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研究課題名(和文) Development of a construction theory of reasoning that can be practically applicable to research writing and beyond

研究課題名(英文) Development of a construction theory of reasoning that can be practically applicable to research writing and beyond

研究代表者

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交付決定額(研究期間全体)：(直接経費) 3,000,000円

研究成果の概要(和文)：(1)「一つの簡単な文から始める：論証構築ガイド」というタイトルの本。これは研究の主要な成果です。実践的な論証をどのようにして一つの簡単な文(最終的には論証の結論となる)から構築できるかを紹介しています。また、この構築アプローチを評価アプローチと対比させることで、研究プロジェクトの重要な動機づけとなった点も強調しています。(2)「研究の独創性を発展させる方法」というタイトルの本。この本では、ステップバイステップのレシピを通じて、一つの簡単な文を発展させることで研究の独創性をどのように発展させるかを示しています。(3)研究成果を異なる段階で発表した6つの学術論文。

研究成果の学術的意義や社会的意義

今日、AIツールがアカデミックライティングを支援する場面が増えていることから、主に言語使用に焦点を当てた教科書は時代遅れになりつつあります。その結果、アカデミックライティング教育においてパラダイムシフトの必要性が高まっています。このシフトとは、従来の言語中心のスキルに重点を置く方法から、学術論文における明確さと説得力を高める実践的な思考スキルにより深く焦点を当てる方向へと移行することを伴います。提案する本書は、アカデミックライティングのための実践的な思考スキルを主に強調しているため、今年出版することでこのパラダイムシフトの最前線に位置付けられます。

研究成果の概要(英文)：During the research period since 2017, I have achieved the following research outcomes: (1) The book, titled "Begin with One Simple Sentence: The Argument Construction Guide". This is the main achievement of the research. It introduces how a practical argument can be constructed from the formulation of one simple sentence (which will eventually serve as the argument's conclusion). It also contrasts the construction approach to argument studies from the assessment approach, which was a key motivation for the research project. (2) The book, titled "How to Develop Research Originality". This is the book that demonstrates, through step-by-step recipe, how research originality can be developed through the development of one simple sentence. (3) Six journal papers that presented research outcomes in different stages. (4) Nine oral presentations and talks that presented research outcomes in different stages.

研究分野：Philosophy

キーワード：Argument Applied Logic Academic Writing

## 1 . 研究開始当初の背景

There are two main motivations for this research. First, nowadays more and more philosophers are employed to teach academic writing courses. But these courses are largely conducted on a trial-and-error basis, and they lack a philosophy foundation. Second, being able to reason effectively is a very important skill for every educated person. It is important for scientists and researchers to effectively communicate to the public about what they have discovered. It is important for university students to effectively communicate to their teachers about what they learned. It is also important for responsible citizens living in democratic societies to effectively communicate what they think to their governments to help make better policies and regulations.

However, according to a well-known reasoning experiment called the Wason Selection task, most people cannot even correctly perform a very simple and straightforward reasoning task (Wason, 1968; Wason & Johnson-Laird, 1972).

The reasoning experiment concluded that the reasoning failure is due to the presence of the so-called content effect (Lai, 2004). But there is a good reason to suppose that the failure is an inevitable result from the fact that most people are not taught how to reason properly and effectively. This is obvious when we consider the fact that most graduate students do not know how to write a convincing research paper.

As far as writing a convincing paper is concerned, a student needs to know how to properly construct a logical argument for the main claim made by the paper. And in order to do that, the student needs to know how to properly construct a logical relation linking the claim to its supporting premises. But unfortunately, the student would not be able to learn this skill from either the traditional or contemporary studies of reasoning.

Both traditional and contemporary studies of reasoning only focus on the proper assessment, rather than construction, of a logical argument. This is obvious from the definition of logic, which covers both formal and informal approaches to the studies of logic: "Logic is the study of the methods and principles used to distinguish correct from incorrect reasoning." (Copi and Cohen, 2005. P. 4)

Under this direction, it would be quite difficult for the studies of logic to be practically applicable to research writing and other reasoning activities of the same nature. Research writing is by nature a process of construction, which often requires the writer to construct, from scratch, a logical argument for the paper's main claim. Proper assessment of the validity of an argument requires the presence of an argument. But how could anyone conduct a proper assessment of an argument before the argument is constructed?

The problem can be clearly demonstrated through a specific example. Stephen Toulmin (Toulmin 2003) provided a framework of argumentation commonly known as the Toulmin Model. It is perhaps the most practical model among the known studies of logical argument. Unlike the abstract analysis about the validity principles in the formal studies, the Toulmin Model specifies a more practical category of elements (e.g. "claim", "data", "warrant", etc.) that constitute a convincing argument. And for this reason, it is the most popular model used in the education about argumentation in an academic writing course.

But unfortunately, the Toulmin Model is just about, in Toulmin's own words, the "practical assessment of arguments" (Toulmin 2003, p. 7). Even if students know that "data" and "claim" are the elements that constitute a convincing argument, they would still not know how to build a logical relation linking the "data" and "claim", because they would not know what would qualify something as the proper data for the claim.

## 2 . 研究の目的

This research aims to develop a construction theory of reasoning from which one can learn how to construct, rather than merely assess, a logical argument. The principal task of the research is to elucidate the mechanism underlying a constructive approach of logical argumentation; i.e. constructing a logical argument from the argument's conclusion. If the project is successfully implemented, it would enable, among other things, philosophers to play a more constructive role in the education of research writing and beyond.

### 3 . 研究の方法

(An Overview)

The proposed research was implemented through four different stages. The first stage was to justify the need for a construction theory of reasoning through the inadequacy of the reasoning studies that focus only on argument assessment. Second was to establish the theoretical foundation for building a logical argument from the argument's conclusion. Third was to specify, through making the argument recipes, the detailed construction steps linking a conclusion to its supporting premises. Fourth was to create a room for the application of the reasoning theory beyond the research writing education. The research was implemented and tested through research writing education.

Let me explain the methods more specifically.

#### (Stage 1)

The central task in the first stage was to *justify the need for a construction theory of reasoning* in the context of research writing, by demonstrating that a theory of reasoning that is based on the analysis or assessment of logical arguments is inadequate for a practical and effective application of the theory to help graduate students write a convincing research paper.

For this stage of the research, a thorough ***literature review*** was conducted on popular studies of reasoning (e.g. Tolmin 2003) or argumentation (e.g. Walton 2008) to confirm the following claims: (i) the reasoning studies are mostly about argument assessment, (ii) it is difficult to apply the reasoning studies to reasoning activities of a construction nature (e.g. research writing), (iii) reasoning activities of a construction nature require the knowledge about how to build a logical argument from scratch.

For the practical part of the research, an ***experiment*** was conducted in the research writing course to confirm the research claim given in (i)-(ii). The course students received basic lessons on argument assessment, and then they were asked to construct an argument for their own research.

#### (Stage 2)

The central research task the second stage was to *establish the theoretical foundation* for the construction studies of reasoning, by demonstrating that it is theoretically possible for the construction of a logical argument to be carried out from the argument's conclusion to its supporting premises.

For the theoretical part of the research, a thorough ***literature review*** was conducted on classical Aristotelian studies of logic to confirm the following claims: (i) the conclusion of a logical argument provides a good indication about its supporting premises, (ii) it is more effective to make a logical inference based on a conclusion rather than premise, (iii) the definition of "argument construction" is hinted in the classical studies, though it is not developed.

The practical part of the research was conducted through *the practices* in the writing course. A step-by-step recipe on how to build a one-sentence thesis statement from scratch was formulated and tested through the classroom practices. The practical research was conducted in collaboration with the following *renkei-kenkyusha*: Nicolas Baumert, Chad Nilep. They helped testing the thesis statement recipe in their respective courses.

#### (Stage 3)

The central research task the third stage was to further explore and develop the theoretical foundation of a construction theory of reasoning, based on a deeper understanding of the logical relation between an argument's conclusion and its supporting premises.

For the theoretical part of the research, a thorough ***literature review*** was conducted to find out: (i) without having to appeal to the validity principles, a principled distinction between the propositions that are counted as the supporting premises for a given

conclusion and the propositions that are not, (ii) how to identify and build a premise based on a conclusion.

For the practical part of the research, a step-by-step recipe on how to build a logical argument based on a thesis statement (conclusion) was formulated and tested through the classroom practices in the research writing course. The practical research was conducted in collaboration with the following *renkei-kenkyusha*: Nicolas Baumert, Chad Nilep. They helped testing the argument statement recipe in their respective courses.

#### (Stage 4)

The central research task in stage 4 was to expand the application of the construction theory of reasoning, to presentations and debates.

For the theoretical part of the research, a thorough *literature review* was conducted based on Douglas Walton's "Argumentation Schemes" (2008), to find out how to formulate argumentation schemes or templates exclusively used for construction rather than assessment.

The practical research was conducted in collaboration with the following researchers (*not officially registered in this application*): Dr. Mark Weeks, Dr. David Toohey. They helped testing the argument templates in a presentation course for graduate students.

## 4 . 研究成果

### Journal Papers

1. Lai, W. L. "The secret of building a logical argument" in NU Ideas. Nagoya University Multidisciplinary Journal. Vol. 6. P. 23 – 44. 2017.
2. Lai, W. L., Todayama, K. "Why we need a Construction Approach to Logic Education" in Adapting Human Thinking and Moral Reasoning in Contemporary Society. Edited by Yama, H., Salvano-Pardieu, V. IGI Global, 2019.
3. Lai, W. L., Nilep, C., Weeks, M., Baumert, N., Todayama, K. Implementing a Logical Thinking Approach for Education in Research Writing and Presentation. Journal of Nagoya Higher Education Research. No. 19. p. 267 – 293. 2019.
4. Lai, W. L. Introduction to "Logical Thinking Skills for Academic Writing" in Annals of Nagoya University Library Studies. Vol 18. p. 11-23. 2020.
5. Lai, W. L. "How to write a winning abstract" in Annals of Nagoya University Library Studies. Vol 19. p. 9-20. 2021.
6. Lai, W. L. "How to write an attractive introduction". in Annals of Nagoya University Library Studies. Vol 22. p. 9-20. 2024.

### Books

7. Lai, W. L.・寺嶋正明・山祐嗣 (編) 健康的存在とは何か—自然・環境科学と哲学・社会科学からの学際的アプローチ ナカニシヤ出版. 2018.
8. Lai, W. L. How to Develop Research Originality – an introduction to the practical thinking skills for research writing. Textbook for the Nagoya University Library workshop series on Logical Thinking Skills for Academic Writing. Nagoya University Library. 2022.
9. Lai, W. L. Begin with One Simple Sentence: the Argument Construction Guide. (Printout of a book written for the Kakenhi project.) 130 pages. Maruzen. In Press. 2024.

## Oral Presentations

10. Lai, W. L. "Change of Academic Writing Education". London International Conference on Education. Cambridge University, United Kingdom. December 11 – 14, 2017.
11. Lai, W. L. "Change of Academic Writing Education". London International Conference on Education. Cambridge University, United Kingdom. December 11 – 14, 2017.
12. Lai, W. L. "Future of Academic Writing Education". Keynote Presentation. IAFOR Asian Conference on Education. Kobe Arts Center. October 19 – 21, 2017.
13. Lai, W. L. "The Secret of Building a Logical Argument". Keynote Presentation. 3<sup>rd</sup> International Symposium on Academic Writing and Critical Thinking. Nagoya University. February 11, 2017.
14. Lai, W. L. "Lectures on Logical Thinking". Graduate School of Letters. Osaka City University. September 27, 2018.
15. Lai, W. L. "科学における哲学と倫理". Research Institute for Interdisciplinary Science. Okayama University. November 27, 2019.
16. Lai, W. L. "Introduction to my research". Gifu University. March 6, 2020.
17. Lai, W. L. "科学における哲学と倫理". Research Institute for Interdisciplinary Science. Okayama University. March 23, 2021.
18. Lai, W. L. "The Argument Construction Guide". 5<sup>th</sup> International Symposium on Academic Writing and Critical Thinking. Nagoya University. February 16, 2024.

## 5. 主な発表論文等

〔雑誌論文〕 計7件（うち査読付論文 6件/うち国際共著 4件/うちオープンアクセス 6件）

1. 著者名 ライ ウェイリン	4. 巻 19
2. 論文標題 必勝の要旨を書く方法	5. 発行年 2022年
3. 雑誌名 名古屋大学附属図書館研究年報	6. 最初と最後の頁 29～35
掲載論文のDOI（デジタルオブジェクト識別子） 10.18999/annul.19.29	査読の有無 無
オープンアクセス オープンアクセスではない、又はオープンアクセスが困難	国際共著 -

1. 著者名 Lai, W. L.	4. 巻 18
2. 論文標題 Introduction to "Logical Thinking Skills for Academic Writing"	5. 発行年 2021年
3. 雑誌名 Annals of Nagoya University Library Studies	6. 最初と最後の頁 11-23
掲載論文のDOI（デジタルオブジェクト識別子） なし	査読の有無 有
オープンアクセス オープンアクセスとしている（また、その予定である）	国際共著 -

1. 著者名 Lai, W. L., & Todayama, K.	4. 巻 1
2. 論文標題 Why we need a construction approach to logic education.	5. 発行年 2019年
3. 雑誌名 Adapting human thinking and moral reasoning	6. 最初と最後の頁 245-265
掲載論文のDOI（デジタルオブジェクト識別子） 10.4018/978-1-7998-1811-3	査読の有無 有
オープンアクセス オープンアクセスとしている（また、その予定である）	国際共著 該当する

1. 著者名 Lai, W. L., Nilep, C., Weeks, M., Baumert, N., Todayama, K.	4. 巻 19
2. 論文標題 Implementing a Logical Thinking Approach for Education in Research Writing and Presentation.	5. 発行年 2019年
3. 雑誌名 Journal of Nagoya Higher Education Research	6. 最初と最後の頁 267-293
掲載論文のDOI（デジタルオブジェクト識別子） なし	査読の有無 有
オープンアクセス オープンアクセスとしている（また、その予定である）	国際共著 該当する

1. 著者名 Lai, W. L.	4. 巻 17
2. 論文標題 Introduction to Mei-Writing Summer Camp: An icon of general education in modern times	5. 発行年 2020年
3. 雑誌名 Annals of Nagoya University Library Studies	6. 最初と最後の頁 5-22
掲載論文のDOI (デジタルオブジェクト識別子) なし	査読の有無 有
オープンアクセス オープンアクセスとしている (また、その予定である)	国際共著 -

1. 著者名 LAI Wai Ling, NILEP Chad, WEEKS Mark, BAUMERT Nicolas, TODAYAMA Kazuhisa	4. 巻 19
2. 論文標題 Implementing a Logical Thinking Approach for Education in Research Writing and Presentation	5. 発行年 2019年
3. 雑誌名 名古屋高等教育研究	6. 最初と最後の頁 267-293
掲載論文のDOI (デジタルオブジェクト識別子) なし	査読の有無 有
オープンアクセス オープンアクセスとしている (また、その予定である)	国際共著 該当する

1. 著者名 Wai Ling Lai	4. 巻 6
2. 論文標題 The Secret Of Building a Logical Argument	5. 発行年 2017年
3. 雑誌名 Nagoya University Multidisciplinary Journal	6. 最初と最後の頁 1-10
掲載論文のDOI (デジタルオブジェクト識別子) なし	査読の有無 有
オープンアクセス オープンアクセスとしている (また、その予定である)	国際共著 該当する

〔学会発表〕 計7件 (うち招待講演 5件 / うち国際学会 3件)

1. 発表者名 Lai Wai Ling
2. 発表標題 Academic Writing for Graduate Students
3. 学会等名 AWSO Kick-off Event, CEGLOC, University of Tsukuba (招待講演)
4. 発表年 2022年

1. 発表者名 LAI Wai Ling
2. 発表標題 How Nagoya University and Gifu University could collaborate on general education and beyond
3. 学会等名 4th International Symposium on Academic Writing and Critical Thinking (国際学会)
4. 発表年 2019年

1. 発表者名 LAI Wai Ling
2. 発表標題 How Philosophers can Contribute to Teaching Research Writing: A brief introduction to an applied philosophy project
3. 学会等名 The XXIV World Congress of Philosophy (国際学会)
4. 発表年 2018年

1. 発表者名 LAI Wai Ling
2. 発表標題 Research Writing and Logical Thinking Lectures
3. 学会等名 Hiroshima University Library Workshop Series 2018 (招待講演)
4. 発表年 2018年

1. 発表者名 LAI Wai Ling
2. 発表標題 科学における哲学と倫理
3. 学会等名 Okayama University Invited Lectures (招待講演)
4. 発表年 2018年



1. 発表者名 LAI Wai Ling
2. 発表標題 Academic Writing, Logical Thinking, and Philosophy of Cognitive Sciences
3. 学会等名 Osaka City University Invited Lectures (招待講演)
4. 発表年 2018年

1. 発表者名 Wai Ling Lai
2. 発表標題 Change in Academic Writing Education
3. 学会等名 Asian Conference on Education (招待講演) (国際学会)
4. 発表年 2017年

〔図書〕 計2件

1. 著者名 LAI Wai Ling	4. 発行年 2022年
2. 出版社 Nagoya University	5. 総ページ数 55
3. 書名 How to develop research originality	

1. 著者名 頼 偉寧、寺嶋 正明、山 祐嗣	4. 発行年 2018年
2. 出版社 ナカニシヤ出版	5. 総ページ数 184
3. 書名 健康的存在	

〔産業財産権〕

〔その他〕

## 6. 研究組織

	氏名 (ローマ字氏名) (研究者番号)	所属研究機関・部局・職 (機関番号)	備考
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## 7. 科研費を使用して開催した国際研究集会

〔国際研究集会〕 計1件

国際研究集会	開催年
International Symposium on Academic Writing and Critical Thinking	2024年～2024年

## 8. 本研究に関連して実施した国際共同研究の実施状況

共同研究相手国	相手方研究機関
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