# Implementing a Logical Thinking Approach for Education in Research Writing and Presentation

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＜Abstract＞

Writing effectively for the purpose of publications at an international level requires the use of appropriate and expected language, balanced appeals, and convincing logical argument. While many forms of writing instruction discuss the connection to rhetoric, and instruction for second-language writers often highlights the importance of grammar, the role of logic in research writing may not be sufficiently stressed. As a result, many graduate students and young researchers do not understand how to make their research clear and convincing. A logical thinking approach, in which a clear thesis statement is produced early and then developed into a logically convincing argument through the research process, can help such researchers. This paper explains how a logical thinking approach is implemented across courses on academic communication skills. It presents classroom activities designed to help graduate students acquire the skills of logical writing. In addition to research papers, attention to argumentation and reasoning is helpful in preparing preliminary abstracts and oral presentations, and this is shown to be no less important when communicating across cultures and disciplines.

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## 1. Introduction

At Nagoya University Writing Center, we advocate a logical thinking approach (LTA) to writing a research paper and preparing a conference presentation. Briefly put, LTA focuses on the development of a thesis statement or central idea in research. Such an idea is usually an unconfirmed hypothesis in the early stage of research, to be turned into a confirmed conclusion equipped with logically convincing premises in the final stage. Accordingly, LTA is a process of developing a hypothetical thesis statement into a logically convincing argument. Following LTA, students are taught to prepare a research paper by first formulating a preliminary thesis statement, and then proceed to confirm the statement by constructing logically convincing premises based on the statement. The word "logical" in LTA is used in a narrow sense: The premises are logically convincing if the contents of the premises are *inferentially relevant* to the content of the thesis statement.

While we briefly outline how logically convincing premises can be constructed, the primary focus of this paper lies in a general understanding of how the development of a thesis statement can be widely applicable and implementable in academic writing and presentation courses. For this purpose, we will first show the justification for LTA in the current Japanese system of higher education, and then show how LTA can be widely applied and implemented.

The justification for LTA will be shown in section 2, through reference to two major programs created by Japan's Ministry of Education (MEXT). One program helps graduate students develop transferrable or general skills, and another encourages selected universities to compete for top rankings in global research. Section 3 explains why it is important to start writing a research paper with a reasonably clear thesis statement, as an organizing device to help researchers determine the research direction (Moore and Cassel 2011), to avoid a purely data-driven article without a logical conclusion (Belcher 2009), and to help them collect research data more effectively. In section 4 the paper illustrates how the recipes and templates provided as part of the logical thinking approach are used in

graduate-level education at Nagoya University. Creating and communicating a concise point – a thesis statement or controlling idea – is invaluable for coursework in research writing, as well as seminars dedicated to preparing and delivering presentations (section 5). The logical thinking approach is implemented in multiple languages, and for scholars from different disciplinary as well as cultural backgrounds. As discussed in section 6, the approach described here helps researchers to communicate across all of these boundaries.

## 2. Why is the Logical Thinking Approach Needed?

We can begin to see the need for the logical thinking approach through two major programs created by MEXT (Japan's Ministry of Education, Culture, Sports, Science and Technology).

The first program is called the *Program for Leading Graduate Schools*. It was created to solve what is commonly known as "the post-doc problem." Briefly, throughout the 1990s and 2000s, nine selected universities reformed their education systems following MEXT's suggestion to prioritize graduate programs over undergraduate programs. Almost all the top universities extended their PhD program enrollment limits, one result of which was to invite an awkward situation in which they produce more graduates than the universities and research institutes in Japan could ever accommodate.

To solve the problem, the program requires the universities to help graduate students broaden their career paths, so that they do not have to limit their career options to one or two academic fields. According to the website of the Japan Society for the Promotion of Science, the program aims to "foster excellent students who are both highly creative and internationally attuned and who will play leading roles in the academic, industrial and governmental sectors across the globe" (JSPS 2010). Clearly, one of the purposes of the program is to diversify career paths for post-docs.

However, in order to expand the career goals of graduate students, it is highly desirable to implement curricula that can give them transferrable

or general skills applicable to non-academic fields. Even if they become specialists in their own specific fields, it does not mean that they are capable of communicating their research to people in other academic fields or people outside of an academic environment. To help these students cope with the changes, many "leading" graduate schools in Japan have launched courses for leadership training, career education or liberal arts education for postgraduates.

In our view, logical thinking education resides at the core of liberal arts education for graduate students simply because such thinking skills may be transferable across different academic fields and beyond.

Another program launched by MEXT, the *Top Global University Project,* encourages some top universities in Japan to move toward a leading position in global research. In order to become global leaders, universities in Japan should improve their educational policies to incorporate the logical thinking approach into their writing and presentation education. An effective way to the top is to raise the university's contribution to the international academic community. For this purpose, more and more researchers and even students in Japan are encouraged to write papers in foreign languages, papers that are suitable for publication in top international journals. In order to meet this challenge, the content of such papers must be highly innovative, clear, and logically convincing.

Unfortunately, many graduate students at Japanese universities have difficulty producing papers that meet the challenge, at least in part because of a lack of systematic training in logical thinking and academic communication. In Japan, there is no substantive logical thinking/writing/speaking curriculum in elementary and middle school education. Students have to learn how to think logically and express their thoughts convincingly from scratch after they enter universities. The same applies to students from outside Japan, many of whom complain that they have great difficulty in constructing logically convincing arguments in writing a paper in spite of their high research and linguistic competency. The usual reason they give is, "I never learned such skills in my school days." So, if universities aim to "increase the ratio of international students" by

rendering their educational programs more attractive in the eyes of students from overseas, they need to include courses for writing lessons combining logical thinking education.

Indeed, proper education in logical thinking skills is important for learning how to write a publishable research paper. Although there are many textbooks and online materials that provide guides on how to improve academic writing in English, there is a tendency to focus on how to improve the language skills in the writing (Lai 2013). While mastery of the proper use of grammar, punctuation, and academic phraseology is surely important for making a research paper intelligible, more is required to make it publishable. For example, the criteria for scientific papers to be accepted for publication in *Nature* are that they (i) "report original scientific research," (ii) "are of outstanding scientific importance," and (iii) "reach a conclusion of interest to an interdisciplinary readership."[1)] Authors are encouraged to explain, in a cover letter to the journal editors, why the submitted paper should be considered for publication. Such papers should be not only clear but also convincing. Obviously, merely producing a paper that is free of language problems is not sufficient for meeting the publication criteria.

In order to meet such publication criteria, a research paper author must, above all, have a clear idea about the originality and significance of his or her research. And he or she must have a logical argument to convince a wide range of readers how the idea was established and why it should be accepted. To help our students fulfill these extra-linguistic requirements, we have adopted a specific logical thinking approach that focuses on the development of a thesis statement in research writing and presentation.

## 3. The Importance of a Thesis Statement in Research Writing

To begin with, let us clarify what "research writing" and "thesis statement" mean here. When teaching postgraduates, most of our courses and tutorials focus on a particular range of research writing. These materials mainly cover journal papers, master's as well as doctoral dissertations, book reviews, grant proposals, conference proceedings and

abstracts. A thesis statement represents the central idea or main claim of a research paper. The idea is expressed in the form of a statement, which is normally presented in one simple sentence. Since a thesis statement is essentially an idea, it is changeable throughout the process of writing a research paper. In the beginning of the process, a thesis statement is a hypothesis or unconfirmed conclusion. Once the requisite support for the hypothesis is properly established, then the thesis statement becomes a confirmed conclusion.

There is a general acknowledgement among writing centers that a thesis statement is an essential element of argumentative writing. For example, the Purdue Online Writing Lab advises that an argumentative piece of writing must begin with a thesis (Weida and Stolley 2017). Philosophers who link logic studies to academic writing also agree that having a clear thesis statement is essential for the writing process. For example, Howard Kahane and Nancy Cavender suggested that the first task in writing an argumentative essay is to determine a precise thesis for the essay (Kahane and Cavender 2006: 204). The narrow range of research writing specified above clearly falls into the genre of argumentative writing, and thus it is essential for such writing to have a thesis statement. We would argue further that it is important to *begin* the research writing process with a thesis statement.

### 3.1 Starting with a Thesis Statement

In their book about the important role that the thesis statement plays in college writing, Kathleen Moore and Susie Cassel treat thesis statements as the basis of writing as well as reading an academic essay. For the reader, the thesis statement functions as “an anchor” that helps him/her understand the points made in the essay. For the writer, it functions as “an organizing device” that helps him/her think through the issues to be covered, and decide which points are most relevant to the main claim (Moore and Cassel 2011: 8).

Looking at research writing in particular, Moore and Cassel’s point about thesis statements can be appreciated even more. Most of the writing we work with is based on research carried out for the purpose of solving

a problem or answering a question (see also Booth et al. 2008: 10). As long as research is directed toward solving a problem or answering a question, it cannot be properly carried out without having a reasonably clear hypothesis. The hypothesis functions as "an organizing device" that helps the researcher(s) determine the research direction, and identify the evidence that is needed to support the hypothesis. Research in this sense is a process of collecting the data and establishing the support for a hypothesis. And research writing is a process of presenting the data and support that turned a hypothesis or thesis statement into a confirmed conclusion. In both cases, a hypothesis is the basis.

It might be pointed out that certain researches are exploratory by nature, and thus do not require a hypothesis before the investigations are carried out. However, even a researcher with no explicit hypothesis to test implicitly has some aim and expected end in mind. Note that the requirement for having a hypothesis at an early stage of research does not mean that the hypothesis must be fixed at that time. Quite the contrary, a hypothesis should be changeable throughout the research process. If a hypothesis cannot be supported, then it will need to be modified or even abandoned. It would be quite unrealistic to have no idea or purpose at all during an investigation. It would be like sailing into the open sea without having any idea where to go. One would not even know where to begin.

But worst of all, if the process of writing a research paper is not directed by a reasonably clear thesis statement, then it might be at risk of becoming what Wendy Belcher calls a "data-driven article" (Belcher 2009: 86-9). As the name suggests, the author of a data-driven paper tends to focus more on presenting the data that he or she has spent a great deal of time and effort to collect, rather than caring about whether the data can actually support the conclusion of the paper. As a result, readers of the article may be left puzzled by the connection between the data and conclusions.

In order to avoid data-driven articles, therefore, one should pay more attention to the paper's thesis statement and its connection to the supporting data. Paying attention to this connection means that one needs to be careful in judging if the premises really provide convincing support

for the thesis statement. It would be difficult to make such a judgement without the guidance of a clear thesis statement.

### 3.2 Thesis Statement and Convincing Support

The term *convincing* means "capable of causing someone to believe that something is true or real" (Stevenson 2018). Based on that definition, in order for certain premises to be counted as convincing support for a particular thesis statement, the premises must be capable of causing someone, anyone with a third-party point of view, to believe that the thesis statement is true. In other words, it is by virtue of the premises that one can come to believe that the thesis statement is true. If we explore further based on this definition, we can see that in order for the premises to be capable of causing a third party to believe that the thesis statement is true, they must at least satisfy the following two conditions.

First of all, the contents of the premises must be objectively verifiable. The reason behind this condition is quite straightforward: In order for the premises to cause a third party to believe that a thesis statement is true, then the contents of the premises must be verifiable from the third-party point of view. For example, suppose that the thesis statement to be supported is: "there is a black pig on the farm",[2] then the ideal premise that can deliver the convincing support would be the fact that *there is indeed a black pig on the farm*. Facts are objectively verifiable. If it is truly the case that there is a black pig on the farm, then it is objectively verifiable by anyone, and ipso facto, one can come to believe that the thesis statement that "there is a black pig on the farm" is true. Note that the contents of the premises are not limited to facts. As long as they are objectively verifiable, the contents could cover things that are not directly observable such as mathematical truths, universal laws, and other forms of knowledge that are commonly held.

Second, the contents of the premises must be inferentially relevant to the thesis statement being supported. The inferential relevance here describes an unconventional inferential relationship that links the truth of a thesis statement to the truth of the supporting premises by matching the content of the statement with the content of the premises. The simple

example given above shows an ideal match between the premises and thesis statement: the fact that there is a black pig in the farm perfectly matches with the content of the thesis statement. In other words, the hypothesis is perfectly realized or instantiated in the real world. In such an ideal case, the premises *confirm* the thesis statement with 100% certainty. But frankly speaking, the example oversimplifies how the fact was obtained. In reality, it is almost impossible for any non-trivial hypothesis to be perfectly realized or instantiated in the real world. That is, if the hypothesis is non-trivial, then instead of finding the black pig as such, it is often the case that we can at best find footprints that resemble a pig's, black hair that resembles a pig's, etc. The findings are not conclusive enough to be the confirmation of the black pig, but they serve as reliable indicators of the pig, through which a third party can reasonably *infer* the presence of a black pig. A reliable indicator of a pig is inferentially relevant to the hypothesis about a pig. As long as the footprints and hair reliably indicate the presence of a pig, and if it turns out that the footprints and hair found indeed came from a black pig, then one can come to believe that there is a black pig on the farm. Note that linking premise and conclusion by inference is a hallmark of every legitimate argument, regardless of whether the premises make the conclusion necessary (i.e. deductive) or probable (i.e. inductive, and or abductive). The inferential relevance relationship here further enables a principled distinction to be drawn between data that constitute convincing support and data that do not.

Whether the premises confirm or infer a thesis statement, in order for the premises to be convincing support, their content must be relevant to the content of the thesis statement. And in order to judge if the content of the premises is relevant to the content of the thesis statement or not, there must be a thesis statement beforehand. This is another reason why it is important to have a clear thesis statement before building the support.

### 3.3 Arguments for Subjective Claims

As was stated above, the premises used for convincing support in research writing should be objectively verifiable. Nevertheless, the criteria for convincingness described in LTA are also useful for research writing

that makes subjective claims. By "subjective claims" we mean claims related to values, norms, preferences, etc. Specifically, the support for such claims should be inferentially related to the conclusion, and the data must be relevant to the claim.

Since claims of this sort do not have an external truth value, they cannot be verified in the same way we may seek to verify natural phenomena. However, much writing seeks not to prove the truth of its conclusion but to establish probability and superiority over other potential arguments (Lunsford and Ruszkiewicz 2004). Techniques similar to those used to support the probability of claims about objective phenomena can be used to make subjective claims more effective and persuasive.

As an example of such a subjective claim, consider scholar Vicente Diaz's (2016) critique of the marketing of the Disney film, *Moana*. Diaz claims that the marketing featured "distasteful representation, cultural appropriation, and crass commercialization of Islander culture and tradition." Claims about distastefulness and crassness are subjective in the sense that they relate to individual or social preferences. Yet Diaz uses techniques of inductive reasoning to support his point of view. He begins by pointing to depictions in past Disney films that have been criticized as racist or sexist. Next, he points to critical scholarship that suggests the Disney corporation has responded to past criticism in ways similar to their responses to criticism of *Moana*. In both of these arguments the evidence is subjective – critics' beliefs about past events. But Diaz's use of generalization from past observations to support a conclusion about a new case makes use of logical inference and relevance in ways like those described above.

In short, the insights of LTA are applicable to research writing that relates to norms and values as well as natural or social phenomena. A clear thesis statement and effective argumentation can help make subjective as well as objective academic writing convincing.

### 3.4 A Recipe Approach to Developing a Thesis Statement and Convincing Support

The importance of having a convincing argument in argumentative writing has been heavily emphasized by almost everyone who teaches, writes, or cares about the subject. But well-known sources remain largely unclear as to how such an argument can be constructed. Many students, including those who have learned about logic before, do not know how the construction should start and proceed. This is because conventional studies of logic do not really teach argument construction. The focus of those studies lies in the methods and principles used to assess whether an existing argument is correct or incorrect (Copi and Cohen 2005: 4). However, if one is to build an argument from scratch, then one would have to know where to start, and what to do next. The conventional logic studies are helpless at this level.

To help our students learn to construct arguments effectively, W. L. Lai (e.g. 2014, 2016) has developed a series of recipes and templates that provide step-by-step guidance on how to build a thesis statement from scratch, how to build the first premise based on the thesis statement, and how to build the second premise based on the first. The recipes and templates are not designed to teach how to build a perfect thesis statement and argument. They are designed to help students understand what components should be incorporated into the construction process, and most importantly, how the components should be linked together.

In section 4, we shall explain how the thesis statement recipe is used in one of our courses. The LTA “recipes” are step-by-step guides to constructing logical arguments, provided as a first step for students who are unfamiliar with the process.

## 4. Pedagogical Application for Research Writing

The idea that effective research writing must have a clear thesis statement and use logical argument with relevant content may seem like second nature to experienced academics. But novice researchers need to develop this understanding over time. Both the arguments underlying

research writing and the mechanics of producing such writing must be learned. It is not sufficient to show learners models of finished papers and expect them to intuit the logic underlying them. Students whose only experience of research writing is producing basic reports may have a very different understanding of what the models show than their teachers do (Wells 1993). Therefore, it can be useful to work through examples of the thesis statement recipe or other similar techniques in a writing seminar. By working together, students may become more able to apply the techniques, and teachers may acquire greater awareness of the specific difficulties faced by a student or group of students. It is less important for student-writers to have a theory of argumentation than to be able to apply effective argument in their own writing.

For example, in one course at Nagoya University the thesis statement recipe is introduced in four steps over the course of two weekly seminar meetings. Prior to the first of these meetings, participants read about the thesis statement recipe (Lai 2013). During the first meeting, the instructor presents the definition of a thesis statement, and students work together to critique various sentences as acceptable or unacceptable as thesis statements. Following this meeting, each student produces a thesis statement for a paper she or he is working on, or expects to work on in the future. Students send these statements to the instructor prior to the next meeting. During the second of the two meetings, students' proposed thesis statements are presented to the class, without the author's name. All participants in the seminar then work together to suggest ways to make the proposed thesis statement clearer, more specific, and less ambiguous.

The thesis statement recipe (Lai 2013) comprises eight steps. First, the author names the topic of the research with a noun phrase. Next, the noun phrase is used as the subject of a sentence that elaborates the nature of the research. In the third step, this sentence is transformed into a question. By turning the sentence into a how or why question, the author begins to commit to a more specific line of inquiry or investigation. The fourth step is to provide a hypothetical answer to the question. If, as is often the case during graduate seminars, the author is applying this recipe to planned research, the hypothetical answer provides a hypothesis to be tested – a

process of abduction. If the answer is based on completed research, this answer provides the rudiments of a thesis to be supported in the paper. The fifth step refines this rudimentary thesis or hypothesis into a statement by summarizing it in one sentence, though in some cases a small number of very closely linked sentences may suffice. The sixth step of the recipe is to clarify the relationship between the subject and the predicate of the statement. It is often difficult, but is crucial for authors to make explicit the links among elements of their own thinking. Step seven is to highlight and eliminate ambiguities in the thesis statement. This may include lexical or structural ambiguity, as well as vagueness and other threats to clear expression. Finally, step eight is the presentation of the preliminary thesis statement or hypothesis.

In the first of two seminar meetings, participants discuss the definition of a thesis statement, and work through examples of sentences that are not sufficient as thesis statements.

For this seminar a thesis statement is defined as (1) a factual statement, (2) that makes an objectively testable claim about the world, (3) is non-trivial to debate, and (4) is specific enough to treat completely within the span of a given piece of writing. To help participants understand these elements, the instructor presents a series of sentences and asks participants to decide whether they are factual, objective, non-trivial, and sufficiently specific. The series of examples ends with a paraphrase of the actual thesis of a scholarly publication.

As described above, decisions that are second nature to experienced writers are not transparent to novices. It is therefore useful to work from very simple judgments to increasingly nuanced ones in this exercise. Participants have no difficulty in rejecting examples that are not statements. Even so, it is useful to present non-factual sentences including a question. This reinforces the idea that a thesis statement is not the same as a research question; it is a proposed answer to the question. The instructor then provides subjective as well as objective statements. It can be useful at this stage to present objective statements that relate to subjective opinions. For example, “Most people think the current government is doing a good job” is objective: It is either true, if indeed a

majority of people share that opinion, or untrue otherwise. Discussing objective statements about opinions is a step toward more complex judgments about writing.

Participants are next provided with a number of objective statements, some of which are trivial. The definition of "trivial" is, of course, not straightforward. As with objective statements about opinions, it can be useful to discuss statements that may or may not be considered trivial. Simple descriptive statistics, for example, may be too trivial for some types of research but may be appropriate for certain types of survey. This allows for discussion of different kinds of claims, as well as the kinds of data useful for different questions. Finally, participants are provided with various non-trivial statements, including at least one which paraphrases the conclusion of a research publication. Again, they debate the usefulness of the various statements for research writing. Finally, they are shown a published abstract that contains a statement they have been debating. This helps cement the importance of a thesis statement in writing for publication.

During the same meeting, the instructor illustrates a "worked example" of Lai's thesis statement recipe. The instructor illustrates each of the eight steps with an example worked out in advance. It can also be useful to elicit topics, predicates, and questions from seminar participants. In this case, more time should be allowed to elicit, discuss, and agree upon useful examples.

At the next meeting, participants help one another refine their own thesis statements. Following the first seminar meeting, all participants are asked to create a preliminary thesis statement for their own research writing. These statements are sent to the instructor just before the next seminar meeting. The instructor prepares slides with each preliminary thesis statement, removing author's names and sometimes correcting minor language errors, if it is straightforward to do so.

Seminar participants cooperate to critique one another's anonymized thesis statements and offer suggestions for improving them. This process of peer review not only helps each author to identify and understand problems with the thesis statement. It also requires other participants to

reflect on the variety of pitfalls that can make a thesis statement ambiguous, unclear, or insufficiently specific.

## 5. Implementation for Presentations

As Jonathon Schwabish observes, “Presenting is a fundamentally different form of communication than writing” (Schwabish 2017: 2). In fact, even the goals of presenting are often quite different, at least in emphasis, to that of journal articles or dissertations. Occurring at various points in the research cycle, presentations may be a means of reporting results, but are quite often (more often than is the case with those written channels) undertaken by researchers before conclusive results have been achieved, primarily in order to garner feedback that might enhance the research in progress. Nevertheless, it is worth noting that writing usually plays an important role in the presentation process, ideally in a script (Wallwork 2010) and almost always in the preparation of an abstract/proposal. Above all, focusing on a concise thesis (or hypothesis) statement and clearly articulated logical support has considerable value for presentations and courses dealing with the subject. This can be identified in two strongly related areas, the creation of an abstract and the organization of the actual presentation around a clearly articulated point, ideally a thesis statement or statement of hypothesis.

### 5.1 The presentation abstract

It is difficult to overestimate how important it is that researchers become adept at writing presentation abstracts. Much as an article abstract facilitates a potential reader’s decision to read or not, presentation abstracts commonly appear in conference booklets or web pages to help attendees make quick, informed decisions about which sessions or individual papers they will attend. But a presentation abstract has another and more critical function: it is often used as the sole or primary basis upon which conference organizers determine whether a paper will be accepted for presentation in the first place. Depending on the conference, this can be a highly competitive endeavor. Much is riding on

that abstract, with organizers typically preferring, even demanding, that an abstract satisfy certain criteria, particularly that it contains a clear and significant idea and that it offers convincing support, or a credible method for gaining such support, for that idea. A systematic approach toward writing clear (hypo)thesis statements within logically organized and convincing abstracts is obviously of extraordinary benefit in satisfying the demands, including stringent word limits, often set by review committees.

For that reason, a presentation course may from early on have students read and analyze presentation abstracts, identifying a thesis statement or statement of purpose (or the unfortunate absence of this) and breaking the entire text down into its component parts. From there, question prompts as per the recipe method can be used to have students consider their own research in terms of such elements. Finally, perhaps with the aid of some appropriate vocabulary, students are encouraged to generate an abstract of their own. That can serve as the basis for a presentation they will make in class, especially with improvement through feedback from peers and the instructor. It can also serve not only as a model for future "real world" presentation abstracts they are likely to write, but actually help them methodically, logically organize their research work as a whole. In this sense, the fact that abstracts usually need to be prepared well before the actual delivery of a presentation can be seen as a blessing with regard to both the presentation and the orderly advancement of the researcher's project.

There is another respect in which the presentation abstract has a special significance: it serves as a platform to engender the focus, clear logical flow and concision presenters constantly wrestle with. Research presentations need to communicate complex new content in real time, primarily through speech and visual display, to audiences that may or may not be native speakers of the language, may or may not be specialists in the field – all within prescribed time limits. That challenge requires extraordinary attention to communicative efficacy, something that is not always obvious to researchers themselves; they may misguidedly assume preparation to be simply a matter of pasting an article or notes onto slides and reading through them. Of course, we attempt to divest students of

that idea, and working on an abstract built around an explicitly stated assertion provides a way to make the discipline and strategic decision-making involved in presentation preparation concrete.

### 5.2 Presenting around a Point

In teaching presentations and guiding students through the construction of their own presentations, we are not alone in encouraging placement of a thesis statement, or at the very least a concise statement of what the research has set out to determine, at the beginning of the presentation where practicable. This would entail, for example, not relying on a statement as vague and neutral as "We studied..." but rather saying "Our study demonstrates that...." Emphasizing the communicative dimension of presentations, Schwabish writes, "If you don't share your conclusions or the implications of your work up front your audience can't see how the pieces – the previous literature, your data, and your methods – fit together" (Schwabish 2017: 12). Indeed, this is a common cause of comprehension problems for research presentation audiences. Particularly in disciplines where the IMRaD (Introduction, Method, Results and Discussion) structure for articles and presentations is expected, it is easy for presenters to believe they are doing enough if they simply fill the I, M, R and D boxes; there are even slideshow templates available to make the task a very simple, mechanical peg-in-hole operation. The downside to that is that there may be no slide dedicated to stating what the researcher believes has been proven or is expecting to prove. Even if there is, it may not be clear to the audience, or even to the speaker sometimes, that this is the very crux and that everything else is subordinate to that statement, serving to support it, or at least point towards methods of validation. The box-filling approach thus has a tendency to create disjunction between elements within the presentation, primarily because it lacks an underlying logical argument propelling and connecting them. In short, because the presentation lacks the natural wellspring of motivation, the delineation of purpose provided by a thesis statement, it fails to logically flow. As alluded to above in relation to writing, a tendency to overwhelm an audience with data, the so-called "data dump," may then take over (see Weissmann 2008).

This is not to say that we dogmatically insist that the introduction must in all cases contain a thesis statement. In certain fields and within certain conference organizations, there are conventions militating that the presentation work from previous studies through methodology and results before explicitly stating a position. In those cases a research question is typically given in the introduction that will be answered later. There are also cultural expectations that we would be foolish to simply ignore. Since our primary mission is to facilitate researchers' effective communication of their work, we understand that in some cases the best we can do is to show the logical and communicative benefits of an upfront statement of thesis and encourage researchers to ensure they have something akin to a thesis statement in mind as the principle guiding element as they prepare and present. We can also make them aware of other factors that might be fostering a reluctance to posit the thesis early, such as the belief that by deferring the statement of position one generates suspense and therefore interest in the audience, or (again this may vary across individuals and cultures) a disinclination to expose oneself by stating a position without first erecting a solid foundation, or wall, of evidential and logical support.

Such perceived 'benefits' may be more than offset, we would suggest, firstly by the improved cogency and communicative efficacy offered by the upfront statement of a provable point and also by the likelihood that an audience will better be able to critically test the content throughout the presentation, and therefore give more useful feedback, if they know from near the beginning what the speaker's position is. Michael Alley emphasizes an often forgotten reality, "presentation is a two-way form of communication" (Alley 2003: 189); presentations may be a way of impressing others with one's work, but are also part of a cooperative (all the while critical) endeavor undertaken by presenters and audiences together to produce better research results.

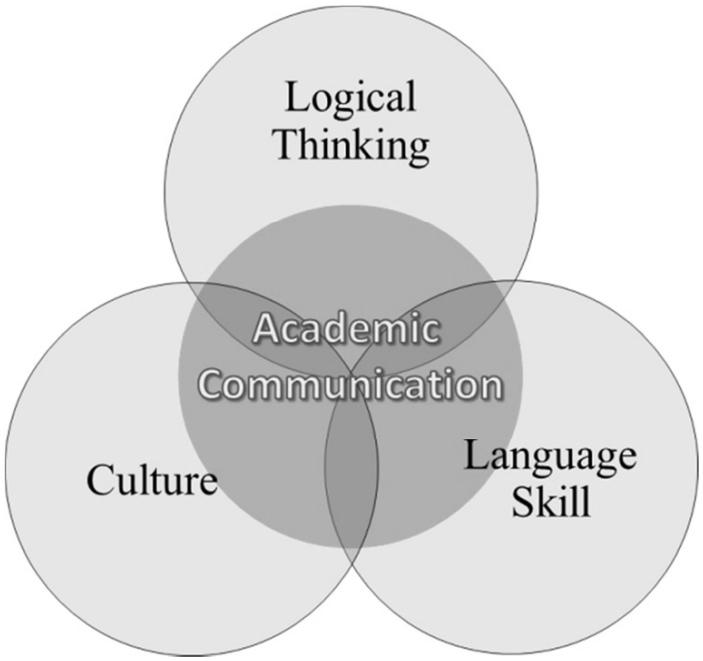
## 6. Applications in a Multilingual and Multidisciplinary Research Environment

As English dominates international academic organizations, for most researchers the mastery of academic writing or presenting requires first mastering a foreign language, and then mastering a particular register of this foreign language, academic communication. In this section we address how a logical thinking approach is useful for communicating research across boundaries of language, culture, and discipline.

Because the specific purposes of research communication are the same across languages, the structure of a research paper written in English resembles research writing in French, German or Japanese more than it does casual English (Labov 2006). Progressing in a multilingual environment is a major difficulty and important challenge researchers have to face in the international academic world, so any efficient academic communication should take this point into consideration.

### 6.1 Language, culture and disciplinary inferences

The challenge of academic communication can be summarized as in the above figure showing 3 intersecting circles associating language, culture and logical thinking. Although the nature of interaction between language and culture is debated (e.g. Beckner et al. 2009, Berwick et al. 2013), it is assumed that the 3 circles have reciprocal influence, even if it is impossible to concretely determine the degrees of such influence. In this figure culture and language develop, exchange, and operate simultaneously as a part of academic communication. Edward Sapir argues that linguistic phenomena are cultural phenomena, and linguistic behaviors such as speech and written language include a symbolic dimension, “for the sounds and marks used therein obviously have no meaning in themselves and can have significance only for those who know how to interpret them in terms of that to which they refer” (Sapir 1934: 492). What is called logical thinking is then influenced by the characteristics of the language as well as the culture of the writer and their language skill.




Source: authors

Figure 1　The Challenge of Academic Communication in a Foreign Language

The importance of a recipe is fundamental while teaching students or young researchers who need to publish in a foreign language. Logical thinking is a key element that they can share, as writers, with their evaluators and then with their readers. Independently of the language, the bases of effective writing lie in the clarity of the thesis statement and the quality of the support. Logical thinking operates similarly across different academic cultures.

Success in academic communication is a question of argumentation and the capacity to predict the readers' or audience's expectations. As Ito (2015) wrote, "academic writing is a kind of sociolect." Indeed, academic writing can be considered as a form of communication specific to a social group, in this case, researchers. Faced with a scientific article, non-specialists may feel excluded because of language, even if they are native speakers of the language. But the difficulty is deeper and appears in different scales. Even if they are sharing the same sociolect, writers from the same discipline but from different countries and speaking different

languages can have difficulty communicating. The issue may not be the quality of the research or the thesis statement as such but the structure of the argumentation. This point, especially the structuration of the writing, is strongly influenced by the language, the culture and the educational background of the writer. Good research communication expressed in a foreign language cannot be merely literal translation.

### 6.2 A good international paper cannot be a simple translation

The structure of the argumentation is one of the key aspects of the academic writing sociolect, influenced by national academic cultures and also by each scientific discipline. One might take as an example an experience that many reviewers of academic journals may share when they have to evaluate a translated article of a non-native author. In the case of French reviewers of a paper by Japanese authors, for example, an article may be difficult to understand, even if the reviewers of the same discipline can comprehend the scientific import of the article (Baumert 2017). The key points of an evaluation appear problematic for texts translated from Japanese and reviewers may note problems with overall logic, article structure, and scientific positioning that come from the effects of language and culture. Most significantly, reviewers face particular trouble when the thesis statement and major conclusions of an article are not clearly expressed within the introduction and the conclusion.

In the academic cultures of the French and Japanese humanities such misunderstanding may be caused by different visions of what the structure of a journal article should be. For Yumi Takagaki, who is engaged in research about text organization in French and Japanese, these problems originate from different literary traditions and expectations in the two cultures, along with education. From an outside point of view, French academic texts appear strongly organized, and the structure is standardized, whereas Japanese academic texts may appear more like a free-flowing discourse (Takagaki 2015). But this does not imply that the Japanese texts are more “natural.” There is often a structure more complex than the French standard in Japanese texts crafted to appear

natural. This includes a thesis statement, although it is intentionally expressed indirectly. The reason for this is mainly that French articles are influenced by the *dissertation* [3] and Japanese students and scholars' texts are more influenced by the *zuihitsu* [4] style. According to Takagaki, "three French rhetorical conventions" can be obstacles for Japanese writers: "an impersonal mode, restriction of spontaneity, and the importance of text planning" (Takagaki 2015: 29). In particular, Takagi points out the difficulty faced by Japanese learners' of French in their paragraph organization, as often observed in their French compositions.

This example concerning French and Japanese could be applied to other language pairs. It suggests that successful research communication should begin with a clear and logical argument, and proceed to use the correct "dress code" to effectively convince the reader to accept its premises. To that end, the structure appears as a cultural filter between the reader and the writer. Many students and young scholars are not aware of this fact, believing that their text structure and organization are a universal schema. This misunderstanding leads them to write papers in foreign languages using a schema that will be systematically devalued by those assessing the work.

### 6.3 The Benefits of a Cross-cultural Writing Approach

In order to help researchers negotiate this complexity, we emphasize that, despite differences across language and disciplines, the bases of a research paper tend to be the same. At the draft level, a clear thesis statement is necessary even for academic cultures that do not typically present this directly in their academic communication. Japanese academic culture, especially in the humanities, provides a perfect example. We have already pointed out that the appearance of a free-flowing discourse does not mean there is no thesis or main idea, because the writer will have to convince the reader to think in his or her way. Behind the process of writing a final version, the need for a recipe to build a thesis statement and a logical argument are fundamental. For students coming from those academic cultures of apparently free-flowing discourse, learning the importance of the logical basis is much more difficult because the basis is

typically hidden.

Learning about academic writing in order to publish papers in a foreign language drives students to consider the cultural elements operating through the language they wish to publish in (Menant 2015). Learning other cultural systems can lead to different ideas and might open up other perspectives, because writing is not only a presentation of data but a significant part of the research process (Wadden 2015). To this end, research writing must be both apropos in its form and logical in its construction. The approach described in this paper, starting from the thesis statement to the adaptation of the best argumentative structure to the reader's culture, helps researchers to communicate across boundaries, because the structuration of the ideas is important, not only to convince the reader, but to advance scientific understanding.

## 7. Conclusion

This paper has shown how LTA can be widely applied and implemented in research writing and presentation courses across languages and cultures. We started by showing the need for general education courses in the current system of higher education in Japan, explaining why it is important to start the research process with a thesis statement. Then we moved on to show how LTA is actually implemented in a research writing course, and how conference preparations can equally benefit from the guidance of a thesis statement. The paper ended with a suggestion that the application and implementation of LTA are not restricted by any particular language, discipline or culture. While this paper has not sought to show exactly how a thesis statement may be developed into a logically convincing argument, which is a major part of LTA, this is discussed elsewhere, for example, in Lai (2014). Once the requisite explanations of LTA and its implementation are provided, this method has the potential to become a model for general education for all graduate students and young researchers.

## Notes

1) Editorial criteria and processes, *Nature*. (https://www.nature.com/nature/for-authors/editorial-criteria-and-processes, 2018.10.30)
2) The example here was inspired by John Austin's (1962) example about a pig in his account on evidence.
3) The *dissertation* (sometime called *composition*) is an organized exercise of argumentation, generally and ideally in three parts (an introduction, a development and a conclusion) according to a thesis statement (*problématique*).
4) The *zuihitsu* is a free-form style in which elements are arranged by associations of meaning and reflect the will of the author rather than a standard order.

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# 研究論文・学術プレゼンテーション指導のための ロジカル・シンキング・アプローチの実践

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**＜要　旨＞**

国際水準の論文を書くには、適切で理にかなった言語使用、論拠の配分、明確で論理的な主張などが求められる。ライティング指導ではレトリックのつながりが重視されたり、第二言語使用者には文法的な重要性が強調される傾向があるものの、研究論文における論理の重要性はあまり強調されてこなかった。そのため、多くの大学院生や若手研究者は、どのようにすれば自分の研究を明確で説得力ある形で伝えらえるかを、十分に理解しているとは言えない。「論理思考アプローチ」は、まず論文の主張を明確にした上で、研究活動を通じてその論を論理的かつ説得的にしていくプロセスであるが、このアプローチが大学院生や若手研究者に不可欠である。本論文は、アカデミックなコミュニケーションスキルを扱う教育において、この論理思考アプローチをどのように実践するかを論じる。具体的には、大学院生を対象としてライティングスキル獲得支援のために開発したプログラムの詳細を論じる。また、学術論文を書くだけでなく、論拠や論証を強調した指導を行うことで、アブストラクトの作成や口頭発表にも有益であることを論じる。これは、専門分野や領域ごとの文化の枠を超えたコミュニケーションにおいても重要な点である。

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