linguistics, and education) were involved in the project. First, academic staff from the FMHLS provided all the resources and advice necessary for the project implementation. Second, an expert on second language acquisition from the School of Arts, English and Languages, QUB, ran the workshop and collected supplementary data by means of a focus group and an interview with academic staff. And third, an expert on education from the School of Social Sciences, Education and Social Work, QUB, delivered a workshop addressed to FMHLS academic staff.

6.1 Workshop

As the main activity of the project, the student workshop ran throughout the academic year 2016-17. In September and October 2016 invitations were sent out by email to international students to attend the workshop, which was also publicised by academic staff. Attendance was voluntary and no certificate was awarded at the end of the course. Hence the main incentive for participants was the opportunity to

have personalised support with their coursework. Refreshments were also provided in the first sessions.

The workshop was delivered in a series of sessions and its content was personalised to the needs of the participants. In each session participants were asked to identify areas which they found particularly problematic and the sessions that followed focused on these specific areas. For instance, two sessions were devoted to plagiarism and quotations as these were areas which some participants found especially challenging (see Appendix for a sample of the slides used in these sessions). Other sessions focused on topics such as the structure of assignments, understanding guidelines, and critically reviewing literature. The aim of this format was to design a workshop capable of being tailored to participants' needs.

In Semester One the workshop was delivered on a weekly basis, with one-hour-sessions on Wednesday afternoons, the most convenient day and time for students. Since attendance was at times irregular (see 6.3), the workshop format was amended in Semester Two. The workshop was re-organised as a 'drop-in clinic' (delivered in fortnightly two-hour sessions) in which students could bring their drafts and discuss them with the tutor. Online communication between participants and tutor was also encouraged by advising participants to send drafts to the tutor and receive feedback by email.

6.2 Data collection activities

Initially, the data collection activities included surveys, learner diaries, audio-recorded focus groups with students, and interviews with academic staff. However, the irregular participation of students made it difficult to carry out some of these activities (see 6.3). As a result, complementary data was sought from students and staff. This was gathered

by means of an informal focus group in a workshop session (Semester Two), an interview with a member of the academic staff, and a workshop with academic staff. Hence this data provided additional insight to complement the data obtained in the workshop.

6.3 Challenges

Engaging with international students was the main challenge in the delivery of the project. Despite the authors' efforts to encourage participation, attendance at the workshop was irregular. While the first sessions in Semester One and Semester Two had a good turnout (between five and fifteen students per session), in later sessions up to only three students attended the course. In some cases only one student, or none, attended. In addition, although a number of students contacted the tutor by email to discuss their coursework, only some sent drafts on a regular basis.

Different reasons may account for this irregular participation. First, attendance at the workshop was voluntary and no certificate was awarded. "We are all very busy", a participant told the tutor in an informal conversation about this issue. Second, some students had attended INTO pre-sessional courses and possibly felt that they did not need another 'language course'. Third, some students may have expected a course focused on technical content (ie, biomedicine) rather than on biomedical academic discourse, and dropped out after realising that was not the purpose of the workshop. And fourth, as reported by the interviewed member of academic staff, some students feared that attending the course would have a negative impact on their marks. In the words of a member of academic staff:

"Apparently [some international students] were afraid of approaching teachers for help because they were afraid of how that would impact on their mark [...] And I was thinking: does that

happen back at home? That if you ask a teacher for help, they immediately think of you as weak?"

As a result of these – to some extent unexpected – challenges, some of the original research procedures (particularly the collection of data with surveys, learner diaries, and audio-recorded focus groups) had to be re-examined. Efforts were therefore concentrated on collecting data by means of ‘drop-in sessions’, on-line tutoring and activities with academic staff (interview and workshop). Although collected data was not as abundant and diverse as the authors originally planned, it was sufficient to have an insight into the matter under study, as shown in section 6.4. and has highlighted an unforeseen finding in relation to international student engagement.

6.4 Data analysis

The data consisted of coursework samples produced by students (including coursework drafts and submitted assignments); coursework guidelines facilitated by students; an oral sample (a semi-structured interview with a member of academic staff), and information gathered during the workshop sessions. The following sections summarise the main findings after analysis of these materials.

6.4.1 Coursework guidelines

On a number of occasions student participants reported that the information provided in course handbooks is complete, but they also pointed out that they find it difficult to understand – and follow – some coursework guidelines. “I don’t understand what they are asking me to do”, a student emphasised. A discourse analysis of coursework guidelines facilitated by students shows that information is not always clearly provided, which may cause some misunderstandings. See an example in Sample 1.

01

The essays should have the following format:

1. Abstract, on a separate page. Summarises the subject, findings and conclusions within 300 words (not included in total word count).
2. Introduction and background to expand on the title and ‘set the general scene’.
3. Main body of the text, divide using appropriate sub headings. This should follow a logical sequence and student should argue pros and cons where appropriate.
4. Conclusions, which should include constructive appraisal and where appropriate include future work/perspectives
5. Reference list / Bibliography

Further guidance for preparation of the essay will be provided in week 1 of the module. All text should be word-processed using primarily Arial size 11, printed on single-sided A4 paper and 1 1/2 line spaced. Tables and figures should be incorporated throughout the essay; as with typical journal articles, titles for tables should appear before each table while figure legends are written below respective figures. All pages should be numbered and the total number of words should be stated at the end of the essay (Total 3,000 words, not including abstract, references, figures, tables or appendices).

Students should ensure that their report is factually correct. As these fields are developing rapidly, references should be relevant and up to date.

Students should note that regulations governing plagiarism are dealt with under “Student Conduct” and that it is an academic offence for students to plagiarise. Plagiarism is defined...

Sample 1. Excerpt from coursework guidelines facilitated by participant students

From a discourse perspective, Sample 1 does not completely achieve its communicative function (ie, instructional function) for a number of reasons. For instance, paragraphs are not clearly organised (cf. no space between them); sentences are not carefully proof-read (cf. that ‘Summarises’, l. 2, has no explicit subject); vocabulary choices may cause confusion (cf. ‘constructive appraisal’, l. 7); and instructions (cf. ‘to expand on the title’, l. 4) are not fully developed. Similar issues were detected in other samples.

6.4.2 Academic writing

In general, student participants were familiar with academic conventions, but the collected written samples revealed that in practice students had difficulties in producing appropriate academic texts. In terms of discourse structure, drafts typically needed improvement in coherence and cohesion, text organisation (eg, too

long sentences), and the development of ‘literature review’ and ‘discussion’. In terms of language accuracy, typical areas for improvement included referential devices (eg, pronoun ‘it’), complex syntactic structures (eg, relative pronouns), vocabulary (limited at times), and register adequacy (eg, use of colloquial expressions). A typical example is presented in Sample 2.

Sample 2 shows the abstract from a coursework draft produced by a postgraduate student. In the discussion with the tutor, the student pointed out that she or he was aware of the discourse structure and communicative function of abstracts but she or he found it difficult to apply these ideas to the actual text. In Sample 2 these difficulties become apparent for the repetitiveness of the text (ie, the potential of bioinformatics in biomedical research) and the only reference to the assignment (“essay”)

02

Abstract

With the advanced development of information technology, there is a huge impact on various industries for the arrival of big data. Biomedical Science is also included which has been greatly impacted by computational analysis of large biological datasets. Through the effective management and use of these biomedical scientific data sets, researchers can better carry out biological information data mining research work. The essential purpose of these works is to fundamentally understand the pathogenesis of human diseases, so as to effectively prevent and cure diseases, especially the high mortality of complex diseases. Since increasingly number of important scientific research projects involved in the support of bio-information technology and even become the leading technology project, Bioinformatics technology as computational analysis has become a biomedical research in the frontier area and the source of innovation. Its development will bring great influence and impact on molecular biology, drug research and development, biomedical resources sharing, and make use of biological information technology to standardize disorderly data and provide convenience for follow-up research. Research, and the standardization of data may bring about significant regularity of discovery.

This essay is to discuss the issues faced in biomedical computational analysis and how computational analysis of large biological datasets is transforming Biomedical Science.

Sample 2. Abstract from a coursework draft facilitated by a student participant

in a short, independent paragraph at the end of the abstract (l. 16-17). Sample 2 also exemplifies some of the issues in language accuracy mentioned above, eg, unclear use of pronouns (eg, 'which', l. 1; 'its', l. 11), unnecessarily long and complex sentences (eg, 'Since increasingly...', l. 7-11), and register-inappropriate vocabulary (eg, 'huge', l. 1). All collected samples contained similar issues.

6.4.3 Critical analysis

Student participants frequently asked for advice on the literature review and discussion of their assignments. They pointed out that they could not fully understand the differences between these two sections and their purpose. Sample 3 provides a clear example of these difficulties. The excerpt comes from a draft report (about anatomical variations of the sciatic nerve) produced by a student participant.

Two issues can be noted here. First, the discussion is situated just after the 'introduction' – as number 2 in the heading indicates. This order is quite

unusual as the reader would expect to find the discussion later in the text (eg, after the 'results'), not after the introduction. And second, there is no critical review of the literature on the subject. Instead, the text only describes the sciatic nerve. Only in the last paragraph in the section (here not reproduced) there are some bibliographic references about the most (un)common anatomical variations of the nerve. Similar difficulties were identified in the other collected samples.

6.4.4 Interview data

The interviewed member of academic staff confirmed the issues outlined above regarding academic writing (see 6.4.2, 6.4.3). For illustration, the participant explained that sometimes she or he needs to "sit down" with an international student and teach her/him how to critically summarise a research article:

"I've myself sat down with [this international student] and gone: right, okay, this is how you write an essay, or this is how you start a literature review, giving examples... Comes to me and says: I don't know how to paraphrase, I don't know..."

In addition, the participant put special emphasis on, first, the challenges of reading scientific literature, and second, the lack of resources at faculty level to support postgraduate (international) students. In relation to reading comprehension, the participant reported that some of his or her international students need a considerable amount of time to read scientific articles. For example, commenting on a particular student, the participant told us that '[this international student] loves reading papers, but will spend days on a single paper, trying to get every ounce out of it'. The staff member provided several reasons for these difficulties:

"It's bad enough when English is your first language, and you've maybe done maths all your life and you start to learn about genes, proteins, diseases, and you're doing that in a second language! You've never read a

03

2. Discussion

The sciatic nerve is the longest nerve trunks of the sacral plexus and it is formed on the anterior surface of the periformis muscle, in the pelvic cavity (13). Typically, it started as a common nerve trunk encompassing two components (ventral and dorsal), which bifurcating into its terminal branches at the upper border of the popliteal fosse, the tibial and common peroneal nerve, correspondingly. In the embryological life, two plexuses are formed in the lower limb at the limbs bud base: the lumbar plexus and the sacral plexus.

Sample 3. Discussion from a coursework draft facilitated by a student participant

scientific paper before... That's a lot to expect of those kids"

These observations aligned with opinions expressed by some student participants in the workshop. Student participants pointed out that they find reading research articles particularly challenging (especially because of the abundant terminology and formal language), and that they generally need "several days" to read some articles.

With regard to support resources, the interviewed member of staff believed that international students' difficulties with academic discourse increase due to the absence of a faculty or university service to help postgraduate students (including home and international students) with their academic learning. The present Learning Development Service provided by the University is mainly addressed to undergraduate students (eg, one-to-one consultations are only available for undergraduate students) and it only supports postgraduate students by means of on-line resources. The staff participant insisted:

"It was frustrating, because I noticed there were issues from the start. And I was concerned. But I spent a good month trying to figure out what the resources were in the university [...] Learning Development Service just do undergrad now [...] If you are postgrad taught, where do you go? [...] I think we have a responsibility to them"

"It's frustrating, because I expected resources to be there... and they are not, for them [international students], and I'm annoyed on their behalf"

According to the participant, the absence of a specialised service also implies that academic staff do not know where to redirect (international)

postgraduate students who need support.

7. Key findings

Based on the analysed data, the following are the main project outcomes:

- **Academic discourse:** For some international students at FMHLS academic discourse can be a considerable challenge. The main difficulties identified in this project were: a) comprehension of coursework guidelines, b) comprehension of academic literature, c) academic writing (in terms of discourse conventions and language accuracy), and d) critical approach to scientific literature. These findings are consistent with research in the field (see 5).
- **Coursework guidelines:** Analysed coursework guidelines were not always clearly organised and developed, which can have a negative effect on how (international) students complete their coursework tasks. This finding suggests that further research on the instructional input received by FMHLS students may be necessary.
- **Specialised service at postgraduate level:** FMHLS postgraduate students, including international students, would benefit from a faculty or university service specialised in academic learning. As successfully shown by similar programmes in other universities (cf. the Centre for English Language Education, University of Nottingham), this type of service can a) provide support to international students more efficiently than pro-active, but isolated, initiatives of individual staff members; b) implement a greater variety of strategies to increase engagement with international students (eg, online booking of one-to-one consultations); and c) help academic staff deal with international students who need support with academic learning.

- **Engagement as a challenge:** The difficulties in the delivery of the project's original aims show that engagement with international students can be a challenge. Therefore any future actions regarding academic learning (including academic discourse) will need to pay special attention to strategies to encourage international students' participation.

8. Conclusions: from research to action

The present project has demonstrated that an interdisciplinary approach to academic learning can be particularly effective. The collaboration between experts from different disciplines (including biomedicine, linguistics, and education) has shown to be very productive in order to, first, understand the challenges faced by FMHLS international students in their academic environment, and, second, raise awareness of these difficulties in a wider academic context.

As a result of this collaboration, two actions have already taken place. The first one was the organisation of a workshop addressed to academic staff at the School Education Day, QUB (attended by 200 participants). The workshop, hosted by an expert in education, was aimed at raising awareness of academic literacies and learning about the concerns of academic staff in this area. The expert put special emphasis on the importance of using formal, but not unnecessarily complicated, English when communicating with students from linguistically and culturally diverse backgrounds (see also Linse and van Black 2010). The second action taken was aimed at raising the authors' concerns at faculty and university level to seek the implementation of more effective initiatives (including greater support at postgraduate level) targeted at international students' difficulties with biomedical academic discourse.

Yet the present project has also shown that further research on some specific areas is needed. For instance, what is the role of received input (eg, coursework instructions) in international students' performance? Is input adequate enough for an international audience? Also, how effective is pre-sessional training in the area of biomedicine? How can engagement with international students be improved? Research in these areas will help to better understand the challenges faced by international students with academic discourse and to implement strategies to confront them.

9. Professional practice: 'early diagnostic'

Another project outcome is the importance of raising awareness among students and academic staff. Some international students only become aware of their difficulties with academic discourse when they are assessed for the first time – sometimes with poor results. It is therefore essential that international students are familiar with the resources available and they use them effectively. At the same time academic staff need to be aware of the potential challenges for international students and know how to deal with these students. Academic staff have a key role at, first, promoting academic discourse among students, and, second, identifying students who require support and assisting them as early as possible. As shown by this project, organisation of workshops for academic staff has proved an effective strategy to raise awareness of these issues.

10. Final reflections

The increasing numbers of international students in UK universities, including QUB, is having a great impact on the entire higher education sector. Internationalisation is

providing universities with new and exciting opportunities, but at the same time it also requires that they respond to the needs of students from overseas. International students come from very different cultural and linguistic backgrounds and for many of them adjusting to a new learning environment can be challenging. The project outlined here demonstrates that resources need to be put in place to help international students succeed in their studies.

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13. Appendix

Sample of the PowerPoint slides used in the workshop to discuss one of the problematic topics raised by participants (here unintentional plagiarism)

Edition: plagiarism

Unintentional plagiarism: inappropriate paraphrase

Original text

We do not yet understand all the ways in which brain chemicals are related to emotions and thoughts, but the salient point is that our state of mind has an immediate and direct effect on our state of body.

Plagiarised version

According to Siegel (1986), our mind affects our body quickly and directly, although we do not yet understand every aspect of how brain chemicals relate to emotions and thoughts.

Edition: plagiarism

Changed paragraph structure, source mentioned, but keywords are the same.

Original text

We do not yet understand all the ways in which brain chemicals are related to emotions and thoughts, but the salient point is that our state of mind has an immediate and direct effect on our state of body.

Plagiarised version

According to Siegel (1986), our mind affects our body quickly and directly, although we do not yet understand every aspect of how brain chemicals relate to emotions and thoughts.

Edition: plagiarism

Some tips

- Use your own words
- Use synonyms
- Change the structure of the sentence
- Change the structure of the paragraph
- Change from passive to active, or vice versa
- Use nouns instead of verbs, or vice versa
- Make sure you mention the source
- Use direct quotes in brackets ("blah blah blah") when you use three or more words from the original source.