Online Resources for Teaching Critical Thinking Skills to ELLs: A Pilot Study

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Abstract: A major problem that has been observed by administrators and faculty at international colleges in Thailand is that many students coming from high schools in Thailand have neither the English ability nor the critical thinking skills necessary to be successful university students. As Facione (2013) reports, there is not only a “significant correlation between critical thinking and reading comprehension,” but also that college student’s GPA is similarly correlated with the scores of critical thinking assessments (p. 21). This pilot project sets out to develop both of these skills among students at an international college preparation center using online teaching tools. The participants are between the ages of 17-20, are both male and female, and the overwhelming majority are of Thai ethnicity. We aim to look at the practice of discretely teaching critical thinking skills, at the same time as teaching basic to intermediate English skills, to see whether students learned how to communicate successfully and meaningfully. Communicating meaningfully requires students to be able to find data, analyze and evaluate it, come to a reasoned decision about that data, and be able to clearly communicate this process to others both verbally and in writing. This pilot project is the first step in examining the practice of teaching the multiple stages of critical thinking through an online platform. After further refinements and piloting, we expect to see a demonstrable increase in meaningful communication after the addition of discrete critical thinking skills in the curriculum.

Key Words: critical thinking, EFL, online learning, Thailand

The concepts of what is now called critical thinking can be traced back to ancient philosophy, and specifically, the Western tradition of Socratic questioning. In recent years, there has been a renewed interest by researchers and educators on how to better define, teach, and analyze critical thinking skills. This paper provides the results of a pilot study in which the researchers set out to discretely teach critical thinking to English language learners using an online interface. Questioning and expressing doubt are the foundations of critical thinking, and as Lopate explains, “The exercise of doubt is something an individual has to cultivate on his or her own, in private, before summoning the courage to air it” (2013, para. 4). Using online tools, students are encouraged to cultivate and embrace the practice of thinking critically away from the classroom. This is done by introducing the concept of critical thinking and the skills that are used when thinking critically. Additionally, the students are given instructional materials on the topics of intellectual standards, logic, and logical fallacies. Finally, students are asked to demonstrate their critical thinking skills through individual writings and group discussions.

Critical Thinking Defined

There has been much debate over how to best define critical thinking (Petress, 2004; Mulnix, 2010). For the purposes of this research, we required a definition that not only fully explained what critical thinking is, but that was also comprehensible enough for lower-intermediate to intermediate level English students. However, finding a definitive definition for the term has proved problematic. One of the problems is that the term is used inconsistently (Lewis & Smith, 1993; Petress, 2004). Facione tried to standardize a definition for critical thinking by asking 46 experts on critical thinking in order to come to a consensus on what critical thinking is. The panel of experts agreed that critical thinking is “purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological,
or contextual considerations upon which that judgment is based” (Facione, 1990, p. 2). While this definition is one that the majority of experts asked by Facione were able to agree with, most of the language used in the definition would be difficult for intermediate learners of English as a Foreign Language (EFL) to understand.

In order to try and find a more adequate definition for our students we looked at a number of the other definitions for critical thinking. Ennis, in one of the earliest, and often cited, definitions of critical thinking says that “Critical thinking is the correct assessing of statements” (1963). However, Ennis himself later admits that this definition was too “vague” and that it did not account for what he calls the “creative aspects of critical thinking” (1993). Additionally, definitions on critical thinking are often influenced in large part by the specific domain of the researcher. Petress (2004) finds striking differences in the definitions proposed by psychologists, philosophers, and education scholars. Mulnix (2010) eases some of the confusion around defining critical thinking when she states that “critical thinking has little to do with what we are thinking, but everything to do with how we think” (italics in original, p. 3). By viewing critical thinking as a process that describes how we become good thinkers, we have been able to give our students a series of steps that break down the different activities encapsulated by the term critical thinking. Both Mulnix’s ideas on critical thinking and the process steps laid out by Paul and Elder (2005, see appendix A) provide our students with an easily understandable concept of what critical thinking is all about.

**Context**

Our approach to the teaching of critical thinking is inextricably linked to our context. Although many materials for the teaching of critical thinking are readily available, few fit the cultural, linguistic, and academic needs of our students. The context of this research can be subdivided into three levels: national, institutional, and departmental. Factors at each level shape the research and guide its course. At the national level, reforms in education drive the interest in critical thinking. These reforms are largely the result of the National Education Act of 1999, which sparked systemic changes that are still ongoing. At the institutional level, Mahidol University International College’s commitment to the ideals of the liberal arts education is a central factor. This commitment is partially due to the internationalization of education. At the departmental level, interest in critical thinking is closely tied to a review of the curriculum in 2009. Current EFL and pedagogical theory guided the curriculum review.

**National level**

The Thai government has initiated several educational reform initiatives in the past two decades. As of 1996, the government has already announced certain goals, including the modernization of teaching methods and decentralization of the school system; however, none of these goals had yet been implemented (de Segovia & Hardison, 2009). The Asian economic crisis of 1997 provided the impetus for deep changes in the educational system. In fact, several explanations for the crash cited the system’s failure to prepare graduates to cope with the rigors of the modern economy. For example, an official in the Ministry of Education blamed “people’s insufficiency of educational attainment and the deteriorating moral and social values that led to selfishness and corruption” (Sangnapaboworn, 2003, p. 3). A further explanation for the crash was the loss of “Thai wisdom” and the ability to think strategically (Jungck & Kajornsin, 2003, p. 27), while others explained the crash in purely economic terms (Terwiel, 2011). Whatever the true causes for the crash were, it did precipitate change on many levels of the Thai administration.

After the crash, the government promulgated a new constitution. Among the 300 clauses detailing changes throughout the government were several clauses meant to reform the educational system (Terwiel, 2011). These clauses led to the release of an additional educational reform bill in 1997 that called for the cultivation of graduates who were capable of thinking critically to solve local problems (Hallinger, 2010, p. 404). Further change came with the passing of the National Education Act of 1999. This act called for a reorientation of education in Thailand. Among other changes, it called for a shift to student-centered learning that was tailored to individual contexts: “[The National Education Act] provided that educational institutes and agencies concerned need to provide substance and activities in line with the learners’ interests and aptitudes bearing in mind individual difference” (Sangnapaboworn, 2003, p. 7). In a major policy shift, the government permitted schools to dedicate up to 20% of their curriculum to locally relevant materials (Jungck & Kajornsin, 2003). Previously, the national curriculum had been standardized throughout the country.

Many researchers (for example Jungck & Kajornsin, 2003; Kirtikara, 2001; Sangnapaboworn, 2003) expressed optimism about the successful reform of the Thai educational system; however, initial changes were largely superficial. Governmental policy had changed significantly, but change “[had] not reached the school and classroom levels in significant ways” (Kantamara, Hallinger, & Jatiket, 2006, p.3). The public recognized the “gap between ‘rhetoric and reality’” (de Segovia & Hardison, 2009, p.161), resulting in frustration (Hallinger, 2010). Some change did occur, but it was “fragmented, lacking in deep integration, and well below the content level … envisioned in the education review framework” (Hallinger & Lee, 2011, p. 154). To date, most of the stated
goals have not been reached. One explanation is that
the goals were simply too ambitious: “The past decade
of educational reform in Thailand is more accurately
framed within the metaphor of the ‘impossible dream’
than as a ‘broken promise’” (Hallinger & Lee, 2011, p.
156).

The reform set in motion by the National Education Act
of 1999 inspires the current research on the integration
of logic and critical thinking into the curriculum at the
Preparation Center for Languages and Mathematics. Reform is still ongoing in the Thai educational system,
particularly at the high school level; however, many high
schools have not yet implemented student-centered
learning, nor have they added critical thinking to the
curriculum. Thus, the cultivation of active learning and
critical thinking in incoming students is a key role of the
Preparation Center for Languages and Mathematics.

**Institutional level**

Mahidol University International College is an English-
medium liberal arts college within Mahidol University. It
was founded in 1986 with the mission to “produce well-
rounded graduates and to excel in broad international
education research and academic services” (“About
MUIC,” 2013). Throughout the years, the college
has maintained its focus and reaffirmed its goal of
“[preparing] its students to meet the challenges of
living and working in the 21st century” through a liberal
arts education (“A Liberal Arts Education in an Asian
Setting,” 2012).

Critical thinking is a key component of a liberal arts
education. One of the goals of a liberal arts education
is to impart “the ability and desire to adopt a critical
perspective on one’s and other’s beliefs, behaviors,
values, and positions, whether this perspective leads
one to a reaffirmation or revision of one’s current
position” (Blaich, Bost, Chan, & Lynch, 2004). This
being said, no comprehensive definition of a liberal
arts education exists. Furthermore, certain dangers are
inherent in adopting a particular approach based on
its success in another context. As Green (2012) warns,
“In education, as far as student learning is concerned,
it is a mere step from ‘best practice’ to ‘one size fits
all’, an approach that threatens to silence a multitude
of alternative (even complementary) approaches,
especially in a multi-cultural setting” (p. 2). Thus,
Mahidol University International College must adapt
the liberal arts education to its own context rather than
accepting an existing approach in its entirety.

The current research is part of the movement to adapt
the liberal arts education to the Thai context. Although
extensive materials for teaching critical thinking exist,
the majority were written for students with different
cultural backgrounds. Additionally, including critical
thinking and logic in the curriculum of the Preparation
Center for Languages and Mathematics will prepare
students for their liberal arts studies at the college.

**Departmental level**

Applicants to Mahidol University International College
who meet all criteria (e.g., entrance test scores, high
school GPA) for admittance but lack the requisite
English proficiency have the option of enrolling in the
Preparation Center for Languages and Mathematics. The
primary role of the center is to develop students’
language skills to the necessary level in as short a time
as possible. Additional goals include the cultivation of
study skills and general knowledge.

In 2009, the curriculum at the Preparation Center for
Languages and Mathematics underwent a thorough
review. Until the time of the review, grammar was
the main focus of the curriculum. After the review,
the curriculum was more closely aligned with the
communicative paradigm. An emphasis on effective
communication replaced an emphasis on sentence-level
grammatical accuracy. In many instances, formative
assessment replaced summative assessment. Also, the
revised curriculum replaced presentations with small-
group discussions. The curriculum review represented
a radical change in the orientation of the program.

The curriculum at the Preparation Center for Languages
and Mathematics continues to evolve in response to
students’ needs. The immanent integration of the
ASEAN Economic Community is making the need for
critical thinking skills ever more apparent. Because
of the lowering of barriers to international trade and
international employment, students who are now
studying at the Preparation Center for Languages and
Mathematics will enter a competitive job market upon
their graduation from Mahidol University International
College. Graduates must be flexible to face such
competition, and critical thinking skills are essential
to such flexibility.

The current research into approaches to teaching
critical thinking is compatible with the communicative
approach to language teaching. The study of critical
thinking is by nature thought-provoking, and it can
provide fruitful topics for discussion among groups
of students and for essay writing. Such cognitively
challenging material may enhance the communicative
approach. As Dewey (1915) observed, “There is all the
difference in the world between having something to
say and having to say something” (p. 39). Students of
critical thinking will not lack for “something to say” and
will not be reduced to discussing trivial topics.

Factors at the national, institutional, and departmental
levels drive the current research in critical thinking and
logic. Developing a culturally relevant and pedagogically
sound approach to teaching critical thinking will be instrumental in achieving several related goals: at the departmental level, preparing students for the rigors of a liberal arts education; at the institutional level, supporting Mahidol University International College in preparing students to take their places as productive members of society and of the economy; and at the national level, of developing critical thinking skills in the spirit of the National Education Act of 1999.

Goals

The purpose of this project is to create a series of lessons and activities on the different aspects and skills of critical thinking that students will be able to work through independently. As mentioned before, critical thinking skills are desirable because they allow students to communicate in English in a meaningful way; however, it is often difficult to get students to demonstrate these skills in the classroom using either oral or written communication. The idea to put these lessons and activities online came in large part from the Google Course Builder project. Google calls this product their “experimental first step in the world of online education” (Google, Inc., n.d.a). Google demonstrates many facets of the Google Course Builder project with two courses they designed in-house. These courses, called “Power Searching” and “Advanced Power Searching,” are meant to teach people how to search the Google website more effectively (Google, Inc., n.d.b).

Teachers can use Google Course Builder to create a website for a specific course. They are able to create a series of classes within each course, and each class can be broken down in separate lessons. The project allows teachers to embed video files that contain the instructional material. This can be done with a simple video of a lecture, a screen capture of an instructor’s computer, or video presentations with an accompanying audio from the instructor. At the end of the video, the students are prompted to answer questions about the lesson, or complete an activity before they are able to advance to the next lesson. At the end of the class, students are able to go back, re-watch, and review any of the lessons at their own discretion. Instructors are also able to give timed assessments online at different points during the course (for instance, after the student has completed half of the classes).

It is our desire to create a series of lessons for specifically teaching critical thinking skills to intermediate English language learners while they are concurrently enrolled in the English Program at the Preparation Center. Our courses will introduce students to specific areas of critical thinking, such as logic (and logical fallacies), intellectual standards, types of questions, source selection, evaluating arguments, analyzing assumptions and prejudices, being fair-minded when making judgments, and being able to effectively communicate a judgment. By engaging in these topics away from the classroom, students are able to choose a comfortable environment to test and practice critical thinking skills. After learning these skills and thought processes outside of the classroom, we want students to be able to confidently use the skills in their English classes during general class instruction times, while creating research papers, writing argumentative essays, and during formal, organized discussions.

Materials and Technology

Materials are made available to students at home through a number of different online platforms. Edmodo is a social website designed specifically for students and teachers. Using it, teachers create online “classrooms” which require unique passwords for students to enter. Teachers can create assignments, make comments on individual assignments that have been turned in, send messages to the entire class, share electronic documents, and embed materials right into the class page. Once the students have joined the class, they are able to send and receive private messages with the teacher, post comments and ask questions to everyone in the class, share and receive electronic documents with the teacher, and view their grades.

Google Drive is a platform that allows users to create text documents, spreadsheets, presentation slides, and “forms”. Students are able to create text documents that they can then share with others using Google. This tool facilitates peer editing since editors can easily view a document and make comments without disturbing the original text. However, the most useful Google product for this project is the Google Forms. Google Forms is a tool that gives users the power to create online questionnaires that can then be shared with others. Once the Form has been completely answered, the information is then automatically transferred to a separate spreadsheet within Google Drive. Google Forms has proven to be a valuable tool for both creating assignments based on the lectures, as well as getting feedback and comments about the lectures themselves.

Finally, Powerpoint is a software package for creating slideshows. These slideshows can be loaded into a separate program, Camtasia, which enables users to record an audio file on top of the slideshow, combine both the slideshow and the audio file into a single movie file, and then upload and share the movie through YouTube. All of these technologies were central in our efforts to make critical thinking content accessible to our students.

Pilot

In our first semester of piloting this program, we created content for three of the specific areas that we
wanted to teach: intellectual standards, logical fallacies, and types of questions. These topics were chosen because they provide the students with some of the most fundamental aspects of critical thinking. During the “Types of Questions” lesson, students learn about three different systems that can be used to define question and answering: the one system question (that either a correct or incorrect answer), the no system question (a question that elicits an opinionated response that cannot be assessed), and the multiple system question (a question that requires pulling together information from multiple fields to come up with an answer that can be assessed as either “better” or “worse” than other responses based on the validity of support used in the answer) (Paul & Elder, 2009). In the second lesson, intellectual standards are taught to students as a guide to help them understand what quality thinking is comprised of, and the topics introduced include: clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness. Finally, we also dedicate a separate lesson to logic. This lesson teaches students about the different parts of an argument (premise and conclusion), and some common logical fallacies that students are likely to encounter.

Using Camtasia, we were able to record five videos that combined a slide presentation of the material and the instructor’s voice narrating over the slideshow. The videos ranged from just over seven and a half minutes to a little over seventeen minutes long. The videos were then uploaded to YouTube and shared with students by embedding them in the Edmodo digital classrooms. In addition to watching the videos, students were asked to complete assignments based on the topics in the lecture. Some of the assignments included creating transcripts based on in-class student discussions in order to analyze the strengths and weaknesses of arguments based on the intellectual standards and logic. Others involved analyzing outside texts that contained a mixture of errors in both intellectual standards and logic. Finally, they were asked to analyze arguments from their own writing assignments that were produced both before and after the critical thinking lessons.

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Implications for Research

After running the critical thinking pilot program for one semester (ten weeks), we asked the students to fill out an anonymous questionnaire using Google Forms. A total of 49 students in two different classes responded, giving a response rate of 92%. The forms asked both Likert and open-ended questions. The questionnaire was not an assessment item at all; rather, the document asked students to give feedback on their experience watching the specific lessons (see appendix B). The Likert responses tended to rate the videos favorably. Overall, students indicated that they were able to understand the presenter’s language (5.52 out of 7), understand the presenter’s vocabulary (5.10 out of 7), and understand the content of the lecture (5.29 out of 7). They also indicated that they would be likely to view one or both videos again (5.23 out of 7) and to a lesser extent that they would recommend the videos to someone in a different class covering the same topics (4.98). The open-ended responses gave us a more critical insight on the lessons. Several students commented favorably on the clarity of the language used in the videos (n= 11) and the clarity of the content (n= 19). This is an encouraging result, as providing cognitively challenging material using simple language was a primary goal of the pilot. While many of the students commented on the clarity of the lectures, a number of others commented that some of the lessons would benefit from including more examples of the concepts (n=9). While each of the lessons contained at least one to two examples of each concept, additional examples could be provided to the students using supplemental materials. As more lessons are planned, instructors need to remain cognizant of the abstract nature of the issues surrounding critical thinking and provide numerous examples of the material during the lecture videos as well as supplemental material to ensure that critical thinking concepts are accessible to learners.

During the piloting of this program, no formal assessments were given concerning critical thinking skills. Instead, instructors and students informally assessed whether or not critical thinking skills were learned, retained, and being demonstrated. This assessment generally occurred through verbal feedback during discussions and written feedback on essays. Searching for critical thinking assessments presented instructors with problems similar to those that they faced when looking for materials for teaching critical thinking; mainly that the language used in many assessments is not written with intermediate to upper-intermediate English language learners in mind, and many of the materials are vastly out of context at the Preparation Center.

Conclusion

Lack of critical thinking skills remains a major problem at international colleges in Thailand. This pilot study has provided insights into the effective use of online materials in teaching discrete critical thinking skills in an English curriculum and has clarified the steps necessary for the cultivation of our students’ critical thinking skills. A definition that is comprehensible for EFL learners needs to be agreed upon, materials need to be developed so that students are able to engage them in a non-threatening environment, and abstract concepts need to be thoroughly reinforced with concrete examples.
Overall, we judge this project to be a small but important step towards improving our students’ education. In the spirit of the National Education Act of 1999 and mindful of the upcoming integration of the ASEAN Economic Community, we will strive to provide our students with the skills necessary to succeed at university and beyond. Through this process of continuous improvement, we will learn alongside our students.

References


Appendix A: Paul & Elder (2005)

1. Raise vital questions & problems that are clearly and precisely formulated
2. Gather & assess relevant information
3. Come to well-reasoned conclusions, then test these against relevant criteria & standards
4. Think open-mindedly
5. Recognize and assess assumptions, implications, & consequences
6. Communicate effectively with others

Appendix B: Reflection / Response Form

1. Were you able to understand the presenter’s language? (Likert scale 1-7)
2. Were you able to understand the vocabulary that the presenter used? (Likert scale 1-7)
3. Were you able to understand the content of the lecture? (Likert scale 1-7)
4. How likely are you to rewatch one or both of the videos? (Likert scale 1-7)
5. How likely would you be to recommend one or both of these videos to someone in a different PC3 class? (Likert scale 1-7)
6. In your opinion, what are the strengths of these specific videos? (Open-ended)
7. How could these specific videos be improved? (Open-ended)
8. Please share any additional thoughts that you may have. (Open-ended)
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