

Research Grant writing for STEM

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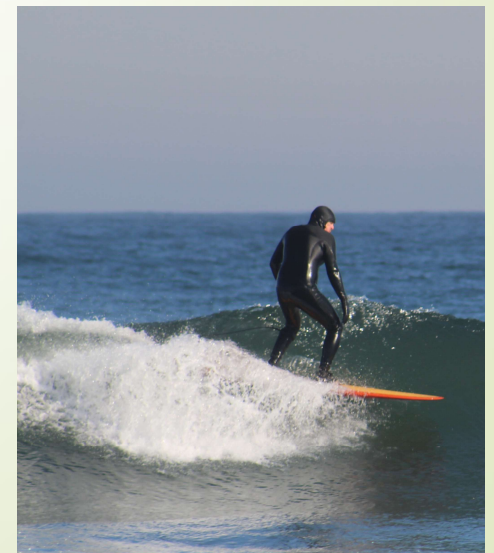
**PACE
EXTRA**

2023 Guest Speaker Series



Bio

- I have been teaching EAP/ESP in Chile since 2007
- In 2020 I completed a PhD in Applied Linguistics at the University of Auckland (NZ)
- My research combines ESP genre analysis with the ethnographic study of situated postgraduate research writing, in particular mentoring and co-authoring practices





Contents lists available at [ScienceDirect](#)

Journal of English for Academic Purposes

journal homepage: www.elsevier.com/locate/jeap



Grant proposal abstracts in science and engineering: A prototypical move-structure pattern and its variations

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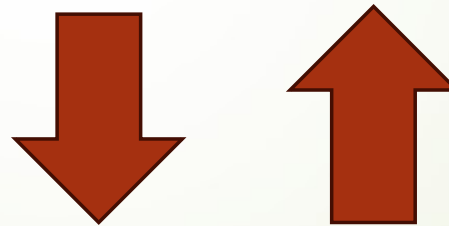


Research grant writing

- A key, high stakes genre
- Secretive, daunting
- Detective work required
- Typical format and length
- Move structures (abstract)
- Name-dropping

Key, high-stakes genre

- Worldwide, scholars are increasingly **pressured to publish** high-impact research to advance their careers or to maintain their employment
- A researcher's **successful grant application** will provide the basis for future research articles



- In turn, **a respectable track record of publications** will then greatly enhance the chances of earning further research grants.



Research grants for emerging researchers

Country	Agency	Grant	Duration	Budget	Profile
New Zealand	Royal Society Te Aparangi	Marsden Fund Fast-Start Grant	3 years	US\$ 65.000 per year	up to 7 years after PhD
Chile	Agencia Nacional de Investigación y Desarrollo (ANID)	Fondecyt de Iniciación en Investigación	3 years	US\$ 40.000 per year	up to 7 years after PhD

Secretive, daunting

- Grant proposals tend to be **classified as confidential** documents by research funding agencies and not made public, making them an **“occluded genre”** (Swales, 1996, p. 47).
- As a result, novice researchers lack easy access to publicly available exemplars of this genre and **cannot learn by imitation**, as they would with more widely publicized research genres such as RAs or conference presentations.



Detective work required

- Funding agency websites
- University yearbooks
- Researchers' homepage, blog, etc.
- Ask an established colleague!





Local disciplinary ecosystems

- Research **articles** in science and engineering are usually addressed to a **global** audience of **highly specialized** readers

But...

- Research **grant proposals** are mostly fed into **locally** controlled ecosystems, such as government-run funding agencies
- Research grant proposals are often read and evaluated by members of the **general** disciplinary community


Format and length of grant proposal and abstract

Country	Agency
New Zealand	Two stages: <ul style="list-style-type: none">• Single-page expression of interest• Full proposal includes a 200-word abstract
Chile	<ul style="list-style-type: none">• Full proposal includes a 300-word abstract• Full proposal in English with bilingual abstract
Japan (KAKENHI)	<ul style="list-style-type: none">• Full proposal includes a 200-word abstract• Either Japanese or English
USA (National Science Foundation)	<ul style="list-style-type: none">• One-page summary (approx. 600 words)• <i>“not an abstract of the proposal”</i> but instead <i>“suitable for dissemination to the public”</i>• prescribed headings: <i>“Overview, Intellectual Merit, and Broader Impacts”</i>



The abstract and the full proposal

- The relationship between the grant proposal and its abstract is similar to that found between the research article and its abstract.
- Swales (1990) already observed that the RA abstract fulfils a dual role of **summary** matter and **front** matter.
- The role of summary matter ensures the **adequate representation** of the RA's contents,
- The parallel role of front matter serves to catch the reader's eye and to **highlight the most attractive aspect** of the longer document



How to write a grant proposal abstract

- Sequencing and cycling of moves
- Real-world and science orientation
- Prototypicality and variation



The basic ingredients of a grant proposal abstract

Move	Purpose
Territory (T)	describes existing knowledge upon which the proposal is based
Niche (N)	indicates some limitation identified in the Territory described above
Goal (G)	states the single main purpose or objective of the proposed research
Means (M)	lists more specific sub-goals, describes the research methods and materials, and predicts specific results or achievements
Benefits (B)	outlines the expected benefits of the project, usually formulated as an upshot of the overall Goal

**Title: Advanced alloying Anode for Magnesium
Rechargeable Battery System
(n.11, Engineering, New Zealand, 197 words)**

Move structure

Magnesium rechargeable batteries have recently gained much attention due to their high potential energy density and low cost.

Territory

// However, the development of magnesium rechargeable batteries has been severely hindered even through there are breakthroughs in electrolytes and cathode materials. The current use of commercial purity magnesium anodes is one of the main reasons for the poor electrochemical performance of magnesium batteries. // This project aims to open a novel route

Niche

for developing high energy density magnesium rechargeable batteries by investigating the new magnesium alloying and/or intermetallic anodes. // Electrochemical charge/discharge

Goal

behaviour studies will be conducted on Mg alloys with controlled microstructure, such as alloying elements, intermetallic phases, grain size and twinning density. The electrochemical phenomena occurring at the Mg alloy/electrolyte reaction interface will also be systematically studied to understand the effect of alloying elements, intermetallics and microstructure evolution on electrochemical reaction interface. Physical models will be developed for understanding the electrochemical reaction mechanisms, and the relationship between microstructure and magnesium anodes performance. // This Fast-Start Marsden project will enable

Means

me to develop my current pioneering research on engineering materials into a new research frontier in energy storage technology, and further establish a New-Zealand-based global research network in this emerging area.

Benefits

Real-world Orientation

Territory (Trw)

Niche (Nrw)

Benefits (Brw)



Science Orientation

Territory (Tsc)



Niche (Nsc)



Goal (G)



Means (M)



Benefits (Bsc)

**Title: Unravelling molecular details of protein interactions
that drive Alzheimer's disease
(n.03, Biology, New Zealand, 176 words)**

Dementias such as Alzheimer's disease are one of the leading causes of death worldwide, // and despite an increasing incidence, there are currently no effective treatments against these debilitating diseases. // Development of therapies has been hampered by a lack of mechanistic understanding of events that underlie the disease. // Two hallmarks of the disease are abnormal aggregation of the protein amyloid-beta and inflammation. // In this project we aim to link these two key features and broaden our understanding of pathological mechanisms in Alzheimer's disease by ... [CONTINUES]

[CONTINUED] ... // This work will establish crucial information on the molecular pathology of Alzheimer's disease, // providing targets for the development of therapies to block harmful interactions to treat Alzheimer's disease.

Move structure

Territory (rw)¹

Niche (rw)

Niche (sc)²

Territory (sc)

Goal

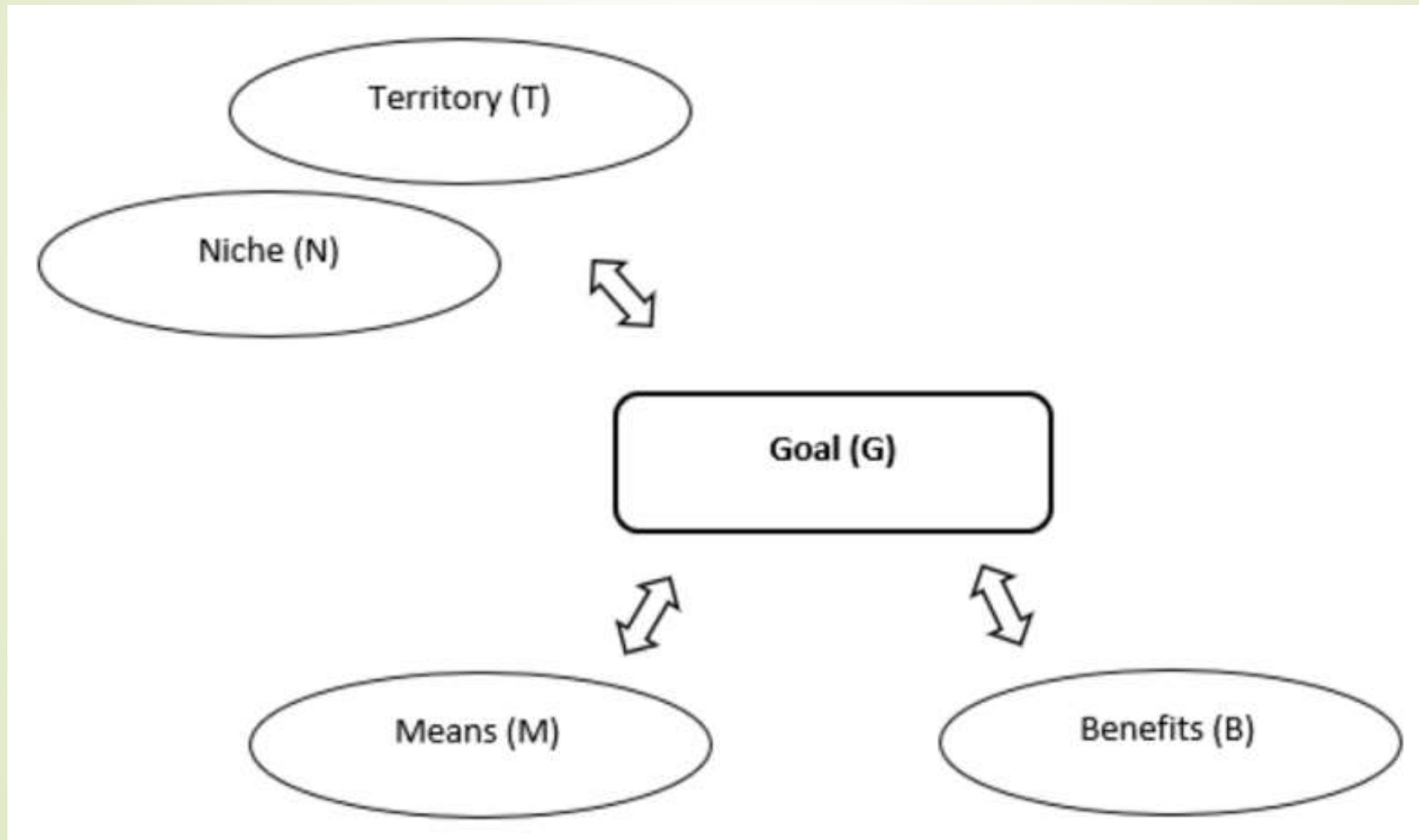
Benefits (sc)

Benefits (rw)

¹ (rw) = real-world orientation; ² (sc) = science orientation

Title: The magnetic myocyte: applying inspiration from muscle physiology to electric motors (n.13, Engineering, New Zealand, 167 words)	Move structure
<i>We aim to rethink</i> electric motor design, mimicking biological muscle to drastically improve motor performance. // Robots	Goal
that are intended to augment human capability, by working together with us or by helping us when our own muscles become insufficient, need actuators with muscle-like performance. // <i>However</i> , today's ubiquitous electric motors	Territory
<i>cannot match</i> the combination of force output and agility offered by biological muscle, and <i>a new approach is needed</i> to enable these robots to become fully useful. // <i>We will take</i>	Niche
<i>three main paths</i> to improvement , using the architecture of muscle itself as inspiration. <i>First</i> , we will use miniature motor units repeated in series and parallel, like the structure of muscle fibres. <i>Second</i> , we will use fluid vessels to carry liquid metal "blood" that delivers energy and removes heat. <i>Finally</i> , we will use distributed control systems and power systems to act like the nerves and signal transducers in muscle. // This new	Means
actuator design approach <i>will enable</i> robots to truly augment human performance, and <i>open a new paradigm</i> in bioinspired design.	Benefits

The central role of the Goal move



Emphasize relevance for specific country / committee

Increasingly energetic swell in the Southern and Arctic Oceans can no longer be ignored from Earth System Models (ESMs) climate predictions. Their impact on sea ice erosion has been observed both in situ and remotely. // The quantification of

Territory

are partly false. Up to now, few studies have evidenced natural examples of such pressure deviations. // The project proposes to track evidences of such deviations in the metamorphic rocks of the Chilean Coast ... [CONTINUES]

Goal

performance. // This Fast-Start Marsden project will enable me to develop my current pioneering research on engineering materials into a new research frontier in energy storage technology, and further establish a New-Zealand-based global research network in this emerging area.

Benefits



Activity:

- Access the file with the sample grant proposal abstract
- Try to label the five moves: Territory (T), Niche (N), Goal (G), Means (M, and Benefits (B)
- Try to identify real-world (rw) and science (sc) orientations in the T, G, and B moves
- Try to spot language that emphasizes a specific national context



**Thank you
and good luck
with your
grant proposal!**