PUBLICATION SKILLS DEVELOPMENT IN THE SCIENCES: DECISION SUPPORT FOR EFFECTIVE PROGRAM DESIGN

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Abstract

In the face of expanding pressure for science researchers to write articles for refereed journals, research is needed on ways to design cost-effective training programs that respond to contextual variables including language backgrounds. Here we propose a matrix of four descriptor scales for classifying groups to be trained, based on detailed analysis of workshops taught by interdisciplinary teams in a wide range of institutional and linguistic contexts using a collaborative approach grounded in genre analysis and corpus linguistics. The resulting classification of participants and context enable optimisation of the training team and effective decision-making about program design.

Keywords: Publication skills; research articles; academic writing; training programs; interdisciplinary collaboration.

Resumen

Frente al incremento de la presión en investigadores científicos a escribir artículos para revistas indexadas, hacen falta estudios sobre maneras rentables de diseñar programas de formación que responden a variables contextuales, entre ellos la lengua materna de los participantes. En este estudio proponemos una matriz de cuatro escalas descriptivas para la clasificación de grupos de formación, basada en el análisis detallado de talleres impartidos por equipos interdisciplinarios en una amplia gama de contextos institucionales y lingüísticos utilizando un enfoque colaborativo basado en el análisis de géneros y la lingüística de corpus. La clasificación resultante de los participantes y el contexto permite la optimización del equipo de formación y la toma de decisiones eficaces sobre el diseño del programa.

Palabras clave: Habilidades de publicación; artículos de investigación; escritura académica; programas de capacitación; colaboración interdisciplinaria

INTRODUCTION

The issue addressed in this article is the need for effective approaches to developing the range of skills required by researchers to publish scientific articles in the peer-reviewed international literature. This currently means 'in English', regardless of what we may think of the equity of this requirement (Ferguson). The need

can be seen as situated in the field of science research education, as it is most often supervising academics in the scientific disciplines who are expected to work with their graduate students on the writing and submission of their first manuscripts, thereby providing quality control on the product as well as helping them develop towards independent author proficiency – although the degree to which the latter outcome is achieved is highly variable (Li, "Publish"). However, it runs parallel to and is impacted by understandings and approaches located within the fields of applied linguistics and English language teaching, especially but not exclusively for the many scientists who use English as an additional language (EAL). Many science research workplaces worldwide are now both multicultural and multilingual, and this trend will only intensify as globalising tendencies take increased effect. Users of English as a first language (EL1) are already a minority among users of the language worldwide (Graddol). Increasingly, supervisors/advisors and mentors helping junior scientists write manuscripts in English will themselves be from EAL backgrounds, as will journal editors and referees. The discourse communities that novice authors are seeking to join are thus changing rapidly in terms of their composition. An additional factor here is the general decrease in the amount and effectiveness of instruction in English grammar and writing provided to EL1 students in schools in many places (e.g. Grow). This means that the metalanguage needed to discuss why particular language choices are appropriate in a given situation may not be shared by mentors and mentees. In locations where English is a foreign language (EFL), for example China, effective teaching of the discipline-specific English needed by researchers is often hampered by the problems posed for English teachers by complex scientific content – and this problem applies to all fields of specialised research. When this situation is combined with the limited and generally prescriptivist coverage of many of the available books on scientific writing addressed to scientists (Cargill, *Collaborative,* 4-8), it is clear that previous approaches to addressing the problem can be characterised as somewhat ad hoc and piecemeal.

At the same time, the 'context of situation' (Halliday and Hasan) in which scientific articles are being submitted is becoming more stringent, with rejection rates reported for highly-ranked journals of around 93% for *Nature* (http://www.nature.com/nature/peerreview/debate/nature05535.html), approximately 75% across a broad range of journals (Sugimoto et al.), and still as high as 31% (PLoS One http://www.plosone.org/static/information#1) for full open access journals. In parallel, the pressure is increasing to publish, and to publish within higher degree candidature in many cases (Cargill and O'Connor, *Developing*). Burgess et al. describe Spanish contexts and Cargill, O'Connor and Li Chinese contexts. The Indonesian Ministry of Higher Education has recently instituted a graduation requirement for PhDs of an article published in English in a journal listed in the Scopus database (M. Damriyasa, Udayana University Bali, pers. comm. 2013). Thus the pressure on academics, in their own right and as supervisors/advisors, as well as on their graduate students, can be extreme.

Training is clearly needed in many contexts that will support novice authors writing for publication in highly-rated international journals, but identifying who to train, when to train them, and what type of training will be most effective can

be a complex challenge. There is little published research investigating these issues to date. Burgess et al. report that practically oriented workshops were the preferred training option for the academic historians and psychologists they studied, even though they had limited experience of such training in the past. The Chinese plant scientists studies by Cargill and O'Connor ("Identifying") reported strong intentions to implement training in their own contexts based on that they had received, but no follow-up research has been conducted.

An additional contributor to this complexity is issues related to institutional structure: who is responsible for arranging and/or providing the training? As quality assurance and the reaching of broad targets directed at improving positions on league tables become more important for higher education and research institutions, decisions on training provision may be more likely to be made centrally, rather than at discipline level, perhaps by staff in human relations or research management branches. This in turn may mean that decision makers come from a range of backgrounds and worldviews, often removed from the specifics of academics' concerns. As a result, training programs are often required to target transferable generic skills rather than discipline-specific needs (Bastalich). However, this trend seems to fly in the face of accepted ESP wisdom for advanced academic literacies; Ken Hyland in an article entitled 'Specificity revisited: how far should we go now?' came to the conclusion: "as far as possible" for this type of training. It is thus an ongoing challenge to convince training providers of the benefits of a discipline-specific approach to training. However, even when decision making is in the hands of those to be trained, they may have limited exposure to current thinking around the pedagogical aspects of publication skill development. There is a pressing need for strategies to support decision making about training options, to help ensure best value for both the effort and funds expended.

The focus of this paper is therefore factors found to be relevant to designing effective and cost-effective programs for developing the skills of novice writers of scientific research articles for submission to refereed journals published in English. We present a tool for locating groups to be trained on a matrix of four variables that have been identified as salient through analysis of prior workshops, thus enabling informed decision-making about program design. The remainder of the article is organised as follows. We first describe the collaborative training approach we use, the contexts where it has been applied and the workshops analysed in the process of developing the decision support matrix. The four descriptor scales are then presented, with explanations of three points on each based on the analysed workshops. The final section discusses broader applicability and a potential future research agenda.

COLLABORATIVE TRAINING: DEVELOPMENT AND UPTAKE

Elsewhere we and others have reported and analysed the development and implementation in various contexts of a training approach based in interdisciplinary collaboration across sciences, education and applied linguistics and named Collaborative Interdisciplinary Publication Skills Education: CIPSE (e.g. Cargill "Collaborative"; Cargill and O'Connor "Structuring Interdisciplinary Collaboration to Develop Research Students' Skills for Publishing Research Internationally: Lessons from Implementation"). The approach is demonstrated in the book/website package *Writing scientific research articles: Strategy and steps* (*WSRA,* Cargill and O'Connor). It builds on the interdisciplinary teaching approaches traditionally used within English for Specific Purposes (ESP) (Coffey), and extends their use. ESP has as its goal the teaching of the English needed for a particular specific purpose. CIPSE takes this one step further and focuses on achieving the purpose: the writing and submission of a manuscript and negotiation of its publication. It thus requires, in its 'strong' form, hands-on input from expert members of the target discourse community – publishing, refereeing scientists in the relevant field of science. Details of the application within CIPSE of the genre analysis and corpus linguistics approaches that are its strengths can be found in Burgess and Cargill.

Scientists can, and do, provide advice to their junior colleagues and students without recognising a need for a framework such as CIPSE. What CIPSE provides in this situation is the means to harness the insights of genre analysis and ESP pedagogy to give a principled and accessible way to overcome the teaching issues commonly faced by mentoring scientists. These issues often lead scientists to simply rewrite their mentee's draft (Li, "I Have") rather than try to show how it can be improved by the student herself, thus supporting skill development for future application. The WSRA book/website package has been shown to be useful in this way for Australian scientists (Cargill and Smernik) and potentially for Chinese scientists (Cargill and O'Connor "Identifying and Addressing Challenges to International Publication Success for Efl Science Researchers: Implementing an Integrated Training Package in China"). Reviews of the book in science journals have also been positive (Opie; Jobling; Crissman), and over 12,000 copies have been sold to date. Thus there is a modest amount of evidence that the approach exemplified in the WSRA package is accessible to and usable by scientists. Thus CIPSE training is relevant for scientists (including masters and doctoral students) as authors, and for scientists as mentors.

CIPSE training workshops have been delivered in a wide range of contexts, sometimes by the first author alone and sometimes in teams with the remaining authors or other scientists. Contexts include universities in Australia, China, Spain and Indonesia; and research institutes, centres or groups in Australia, the Philippines and China. Trainee groups have been made up of EAL users who shared a first language, EAL users from several language backgrounds, and a mix of EAL and EL1 users. All workshops have been evaluated using the same methodology, enabling comparisons to be made of outcomes across the contexts. The appendix

gives details of workshops delivered and the publications in which data from them are analysed. Relevant findings are referred to in the following section in support of the descriptor scales we propose.

A DESCRIPTOR SCALE MATRIX

This work builds in part on the broader 'model' concept presented in Cargill and O'Connor ("Getting"), but is more tightly focused, aiming to provide a tool for use in negotiations with responsible parties that will enable the salient educational aspects of the situation to be taken appropriately into consideration. It therefore seeks to develop ways of talking about CIPSE and its potential contributions that will resonate with the concerns of different audiences.

Based on analysis of the outcomes of workshops and courses run in a wide range of contexts, as discussed above, we propose the following set of four descriptor scales for analysing groups to be trained, in order to decide on the most cost-effective use of available training budgets. The scales are labelled as follows: Client goals for training; Trainee research experience; Training program type (combined in Fig. 1); and English language context (Fig. 2). We describe three points on each scale, using evidence from research on previous workshops to exemplify each point.

Client training goals

This scale represents the goals held for the training by those arranging for its provision, for whom we use the shorthand term *client*. We characterise the right-hand end of the *Client training goal* descriptor scale (Fig. 1) as 'an increase in the number of SCI (Science Citation Index, Thomson Reuters) papers produced', or, in some situations, 'an increase in the Impact Factor of journals publishing the papers produced'. Such a goal picks up the perspective of McGrail et al. , that only published papers should count as an outcome of an intervention to improve publishing rates. We would debate this view in terms of its effectiveness in evaluating a workshop's success, as it does not take into account the overriding importance for journal acceptance of scientific quality and novelty, nor match with the journal's desired position in the field. Nevertheless, using this wording for the scale end-point is an effective way to get the issue 'on the table' when negotiating training options with a prospective client. If this is their desired outcome from an intervention, then a much more comprehensive program would need to be implemented – the components of which could be clarified using the remaining scales within the matrix.

An intermediate point on this scale is 'an increase in self-assessed confidence to write manuscripts for SCI submission and deal with the publishing process'. As demonstrated by the evaluation outcomes from all workshops analysed in the previous publications, this outcome can be anticipated from running CIPSE work-

shops, and relevant evidence can readily be provided to prospective clients using the published papers.

The left-hand end-point we propose is 'development of the full range of pre-requisite skills for writing a manuscript for submission to an SCI journal'. The pre-requisite skills list that has emerged from our analysis is represented in Table 1. Demonstrating their embeddedness in the concerns of the community of practice of science research, the list items are presented in relation to relevant aspects of the referee criteria list (Cargill and O'Connor *Writing,* 16) that forms a basic jumping-off point for CIPSE teaching. Table 1 also indicates the items for which teaching input from members of the discourse community/ies relevant to the students' fields is of high value. Thus it could serve as a basis for curriculum planning conversations, using as it does terminology that is meaningful across a range of areas with an interest in publication skill development.

TABLE 1. PRE-REQUISITE SKILLS FOR THE PRODUCTION OF A POTENTIALLY PUBLISHABLE ARTICLE IN ENGLISH, IN RELATION TO THE COLLATED LIST OF REFEREE CRITERIA FOR SCIENCE ARTICLES PUBLISHED IN CARGILL AND O'CONNOR (WRITING SCIENTIFIC RESEARCH ARTICLES: STRATEGY AND STEPS 16). HIGHLIGHTS INDICATE ITEMS REQUIRING/BENEFITTING FROM INPUT FROM EXPERTS IN THE RELEVANT SCIENCE DISCIPLINE/S.

Referee criterion	Pre-requisite skills for writing submittable manuscripts
Is the contribution new?	Library/database/internet access and skills to find relevant literature; analysis of literature to identify gaps and justify a study; writing in own 'voice' using literature; understanding role of audience analysis for effective writing
Is the contribution significant?	
Is it suitable for publication in the Journal?	
Is the organisation acceptable?	Knowledge of all article structures relevant to the discipline area, and content of the sections in each
Do the methods and treatment of results conform to acceptable scientific standards?	Research methodology, research question development and statistics/data presentation relevant to the discipline; discipline-specific use of structure, tense and modal verbs to write about results and conclusions
Are all conclusions firmly based in the data presented?	
Is the length of the paper satisfactory?	Meticulous attention to detail
Are all illustrations required?	Ability to analyse, and formulate 'take-home messages' from, datasets; data presentation and summary skills relevant to the discipline
Are all the tables and figures necessary?	
Are figure legends and table titles adequate?	
Do the title and the abstract clearly indicate the content of the paper?	Ability to highlight key messages for an intended audience
Are the references up-to-date, complete, and the journal titles correctly abbreviated?	Understanding of and skills in citation practice relevant to the discipline and avoidance of plagiarism; use of bibliographic software or manual systems for storage/ retrieval of references and preparation of reference lists

Is the paper excellent, good or poor?	Appropriate proficiency in discipline-specific English at the levels of vocabulary choice and use, accurate sentence structure for clear meaning, argument construction and linking, and information ordering to meet audience expectations; skills in self-editing and responding to feedback[1]

[1]Although this criterion can be expected to relate more, for the journal and the referees, to issues of newness and significance than to the issues listed, these language-based skills are important pre-requisites for communicating newness and significance and will affect judgements made about this criterion. Note, even PLOS ONE (pioneering acceptance of articles which may make only 'incremental' contribution through novelty and significance i.e. not Impact driven) has one of its seven criteria for acceptance as: "Is the article presented in an intelligible fashion and written in English?" with the consequence that "Poor presentation and language is a justifiable reason for rejection."

Trainee research experience

This scale relates to Swales (56) notion of Senior and Junior Researchers, but with somewhat finer distinctions (Fig 1). The right-hand end is represented by more senior researchers who are responsible for overseeing and mentoring the publishing of junior staff and students, as well as for publishing their own papers – characterized here as Mentoring Researchers (MR). The intermediate position on the scale for our purposes begins with senior research students in the process of drafting an article on their own results, through to employed/ post-doctoral researchers who may have published several papers internationally but are looking to improve their efficiency and polish their skills. This group is characterized as Early-career researchers (ER). We would argue for a further subdivision within Swales' *Junior* category for the left-hand endpoint of this scale. That is because in several of the EFL contexts we have experienced, beginning research students are gathered together, sometimes from sites at quite some distance, and taught as a cohort in the very early stages of their research degree candidature. The discipline areas within science of the cohort may be very disparate (or could even extend beyond science to all fields where primary data are collected and analysed, as for centrally run paper-writing workshops in our own university in Australia). The outcomes of our workshops at GUCAS demonstrate that where trainees have not yet conducted a research project to its completion and struggled to present the data analysis and conclusions to a critical public audience in writing, they are less likely to benefit from training that includes the full range of CIPSE content, including for example strategies for dealing with reviewers' comments. In such cases, the cost of including a collaborating scientist member in the training team is likely not to be warranted. Thus the left-hand end of the scale is a commencing HDR (higher degree by research) candidate, with no/little experience of designing and conducting research and/or no/little formal research training. This group is characterized as Commencing Researchers (CR).

Aspects to be considered in defining the position of a cohort on this scale need to include their level of research training, as well as their levels of experience in reading research articles in English, designing and conducting research studies

independently, and writing up the research. It is important to note here that, in relation to the last-mentioned point, the actual level of input to writing a paper needs to be considered – the appearance of a person's name in the author list should not be accepted uncritically as evidence of substantial input to the English writing in all cases (Li "I Have"), the widely accepted Vancouver Protocol notwithstanding (International Committee of Medical Journal Editors).

Training program type

The right-hand end of this descriptor scale represents an embedded or integrated approach to developing publication skills within a research workplace (Fig 1). Its defining feature is that the research workplace/s of the participants form/s an integral part of the planning and organisation of the program, including their discipline locations, their practical agendas and the constraints affecting them. If external CIPSE presenters are used, local implementation options and professional development for local staff are part of the program planning. If graduate students are the trainees, then supervisors/advisors participate in order to be able to carry on the educational process after the training event. If an academic support course or similar is wanted, then a full context analysis can be included to identify the feasibility of various embedding options. In practice, as represented by the implementations analysed to date, this degree of integration has not often been on the horizon. However, where repeat training events are arranged, perhaps annually, this point can be a useful reference point for indicating what may be possible.

The mid-point on this descriptor scale represents situations where a program (course or training event) is requested for a group of trainees taken out of their workplaces, but where the details of the workplace/s can form part of the event planning: discipline locations are known, at least some relevant details of the research context can be provided, and local uptake options can be considered in the planning, including train-the-trainer options. Examples of this point on this scale are the China Academy of Engineering Physics workshop (2009), and the New Phytologist workshops (2007, 2009). The left-hand end of the scale is a stand-alone, one-off training event, external to participants' working environment, where issues of discipline mix are not taken into consideration. Examples include lecture series offered across an entire university, such as in Nanjing (2006).

These three scales (Figure 1) can usefully be considered together as a base point for negotiations. The closer to the right-hand end of each scale the training context is, the more likely it is that significant value will be added to the training by including a scientist in the CIPSE presentation team – preferably one whose research interests match those of the trainees, at least in terms of general field and approach/ methodology. If the trainees' context falls to the left of the mid-point on any scale, it is likely that the additional cost of including a scientist presenter will not be warranted, and that very satisfactory outcomes will be achieved with a CIPSE program taught by an applied linguist/ESP teacher alone. For example, the

program run by Cargill alone for CRs at GUCAS in 2008 received comparably high evaluations to those run by scientist/linguist teams in 2006, and those she taught at Nanjing and Shanghai Universities in 2006 for mixed CR/ER groups, organized without taking discipline/workplace into consideration, showed strong increases in participant confidence to write and deal with the publishing process. It should be noted that the level of value added by the inclusion of a scientist in the team, in those situations where it is appropriate, is very high, not least in terms of the enhanced credibility it affords the training course.

Training context descriptor	Less added value	Significant added value	Very high degree of added value
Client training goals	Prerequisite skills for ms writing	Increased trainee confidence to write/publish	Increased output/level of published articles
Trainee research experience	Commencing researchers	Early-career researchers	Mentoring researchers
Training program type	Stand-alone, workplace contexts not considered	External but workplace contexts considered	Embedded in workplace

Figure 1: Variation in degree of value added by including scientist presenters in CIPSE training, in relation to three training context descriptor scales.

English language context

The fourth descriptor scale, English language context, operates alongside the first three in terms of determining presentation style and methodology and the amount of content that can be covered in a given time; however, it is not a determinant of the team structure. Current practice for CIPSE training in EFL contexts is to stipulate that participants must have a level of English proficiency that will enable them to follow a presentation given exclusively in English and based on articles in English, and to interact appropriately with the presenters. We rely on self-assessment of this level, as previous attempts to stipulate test scores or the equivalent did not lead to more homogeneous proficiency in trainee groups.

The descriptor scale for English language context takes into account Swales (56-57) concepts of "Broadly English Proficient" (BEP) and "Narrowly English Proficient" (NEP), and the fact that users of English as a first language (EL1) experience many of the same difficulties in writing science English at this advanced level as do academics from other language backgrounds (52). We propose that this scale focus not on the individuals to be trained, but the context in which the training takes place and the research workplace is located. This is because the resources and strategies that trainees will need to learn about and practise relate more directly to

these contextual features than to their individual proficiency in many cases, and this formulation of the scale points makes this fact explicit to those making decisions. Thus the right-hand end-point is an EL1 context where all novice authors, including EAL authors, have readily available opportunities for interaction in English about their science and their developing manuscript, and where the working language of the laboratory or group is English. The intermediate point is an ESL science context, where such opportunities are available or can be sought out, although the primary working language of the laboratory or group is not English. Such a context could be in an EFL location, but one where collaboration with EL1 scientists is an ongoing part of the program, with frequent visits from scientists who do not speak the home language of the lab, requiring in-depth communication in English on a regular basis. The left-hand end-point of the descriptor scale is an EFL context, characterised here as being one where opportunities to interact outside the training event with fluent English speakers conversant with the discipline content of the research being conducted range from non-existent to rare and in need of careful structuring. This is the kind of context described by Martinez in an Argentinian university setting, where the 'collaboration' she describes in her content-based course was between herself and her students, who provided the strong content knowledge to pair with her knowledge of genre and language form.

Rather than relating to the added value provided by including a scientist in the CIPSE presenter team, this descriptor scale relates to the value of including an appropriately trained ESP teacher in the team (Figure 2). The added value continuum runs in the opposite direction in Figure 2 from that in Figure 1, with the greatest degree of added value occurring at the left-hand end of the descriptor scale, in science contexts where interaction in English about the science being conducted is not available outside the training event or program, i.e. the type of EFL science contexts described above.

Training context descriptor	Very high degree of added value	Significant added value	Less added value
English language context	EFL science context, interaction in English re science unavailable	ESL science context, interaction re science in English available	EL1 science context, interaction re science in English readily available

Figure 2: Variation in the added value of including an appropriately trained ESP teacher in CIPSE training, in relation to a descriptor scale for the English language context of the training.

CONCLUSIONS

The matrix represented in Figures 1 and 2 reflects the range of contexts and outcomes we have experienced on the ground. The high value of including ESP-trained presenters for CIPSE in EFL contexts has been demonstrated in Spain and a range of contexts in China. At the other end of the scale, the evidence presented of scientists successfully using the CIPSE approach via the WSRA package indicates that including ESP expertise in the teaching team is less essential in an EL1 context, although value is certainly added, especially if the participant group includes EAL scientists.

We propose that the matrix provides a decision support tool with potential for use in the interdisciplinary space occupied by those wanting to strengthen researchers' skills for writing for publication, given the growing range of contexts where scientists are under strong pressure to write for journals publishing in English, and the wide range of structures and understandings into which any efforts to support this writing must fit. For example, when English language professionals receive a request to provide professional development training for science graduate students or early career researchers, as a course or a workshop, the first three focus issues from the matrix (client goals, trainee research experience and training program type), and the descriptor sets for each, can usefully guide negotiations with the requesters and avoid potential mismatches of expectations. The matrix also opens up a future research agenda, addressing issues such as the effectiveness of the tool for supporting effective program development in different national, linguistic, institutional and cultural contexts, and the applicability of the collaborative and interdisciplinary training approach that underlies it in disciplinary contexts beyond science and technology.

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APPENDIX

TABLE A1. CIPSE WORKSHOPS CONDUCTED 2000-2009 AND PUBLICATIONS ANALYSING DATA FROM THEM.

CIPSE Workshop/Publication	TinC 2002[1]	THE 2004[2]	JEAP 2006[3]	Revista 2006[4]	Inter-dis HE[5]	ESP[6]	Issues[7]	DEd thesis[8]
Hanoi 2000	x	x		x				
[9]CAS Beijing/Nanjing 2001	x	x	x	x				
Lanzhou 2002			x	x		x		
CAS Beijing 2003			x	x				
CAS Beijing 2004				x				
Inst. of Botany CAS 2005				x		x		
Uni of La Laguna, Spain 2005				x	x			
[10]GUCAS 2006					x	x		x
Nanjing Uni 2006						x		
Shanghai Uni 2006						x		
GUCAS 2007								x
New Phytologist-Beijing 2007					x	x	x	
One-day workshops in Australia 2001-8		x			x			
GUCAS 2008								x
GUCAS 2009								x
Changchun Institute of Applied Chemistry CAS 2009							x	
China Academy of Engineering Physics 2009							x	
New Phytologist-Kunming 2009							x	

[1] (Cargill Lessons for Onshore Esl from Offshore Scientific Writing Workshops)[2](Cargill "Transferable Skills within Research Degrees: A Collaborative Genre-Based Approach to Developing Publication Skills and Its Implications for Research Education"); [3](Cargill and O'Connor "Developing Chinese Scientists' Skills for Publishing in English: Evaluating Collaborating-Colleague Workshops Based on Genre Analysis"); [4](Cargill and O'Connor "Getting Research Published in English: Towards a Curriculum Design Model for Developing Skills and Enhancing Outcomes"); [5](Cargill and O'Connor "Structuring Interdisciplinary Collaboration to Develop Research Students' Skills for Publishing Research Internationally: Lessons from Implementation"); [6](Cargill, O'Connor and Li); [7](Cargill and O'Connor "Identifying and Addressing Challenges to International Publication Success for Efl Science Researchers: Implementing an Integrated Training Package in China"); [8] (Cargill "Collaborative Interdisciplinary Publication Skills Education: Implementation and Implications in International Science Research Contexts" 132-68);

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