

# **A scientist in interdisciplinary team-teaching in an English for Research**

## **Publication Purposes classroom: Beyond a “cameo role”**

### **Introduction**

This paper presents an observational case study of how a scientist (pseudonym Philip, the last name in the authorship byline of the present paper) engaged in team-teaching with his language specialist co-teacher (pseudonym Maria, the second name in the authorship byline)<sup>1</sup> in an English for Research Publication Purposes (ERPP) or publication skills development course for research students in agronomy at a Chinese university on a teaching visit. Understanding how a scientist, or more broadly, a content specialist or research supervisor, may engage in teaching ERPP when teaming up with a language specialist, speaks to the long-standing call for interdisciplinary collaboration between language specialists and content teachers in various pedagogical traditions which endorse a discipline-embedded approach to academic literacy development, including EAP (Dudley-Evans & St John, 1998), writing-across-the-curriculum (WAC) and writing-in-the disciplines (WID) (Thaiss & Porter, 2010), and Content and Language Integrated Learning (CLIL) (Lasagabaster, 2018). Despite the long-standing call, however, the desired interdisciplinary collaboration, especially in the form of classroom team-teaching, has remained rare in practice (Deane & O’Neill, 2011; Lasagabaster, 2018). Unsurprisingly, the role of discipline specialists in a classroom setting based on interdisciplinary collaboration is little known. The study we will present in this paper, by illustrating a scenario of language—content classroom partnership and examining a

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<sup>1</sup> The pseudonyms of the two will only be used in the peer review stage.

scientist's role in the team-teaching, will provide a valuable reference for practitioners and administrators who may want to foster interdisciplinary collaboration in their institutional contexts and in particular discipline specialists' active participation in teaching ERPP.

Featuring a case of ERPP teacher—scientist team-teaching in a class setting, the study to be presented in the present paper focuses on what the scientist (Philip) does as a co-teacher by analysing his spoken discourse in teaching. In an interview with the first author, Philip commented, self-effacingly, that his co-teacher, Maria the language specialist, was “really the one who does this stuff”; while he only had a “cameo role, popping up from to time”. Although Philip's analogy might have a point in terms of the amount of speaking time in the classroom (in fact, not quite, as we will show later in the paper), we will aim to demonstrate in this article that his apparent “cameo” appearances added rich dimensions to the team-teaching in the ERPP class.

### **Literature Review**

There has long been recognition among both scientists and language educators of the challenge faced by English as an additional language (EAL) authors in academic writing for scholarly publication and hence the need to provide instructional support to facilitate their publication success (Benfield & Feak, 2006; Benfield & Howard, 2000; Wang & Bakken, 2004). Paradoxically, such instructional support has not been common in tertiary institutions (Burgess & Pallant, 2013), although it is perhaps on a trajectory of growth, as more graduate writing support initiatives, perhaps increasingly with a writing for publication focus, emerge (Simpson, Caplan, Cox, & Phillips, 2016), and the need for

implementing intervention to boost publication rates among academics also continues to rise (Burgess & Pallant, 2013).

Installation of publication training workshops at a medical research centre at The University of Texas, U.S. seems one of the better known examples of an ERPP initiative (Cameron et al., 2009; Cameron, Chang, & Pagel, 2011). Yet the potential scientist—language specialist collaboration and the two parties' respective roles in the set-up are not clear from the reports. Reporting on some early iterations of the workshops, Cameron et al. (2009) noted that “Teams of two or three experienced biomedical editors lead the workshops” and “a faculty member leads the discussion on the peer review process” (p. 508). This seemed to suggest a collaborative scenario, involving scientists (“biomedical editors”) and an educational specialist (“a faculty member”, presumably Cameron herself). Reporting on later versions of the workshops, Cameron et al. (2011) indicated a stronger role for the educational specialist, in commenting that the “feasibility” of such a training programme “depends on the availability of an instructor who is not only experienced in English as a second language (ESL) teaching methodology but also comfortable with scientific discourse” (p. 77).

Echoing Cameron et al.'s (2011) report, the literature shows evidence of language specialists being the main instructors of programmes designed to develop L2 scientist authors' publication skills (Bazerman, Keranen & Encinas, 2012; Hanauer & Englander, 2013), or courses aimed at enhancing graduate students' scholarly writing or publication success (e.g., Flowerdew & Wang, 2016; Simpson et al., 2016). Huang (2017a) introduced an exception, by showing how two subject specialists at a Taiwanese university teach an English research writing course in their disciplines (maritime science

and ocean science respectively) in contrastive ways, with one adopting a generic skill approach to writing and the other subscribing to a more discipline-specific approach. In the wider literature, research has illustrated content teachers' incidental language teaching in tertiary subject classrooms in European (Costa, 2012) and New Zealand contexts (Basturkmen & Shackleford, 2015), and their lack of a principled methodology in teaching reading comprehension in an Iranian context (Atai & Fatahi-Majd, 2014).

However, what happens when a discipline specialist co-teaches a class with a language teacher is almost unknown. Previous research on interdisciplinary classroom teaching has focused on the collaborative interaction between subject teachers and their language teacher colleagues in secondary schools in the UK (e.g., Creese, 2006) and elementary schools in the U.S. (e.g., Peercy, Martin-Beltrán, Yazan, & DeStefano, 2017). Tertiary institutions seem to be characterised by an overall paucity of language teacher—scientist collaboration (Lasagabaster, 2018) despite the long-term efforts of language teachers to seek such collaboration (e.g., in some Australian universities; see Chanock, 2017). Successful endeavours of collaboration seem to typically concern discipline-embedded teaching of communication skills to undergraduate students (e.g., Deane & O'Neill, 2011; Jaidev & Chan, 2018; Watts & Burnett, 2012), but it is unclear whether classroom team-teaching was present and how it might have transpired.

Huang (2017b) illustrated a graduate teaching context, where her effort as a language teacher to involve supervisors in co-teaching with her a Technical English Writing course to graduate students in engineering at a university in Taiwan achieved limited success, for the content specialists “seemed to define themselves as guest speakers” (p. 227) and lacked interest in engaging in pre-course co-planning with her.

Indeed, subject specialists' lack of understanding of novices' learning needs and their reluctance to participate in supporting novices' academic literacy development has been reported in the literature (e.g., Authors, 2019a; Johns, 1997). In the context of mainland China, where the study presented in this paper was conducted, there have been occasional reports of content specialist teachers providing English academic writing instruction to graduate students on their own (Yang, 2012) or co-teaching with an English teacher (Wu, 2015). Yet as with the papers from further afield, there is little detail of classroom teaching in such reports.

In contrast to Huang (2017b), Saunders, Tsai and Chen (2014), also telling a Taiwanese story, documented a more positive picture of language—content partnership, where a discipline specialist invited a language teacher to co-teach an introductory English academic writing course to graduate students (in rehabilitation health science). In the field of ERPP, successful interdisciplinary collaboration is illustrated by the work of two co-authors of the present paper, namely, a language specialist (Maria) and a scientist (Philip), who have implemented interdisciplinary team-teaching targeting graduate students and academics in a wide range of institutional contexts for well over a decade (e.g., Authors, 2006; Authors, 2012; Authors, 2016; Authors, 2018a; Authors, 2018b). Workshops/short courses, building on the complementary expertise sets of an ERPP practitioner and a scientist, have been mostly taught by Maria herself, but sometimes team-taught by Maria and Philip, and on occasions, by Philip or another scientist on their own (Authors, 2016). Nevertheless, although Authors (2016) reported on a scientist colleague teaching ERPP on his own to a writing group for graduate students, the study focused on evaluating the teaching effectiveness, rather than on the scientist's instruction.

In the study to be reported in the present paper, we availed ourselves of an opportunity when Maria and Philip were team-teaching ERPP to a class of graduate students of agronomy at a Chinese university, to examine the details of Philip's classroom instruction in this setting.

## **Our Study**

### **Research Setting**

Maria (an ERPP specialist) and Philip (an ecologist), both affiliated to a university in South Australia, were invited by a College of Agronomy of an inland Chinese university to teach a 32h "Writing a Science Research Article for International Publication" (WaSRAfIP) course in October-November 2018, targeting graduate students who mostly had data and were ready to write. This was Maria's 25<sup>th</sup> ERPP teaching trip to China since the early 2000s; while Philip had also been to China numerous times, above all for research collaboration with his colleagues in Chinese Academy of Sciences (CAS) institutes spread around the country, and sometimes joining Maria for an ERPP workshop/short course at a CAS institute or a university (see Authors, 2019b). Prior to this trip, Maria had been to the host university in two previous years without Philip, offering a version of the WaSRAfIP course to Master's students in the same College of Agronomy. Conducting team-teaching targeting graduate students who had data had been an experience familiar to Maria and Philip (e.g., Authors, 2006; Authors, 2012). The match between Philip's research specialisation and the discipline of the host College was both a motivation for and an additional benefit of having Philip team-teaching the ERPP course with Maria.

For the host College, the WaSRAfIP course was part of their programme of reforming the graduate curriculum; thus funding was guaranteed to implement the team-teaching plan initiated by Maria. The initiative was warmly supported by her two local collaborating colleagues (pseudonyms Xia and Chen). Both for logistic reasons and to encourage local take-up of the teaching, the 32h course, i.e., the focal ERPP course in our study, was timetabled across three weeks, with the following arrangement of the instructors, content and targets:

- Week 1 (Xia): 4 x 2h = 8h – refining tables/figures, bullet-points of THM [Take Home Message], writing results sections, writing methods and materials – students finish the week with draft of own methods and results sections
- Week 2: (Maria and Philip): 4 x 4h = 16h + consultations – choosing target journals to match THM, referee criteria, writing introductions, writing discussions, abstracts and titles, submitting, covering letters and responding to editor comments – students aim to finish the week with a complete first draft of their manuscript
- Week 3: (Maria and Chen): 4 x 2h = 8h – making and using a corpus, the composition and re-use of noun phrases, article (“the/a/an”) usage, self-editing process – students aim to end with a self-edited version of their manuscript

Xia’s teaching in Week 1 was based on a set of 82 slides prepared by Maria; Week 2 covered 187 slides; and Week 3 used about 70 slides, mostly prepared by Maria, with some by Chen. Our study focused on the 16h of class in Week 2 which was co-taught by Maria and Philip on 4 half-days (i.e., afternoons of 4 weekdays), using 4h on each half-

day.<sup>2</sup> The focal class had 22 registered students, including 15 PhD students and 7 Master's students, most of whom already had data to write their paper with.

In terms of English proficiency, it is generally understood that inland university students such as the students at the host university on average have a lower English proficiency level than their counterparts in coastal cities of the country (EF EPI, 2018). In informal group discussions among the students themselves at the end of the course, some students pointed out that after attending the course, their English listening had improved. For example, one student reported that she could understand about 60% of Maria and Philip's lecture at the beginning; gradually she was able to understand 80-90%. It is further worth mentioning that the students completed anonymous questionnaires before and after the course teaching (matched by their date of birth). Results show that their confidence to write a paper for international submission had an average 1.2 point increase to 4.85 on a 7-point Likert scale ( $p=0.0003$ , matched pairs, 2-tailed Student's t-test); and their mean confidence to publish showed a 0.7 point increase to 4.5 ( $p=0.016$ ). Maria and Philip's teaching, as the central part of the WaSRAfIP course, likely contributed to the rise in the students' confidence levels.

### **Research Question, Data Collection and Data Analysis**

The research question that guided our study was as follows: *How can the instruction of Philip, the scientist, be characterised in the focal ERPP class where he was team-teaching with Maria, the language teacher?* Ethical approval to conduct the study was obtained by the first author of this paper from her university; consent for research

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<sup>2</sup> Such intensive scheduling was not ideal (post-course feedback from the students clearly indicated that they preferred a more spread-out timetable), but was perhaps understandable, when external visiting instructors were involved and there was a restriction to the available funding support.



participation was granted by the relevant parties of the host College of Agronomy. The classroom had fixed desks and movable chairs; sufficient rows and space were left in the back, where the first author sat as a non-participant observer, typing observational notes into her laptop, without using any observational scheme but focusing on the shift of turns between Maria and Philip and what Philip said to the class. An accompanying PhD student from her university sat next to her and helped with the video-recording.<sup>3</sup> During Maria and Philip's teaching week, the first author also conducted several semi-structured interviews with Philip, which covered a range of topics, including his research career, experience of teaching ERPP in different contexts, his views on Chinese science, students' difficulties and supervisors' role in mentoring novices for publication, as well as his perspectives on the co-teaching with Maria on the course (see Authors, 2019b). In addition, Maria was also interviewed for her take on Philip's role in the class. Session slides constituted the main source of documentary data in the study.

All the video-recordings and interviews were transcribed in the original language (English); the transcripts were then coded by the first author in NVivo11. The interview transcripts were coded first, in the expectation that this analysis would provide insights to inform the analysis of the classroom transcripts. The classroom transcripts were then coded in relation to the session slides, using a data-driven approach and following a procedure similar to that reported in Authors (2018a). Initially, under a second-level code ('slide with number and short caption'), first-level data-grounded codes were subsumed,

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<sup>3</sup> A limitation of our data collection was that due to the equipment constraint, no microphone was carried by Philip or Maria to capture their exchanges with students during class discussion/writing time in group-based or one-on-one conversations; and the voices of interaction between students and the instructors during lecturing, when low in volume, were also not captured. This has had an impact on the kinds of classroom data we could transcribe and analyse.

which were consistently *in vivo* codes based on key words from the slides and the two instructors' remarks. For example, under 'slide 117 where do we find Discussion text', three first-level codes were subsumed, corresponding to the three bullet points shown in the slide and the talk of Maria (in this case). In view of our research question, we then re-organised our categories of codes to focus on Philip's teaching, a step which led to three interim, broad groups of third-level codes: Maria and Philip switching turns, Philip giving advice to students, and Philip sharing personal experience.

In the next step, informed by her knowledge of the relevant literature, her observational fieldnotes, and the foregoing analysis of the interview data, the first author modified and re-organised the codes and categories which fell under each of the aforementioned interim third-level codes, thus moving from more descriptive and topic-based coding to more interpretive and focused coding (Bazeley, 2013). This led to a number of analytical clusters that addressed our research question. Reliability of the coding results was strengthened by using two strategies: a code-recode strategy (Ary, Jacobs, & Sorensen, 2010, p. 503), and sharing and discussion of the coding results with all the co-authors of this paper (including validation by Philip and Maria). The final version of our coding scheme consists of three analytical clusters, as will be elaborated later in the paper. The section below, however, drawing upon the observation and interview data, aims to contextualize the findings to be reported.

### **Team-teaching and the Two Instructors' Perspectives on Their Roles**

Philip and Maria's co-teaching (16h) in Week 2 was the central portion of the focal 32h course which spanned three weeks. The two instructors were both present in the classroom on all half-days (4 x 4h). The teaching was primarily based on 187 slides, as

noted earlier; samples of materials from their textbook (Anonymized textbook, year of publication) were also used. Philip led the teaching on approximately 30% of slides, with Maria leading teaching on the remainder, though this included approximately 5% of slides which were clearly co-taught but with Maria as the lead. The students were from time to time prompted to look into their Own Discipline Articles (ODAs) (Authors, 2006) that they brought to the class; discussion time and writing time were built into the sessions. From an observer's perspective, it was apparent that Maria and Philip had decided beforehand which slides they would each be responsible for in class (confirmed by them), although their eye contact and body language during the teaching also facilitated the shift of turns between them, apart from spontaneous chipping-in. The slides that Philip spoke to covered the following topics, as indicated by the slide headings:

- why publish, journal quality indices, selecting target journals, and getting to know a journal (Day 1)
- writing Discussion (Day 2)
- writing Abstracts (Day 3)
- the editor's role, editor's rejection without review, publishing ethics, refereeing process, main types of comments from referees, and responding to reviewers (Day 4)

Coverage of these topics, and the fact that Philip and Maria also chipped in (interrupted briefly) when the other was speaking whenever they deemed it useful, have together created the classroom discourse that became the focus of our analysis in answering our research question. The verbal interactions between Maria and Philip were predominantly "public" and targeted at the students; only occasional brief exchanges

were “private”, i.e., targeting each other only, as a reminder or to help each other to make a quick decision.<sup>4</sup> This indicates that the two colleagues had developed comfort in and familiarity with their classroom team-teaching partnership, as a result of their long-term collaboration.

Overall, Maria used a majority of the speaking time. In fact, the first author was initially struck that Philip’s lecturing time was not as much as she thought it would have been. In an interview with the first author following the first two half-days, Philip initiated an explanation:

Probably that when you’re observing the course, you may not see as much interaction as you would have if you had come in the earlier days [i.e., early years of Philip and Maria’s collaboration]. Because Maria has absorbed lots of what I would say and used it herself. And also because she teaches it when I’m not there, she has to absorb me. (Interview, October 31, 2018)

Thus from Philip’s perspective, Maria had “absorbed” what he would have to say, as a result of their long-term collaboration and her having to teach on her own most of the time over many years, an interesting point which was confirmed by Maria. Philip further observed, with modesty: “Maria is really the one who does this stuff. I have a cameo role, popping up from time to time.” Maria, on the other hand, when checked on this by the first author, pointed out:

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<sup>4</sup> Four instances of such “private” exchanges were identified, listed as follows in order: Maria jumping in to remind Philip to explain the meaning of the word ‘Trust’ when he mentioned that the journal of *New Phytologist* is owned by a Trust (Day 1); Philip checking with Maria whether he should break and let her carry on with the next slide and receiving a positive response (Day 1); Philip asking Maria whether he was going too quickly in explaining the writing of abstracts and being assured it was fine (Day 3); and after Maria had analysed with the class an excerpt of a six-stage Introduction (from Weissberg & Buker, 1990, pp. 42-43), Philip helping Maria to decide (when she was unsure) it was fine to skip a class exercise (slide no. 56) which asked students to give the analysis answers in a table by recording sentences numbers for each stage number.

I am not as credible to the students as Philip. OK, my speaking is much clearer. They understand a lot more of me than they do of Philip. But he is so engaging. They listened to him in spite of themselves. The extra degree of uptake we get from his way of engaging the students really adds to the learning. (Interview, November 4, 2018)

We speculate that novice researcher-writers may value the experience of a senior colleague in their discipline area over a ‘language teacher’, not least because of the power relationship and social norms pertaining to professor-student interactions in China.

In the interview Maria also commented on Philip being “a bit didactic”, coming from “a large traditional rural Catholic family” and always the “one who organises kids to take them bushwalking and show them all stuff”. “He’s a teacher; he even gets me interested in botany—he tells me about trees”, Maria recounted with delight. These comments indicate personal characteristics of Philip as an effective teacher. In the following section we will aim to show how being “a bit didactic” was manifested in multiple ways in Philip’s apparent “cameo” appearances as a scientist co-teacher in the ERPP classroom. The three analytical clusters revealed in our classroom discourse analysis of Philip’s instruction in the team-teaching set-up, as mentioned before, are summarised in Table 1, with categories of meaning subsumed under each cluster.

INSERT TABLE 1 HERE

The section below will present evidence mainly from the classroom discourse data to address our research question; interview data will be drawn upon for corroboration or extension of meaning where necessary.

### **Philip the Scientist in Team-Teaching**

## Putting “a Scientific Spin” on the Lecture

### *Explaining academic vocabulary in a discipline-specific way*

Philip pointed out in an interview that what he did in class was to put “a scientific spin” on the flow of the lecture. He explained:

I think I pitch in when there’s a value in explaining things a little more around the culture of scientific publication or the concepts that a scientist needs to understand as distinct from a social scientist research perspective, which Maria brings.

(Interview, October 30, 2018)

Class observation provides evidence for this. As a warm-up exercise in the beginning of the first session on Day 1, the students were asked to form pairs to find out about each other’s name, hometown and research topic, and then each introduced their partner to the class. As a result, Maria and Philip had an idea of the research focus of the class of students. For Philip, this facilitated his making reference to students’ topics during teaching. Under the topic of selecting target journals, a few slides were based on the example of the journal of *New Phytologist*. Philip was talking from slide no. 24 (“What sort of papers do NOT get into *New Phytologist*?”), which shows a quote from the journal webpage: “Studies that report incremental advances or are narrow in scope are not appropriate.” He explained the phrase *incremental advances* in the quote:

Do you know what *incremental advances* means? So if you do a study, you add foxtail millet, add some altitude; or there’s a paper that shows something, and you add more nitrogen to that, and you show regulation of growth most likely increases a bit—that could probably be incremental—a little more information,

not good, only small amount. So the journal will NOT want to publish things that just advance a little; it'll want something new.

In the explanation above, “foxtail millet” was mentioned earlier by a student in describing his research topic, which apparently was rather limited in terms of novelty and significance (i.e., a case of “incremental advances”) (according to Philip). Clearly, Philip’s relevant content knowledge and scientific judgement made his comment above possible.

On Day 3, Maria was talking from slide no. 118 on six information elements to be included in the Discussion section. While on the fourth element, shown as “Limitations that restrict the generalisability of the findings” on the slide, Maria checked if the students knew the word *generalise*. Getting no positive response, Maria proceeded to explain the meaning of the word in an indirect way; and Philip then added to it with an exemplification, linking to the students’ specialisation in agronomy. The episode is shown in Excerpt 1:

### **Excerpt 1**

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Maria: *Generalise* means—well, you do a study, and you have a certain amount of data; you design the study carefully. But can you say that the results that you got in your study will be true for other situations beyond your experiment?

Philip: So if you do your study in the field with some soil and the soil has high clay content, will that study be true in other soils which have lower clay content? To generalise, you have to understand if clay content will influence your results. And then if you think it will influence it, you will

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discuss that as a limitation. If you think it will not influence it, you will control for the reviewer worrying about that limitation. So to generalise, you have to understand the limitations of your study.

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Philip's elaboration of what *generalise* means by creating a discipline-specific scenario did seem to have an effect of "engaging" the students, who "listened to him in spite of themselves", as Maria put it (quoted earlier).

### ***Commenting on students' work***

Other than the occasions when Philip explained certain words, his specialist knowledge was also put to use when he commented on students' attempts at drafting. Slide no. 155 ("The author's covering letter/message") lists a range of components that can be included in a covering message, the fourth in the list being "highlight specific points that reinforce the novelty and significance of the research" (Day 4). Maria invited several students to share in turn what they would write in their covering message to fulfill this point of requirement. The students' responses were followed by Philip commenting that the suggested sentences did not bring out the novelty of their research, as exemplified below:

You didn't show any novelty. You have to find what is new about your research to tell the editor. So the editor will be encouraged to send your paper for review. All you said was the topic; you need to find the specific words for your topic to say what is new.



Sure, but do you think that the journal may have received manuscripts before about nitrogen and carbon in soil many, many times, so you have to find something novel? You have to be more specific about the novelty, the type of nitrogen, the type of soil, the ratios of carbon and oxygen, the situation, the temperature, the crop rotation, something that is genuinely specific.

As shown in the extracts above (in particular the second extract), Philip's specialist knowledge enabled him to guide the students in trying to "highlight specific points that reinforce the novelty and significance of the research" in writing their covering letter.

### ***Offering writing advice as a scientist writer***

Philip gave writing advice to the students based on his own experience as a scientist writer. When Maria was lecturing on writing the Introduction (Day 2), Philip pitched in with advice for the class on composing the section: what is needed is a skill to show a "gap" (Stage 3) (Anonymized textbook, year of publication, chapter concerned; Weissberg & Buker, 1990),<sup>5</sup> rather than to explicitly state the "gap"; and "do not spend all the time looking up references rather than writing; you can put 'ref' in brackets, which shows where you recognise a reference is needed [and come back to it later]." At one point on the same day, showing an Introduction excerpt which repeatedly used "author-prominent citations" (Anonymized textbook, year of publication, page no.) (slide no. 67), Maria called upon Philip to share his practice, as shown in Excerpt 2:

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<sup>5</sup> Weissberg and Buker (1990) proposed a five-stage model for writing the Introduction section of experimental research reports, a model which is adopted in Maria and Philip's textbook (Anonymized textbook, year of publication). The five stages are: 1) "General statement(s) about a field of research to provide the reader with a *setting* for the problem to be reported"; 2) "More specific statements about the aspects of the problem *already studied* by other researchers"; 3) "Statement(s) that indicate *the need for more investigation*"; 4) "Very specific statement(s) giving *the purpose/objectives* of the writer's study; and 5) "Optional statement(s) that give a *value or justification* for carrying out the study" (Weissberg & Buker, 1990, p. 22).

## Excerpt 2

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Maria: What these people found. [...] It's very easy to write sentences like that if you use this style. [...] What will you do, Philip?

Philip: I like to use author-prominent if I'm going to argue with that study, but that's the only time I probably use it. I never use it just to set out to lay a  
Stage 2.

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On Day 3, talking from slide no. 142 showing five typical information elements of Abstracts (Anonymized textbook, year of publication, chapter concerned; Weissberg & Buker, 1990, p. 186), Philip suggested “writing these five things as dot points, one dot point each and then write a paragraph out of that”, which he said would make it easier to write an Abstract. The same strategy of writing dot points was raised by Philip again when he was talking about the writing of Discussion, referring to his own practice: “So when I come to do Discussion, I already have a long list of points, then I can write sentences.” On writing the same section, Maria showed the Discussion paragraph 1 of McNeill et al. (1997) (slide no. 120), and pointed out that the first sentence, by using the underlined string, i.e., “...proved eminently suitable as a method for labelling...”, skillfully “points us back [to the Results] but does not repeat”. At this point, Philip commented from the perspective of the authors of the article (the use of “we” in the following):

And we of course, in the Results, already show it, right? But we put it here because we want the success of the experiment or the evidence created to be in the mind of the reader as they start to think about the meaning of the results. So

we first talk about what we have been able to show, and then what that means and what the limitations are, or practical considerations. So that's why we start [the Discussion section] that way. A good way to start.

Philip thus reinforced and expanded Maria's message that the opening sentence in the McNeill et al. (1997) example was indeed "a good way to start" a Discussion section.

### **Advising the Novices to Do What a Scientist Does**

#### ***Reading regularly and widely, and publishing as many papers as possible during candidature***

Early in the first session on Day 1, Philip said to the class: "If you're not reading two papers per week, a minimum, you are not learning in the field." Apart from regular reading, he emphasised reading widely: "Maybe you only need to read five papers to understand your method. But to explain that to the world of people in your field, you need a much bigger view." This means one must read widely, "sometimes outside your field, to engage with the bigger questions in your field", Philip advised. He gave an example of "trade" being "possibly the biggest question in agriculture today", referring to the "China-U.S. trade war" and implications this could have for one's reading and writing:

World trade, economics of production, and change in policy for trade can make everything you study very small, because trade problems can create a big need or big waste. Many things influence food availability, read about it. Read a paper in *Nature*, for example, because you need a perspective when you write your introduction, about the influence of your production on the economy. I think if

you haven't read widely, when you write your manuscript, it will show that your reading is very limited.

On Day 4, when elaborating the main types of comments from referees (slide no. 174 and the subsequent slides), Philip referred to Isaac Newton's 17<sup>th</sup>-century expression "standing on the shoulders of giants", and said to the class:

When you write your manuscript, the giants are the literature. When you're arguing your case, particularly in the Discussion and the Introduction, and when you're responding to reviewers, you find the giant and you put the giant on your team to fight the reviewer. [...] You use the literature as your best friend.

From Day 1 of the week, Philip encouraged the novices to attend conferences and publish as many papers as possible during their candidature. "To play in this game, you must have papers", Philip said. He referred to some research findings to encourage the students to go beyond publishing one paper only during their candidature:

There was a study of how much people published when they were young during the PhD (Laurance, Useche, Laurance, & Bradshaw, 2013). It found how much you publish in your PhD and immediately after is correlated with your success as a researcher: the more you do early, the better your career. So if you're focused on only one [paper], you will graduate; but the study says your career will not go quickly.

Philip reminded the class in a down-to-earth manner: "When you apply for a job—everyone who applies has a PhD—so you have to have more than the PhD. That's the publications."

### ***Interacting with peers***

Other than the importance of reading and publishing, Philip emphasised that the novices should interact with peers. On Day 3, while Maria was discussing the information elements to include in writing the Discussion section (slide no. 122), Philip shared (as reported earlier) that when he came to writing his Discussion section, he always already had a list of “dot points” that he put down for writing the section. Maria followed up and advised, “Maybe you can give a little talk to colleagues about findings”, in preparation to write the section. At this point, Philip walked to the front with his laptop, showing from its screen an image of waves of thinking flowing from two heads and mixing, and said to the class:

When you’re talking and other people are interacting with you, your brain has to think, what are they saying? What does it mean with what I already know? How do I explain better to them? What are the problems with what I’m saying? So when you’re talking, your thoughts are mixing with their thoughts. It helps you to be much clearer.

On Day 4, moving on to slide no. 181 on one of the main types of comments from referees: “The referee has unspecific negative comments—e.g. ‘poorly designed’, ‘poorly written’, ‘badly organised’”, Philip commented:

You’re all good students. You won’t get this one. But if it happens, show the referees’ comments to a friend and discuss with them. What do they mean?— “Poorly designed”, “badly organised”. Maybe a colleague can say, “Oh, it was unclear to me how you did this experiment or how this result relates to that method.” They can give you advice. And I recommend to share with your colleagues, not just supervisors. Supervisors can be too quick.

Thus again Philip, as a supervisor himself, emphasised the value for students to consult with peers, beyond talking to supervisors who “can be too quick” and may not give the novices sufficient attention.

***Preparing a Take Home Message (THM) for one’s research***

In the first session of Day 1 of the co-teaching week, the students were prompted to consider their progress in choosing their target journal (slide no. 26), by re-visiting the Take Home Message (THM) of their research findings, which Maria hoped they had worked out by the end of Week 1 (taught by Xia), and considering whether the journal they were targeting was a good match for the THM and their publication needs. Upon checking, it was learned that the students actually had not been required to produce a THM in Week 1. Philip popped in at this juncture, creating a scenario for an “elevator speech” (Cameron et al., 2011, p. 74), to drive home for the class the essence of a THM and its importance for a scientist:

OK, so tonight you should write one sentence. Let’s say you met the Nobel Prize winner in plant science—there is no Nobel Prize for plant science—but you met the Nobel Prize winner when they are in the elevator going up. The Nobel Prize winner says to you, what is your latest research? So you would think of your THM from the manuscript you’re writing, and say that to the Nobel Prize winner, as the elevator goes from level one to level three. You have to be quick. You must write one sentence that is the THM from the manuscript you’re writing, one

sentence that you will say to the expert in your field. *Dong bu dong* [Understand or not]?<sup>6</sup>

As Maria was putting down on the white board THM as an assignment that the students should bring to class the next day, Philip went on to recount his experience of composing a THM for his PhD; and Maria followed up with an affirmative note, as illustrated in Excerpt 3:

### **Excerpt 3**

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Philip: When I finished my PhD, I sent my friends a postcard. I did a drawing on the postcard of a pizza and a graph from my PhD. I put the THM from my thesis on the card. Then when I invited them to come for dinner they don't have to ask me about my PhD. They already know the answer, just on one card, and it's very simple.

Maria: You did. I got it in my mail box. I have the postcard with the pizza and the graph. Very clear!

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Philip and Maria thus jointly conveyed the importance of having a THM for one's study, and emphasised that a THM is crucial for selecting a target journal, using a vivid personal example.

### **Illuminating the Identity of a Scientist**

*“We are scientists” and scientists publish in academic journals with a control system*

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<sup>6</sup> From time to time during his teaching, Philip checked on the students' understanding by mimicking *dong bu dong* (Chinese *pinyin*, meaning “understand or not”), without the tones of the Chinese characters, which created a humorous effect.

On two occasions Philip drew a line between publishing in academic journals, which have peer review as the control system on the one hand, and publicizing one's views on *Weibo* [microblog], a live social-media sharing platform in China (with an absence of control) on the other. The first time was when Philip was on slide no. 14 ("Why publish"), on which "Legitimise the research" was in a list of reasons shown (Day 1). He pointed out:

If you just write something on your computer and show it to your dog, you don't legitimise the work, right? You have to show it to somebody who will know what that means, and let them criticise that work. [...] Otherwise, you might say something crazy. [...] Can you publish some crazy thing on *Weibo*? Yeah, it's not legitimised. So in science, we publish to get the feedback before we give the manuscript to the public, so that there's a process to control crazy ideas, insufficient evidence and false argument.

The second time was when Philip was on slide no. 169, on reasons for the rejection of a paper (Day 4):

We believe in the system of peer review, because if we don't, we are back to Twitter, or *Weibo*. You can make up anything and send it to everybody. But we're not that. We are scientists. So we want our method to be checked and our results to fit with our method, and discussion to be appropriate to the results and our introduction, to say why it is meaningful and what is the level of our research. That's what sets the science apart from the *Weibo*, right?

He thus pointed out that the fact that "we are scientists" makes a difference to how and where scientist should publish.



### *A scientist negotiates the publication process*

Manuscript submission and responding to reviewers was the focus of Day 4 and a topic of much interest for students. During the lecture, both Maria and Philip referred to their own experience of being reviewed and being rejected (with Maria also relating experience of reviewing for journals in her field). While on “What are referees asked to do” (slide no. 161), Philip mentioned he just got review reports on a manuscript, noting that reviews can be “annoying” and novices need to learn to deal with them:

One reviewer said something I really don't actually understand. It's very short. [...] That's very common. Reviews are annoying. The other one is much more clear, but many comments. So that's fine. But the editor says, uh, major revision. In fact, I think it won't be so major.

Philip also shared his experience of being rejected. On Day 1 on the question of selecting target journals, he mentioned a recent manuscript that had been “rejected twice from journals”:

They said this work does not fit our scope—I am giving you a bad example—actually, I think the manuscript did fit this stuff [the journal], but may be right on the edge of the scope. It's easy to happen when your work is particularly interdisciplinary. [...] But you need to try to read all of these things [a journal's scope description] to understand how your paper would fit in.

On Day 4 while on slide no. 157 “Reject without review” he referred to this experience of rejection again, saying: “I thought it was appropriate [for the journal]. But the editor decides not me. So they can reject and it can take time.” Then on slide no.

167 which points out that everyone can get rejected, Philip advised not to take rejection personally:

When you work hard, spend two days formatting the papers, you submit the paper, wait for two months, and get rejected. You feel like you are not a good person. But you are the same person after the rejection of the work. It's not about you. The system is sometimes harsh. But the system is fair, mostly fair. So you just say "don't worry, keep going".

He then went on to relate that his second paper from his PhD was rejected by a journal with an Impact Factor of 5 but was later accepted by another journal with an Impact Factor of 7 and now the paper had received over 170 citations. This was an inspiring example for the class.

On discussing how to prepare the response document to the editor, a piece of advice on a later slide (no. 172) says "Make it very easy for the editor to see what you have done". Philip shared: "The way I do it now is to have a table with three columns", for reviewers' comments, response to each comment, and location in the manuscript where a change was made respectively. His illustration went:

When I write in the table, in Column one "reviewer comments", for comment 6, they say "On page six, line 362 it's not clear what you mean". In Column two, I say, I mean da da, and then say what I changed in the manuscript. Sometimes the comment says "The spelling is incorrect". I just say "Done". If I can get the table to have lots of "Done", "Done", "Done", "Done", the editor will look at it and say, oh, they did everything. I try to give an impression that I'm very responsive.

Philip's going to some length to share how he negotiated the publication process as a scientist author is enlightening. In an interview, he pointed out, "the purpose of giving anecdotes is not to prescribe a perfect solution, but to develop some empathy for students". He explained:

I try to avoid just telling my own stories and anecdotes that may or may not be relevant to the students. I try to make it so that they can connect with a person who has been through the problem. [...] So that breaks down barriers to some degree for them. Hopefully they'll leave the training thinking: I'm gonna have to solve some problems, but everybody has to. (Interview, October 30, 2018)

Through sharing his own experiences and practices, Philip the scientist instructor illuminated to the novices what scientific writing and publishing involves, and complemented and extended Maria's part of the teaching. An overall message that he wanted the students to take away was conveyed on Day 1: "Much of what we talk about in this week—you need to take responsibility for developing these skills throughout your research career."

### **Discussion and Conclusion**

In the foregoing section we presented findings to answer the research question *How can the instruction of Philip, the scientist, be characterised in the focal ERPP class where he was team-teaching with Maria, the language teacher?* Our classroom-centred observational study revealed three key dimensions of Philip's instruction: putting "a scientific spin" on the lecture, advising the novices to do what a scientist does, and illuminating the identity of a scientist. It is seen that Philip's being "a bit didactic" as Maria characterised him to be, found its space to play out in the teaching; while his

“cameo role, popping up from time to time” in the team-teaching was shown to be rich in content and meaning.

Previous research on university content specialists’ instruction in a subject class reported that they may teach language incidentally, including explaining specialist vocabulary and teaching conventional expressions in the register of the target discipline (Basturkmen & Shackleford, 2015; Costa 2012). Our findings showed that Philip the scientist, in an team-taught ERPP class (as opposed to a subject class), on occasion explained academic vocabulary (*legitimise* and *incremental advances*) in discipline-specific ways, to facilitate students’ understanding; however, his instruction went far beyond such occasional language focus (which was just one aspect of the dimension of “putting ‘a scientific spin’ on the lecture). Most clearly, what he said to the class of novices reflected his own experience as a scientist, who performs a range of activities—reading, writing, publishing, interacting with peers, negotiating the publication process, as well as supervision. Discipline experts’ personal experience as an academic strongly shaping their classroom teaching has been shown in previous research (Huang, 2017a). It is perhaps exactly because of Philip’s identity as a publishing ecologist who shared the same broad discipline field with them and who could talk to them from his own experience, that the class of agronomy students in our study found him “engaging” and “listened to him in spite of themselves”, as Maria put it. From Maria’s perspective, “the extra degree of uptake we get from his way of engaging the students really adds to the learning” (as quoted earlier in this paper). Maria’s observation echoes a clear message in the literature: that discipline colleagues’ active participation in the development of

students' academic communication competencies makes a difference to students' learning (Deane & O'Neill, 2011; Dudley-Evans & St John, 1998; Simpson et al., 2006).

An interesting point made by Philip is that Maria had “absorbed” him and said much of what he would have otherwise said in class (as he did in the early days of their collaboration). Such “absorbing” is clearly a result of long-term collaboration. For language specialists, this indicates a benefit for them to establish sustainable partnerships with discipline specialists, as their “absorbing” from the discipline colleagues would strengthen their independence, and no less importantly, add to their credibility to students, as EAP/ERPP teachers. An alternative question that can be asked is: has Philip “absorbed” Maria to a large extent as well? The answer is positive, even though our study reported in this paper did not aim to present direct evidence for this (but see Authors, 2018c; Authors, 2019b). In contrast to the reports of subject specialists' lack of interest in working with language colleagues to support novices' academic literacy development (e.g., Authors, 2019a; Chanock, 2017; Huang, 2017b; Johns, 1997), it is Philip's conviction in the value of applied linguistics approaches (specifically genre analysis)—together with Maria's belief in the importance of content teachers' participation in developing novices' publication skills—that has sustained the long-running collaboration between the two. Language—content partnership, including in the form of classroom team-teaching as we demonstrate in this paper, opens up opportunities for such mutual “absorption”, and thus professional development for language and content teachers alike (Percy et al., 2017; Stewart & Perry, 2005).

Although in our study we focused on illuminating the contribution that a discipline specialist can make in an ERPP classroom, we nevertheless would like to highlight a

problematic status quo, based on our personal observation in China and Australia: that while many discipline experts are good teachers and exemplars, they often do not understand how students learn language/scientific writing, and what challenges novices face in developing and communicating their work (Authors, 2019b). In addition, although we acknowledged in our study that the students ascribed strong credibility to Philip, a specialist from their discipline co-teaching ERPP to them, we should point out that Philip did not enjoy being regarded as a “hero” by the students. He reflected:

If we (hypothetically) ran an ERPP course in one room with Philip teaching, and in the next room Maria and Philip co-teaching, I suspect some students would still go to Philip-alone because of the belief in the primacy of content knowledge and experience.

With this reflection, Philip meant that students may tend to give too much credibility to content experts in issues of writing for publication. We believe language—content partnership can shift the perspectives of the students and the wider institutional community in the long run.

Given the long-existing call for interdisciplinary collaboration in ESP/EAP but the continued paucity of actual examples (Deane & O’Neill, 2011; Lasagabaster, 2018), our study, by presenting a real case and focusing on a discipline expert’s classroom discourse, provides a potential source of inspiration for practitioners and administrators to help them better understand the value and feasibility of the collaboration, possibly prompting them to create an action plan for the purpose in their institutions. It is worth pointing out that in our study, Philip and his ERPP specialist colleague, Maria, were teaching on invitation as guest lecturers at a Chinese university, rather than at their home

institution in Australia (to which they were both affiliated on an adjunct basis since the early days of their collaboration). Their “visitor” status may have enabled them not to be bound by the restrictions of institutional silos which may exist at their host university in China (Authors, 2012; Authors, 2019a; Simpson et al., 2016). Chanock’s (2017) chronology of the hardship that language teachers in Australia underwent over the decades to seek collaboration with discipline teachers is a reminder to practitioners and administrators that vision, tenacity, resilience and action will all be needed to make interdisciplinary collaboration a lasting reality.

Finally, the case of Philip’s co-teaching in an ERPP classroom that we present here is in a sense a “unique case” (Yin, 2011, p. 18) which needs to be understood in the context of the long-term collaborative relationship between Philip and Maria. Future research in EAP should continue to study how team-teaching, driven by particular kinds of collaborative relationships, may play out in classrooms, and how it may impact on both the students’ and the teachers’ learning (Lasagabaster, 2018). Research focuses can also vary. While we focused on a scientist’s classroom discourse in a long-term partnership, future research could zoom in on the interactions between the co-teachers (who may be more or less experienced in such partnerships) in particular disciplinary contexts, targeting students with particular needs. Our study seems to be the first of its kind, examining a discipline specialist’s ERPP classroom teaching in a language—content partnership through analysis of classroom discourse, alongside interview data. The study has advanced the literature coverage and is likely to contribute to opening up new avenues of research on interdisciplinary collaboration in higher education.

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