COLLABORATIVE PREPARATION AND CRITICAL THINKING IN ACADEMIC WRITING

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Abstract

This article presents the findings of a pilot research project conducted amongst third and fourth year EFL students taking Assumption University’s Academic Writing course. The goal of the research was to test if small group collaborative preparation had a positive impact on the quality of critical thinking in the students’ writing. A summary of the literature on the concept of critical thinking itself shows much scholarly discord. Even less consensus is revealed by a study of significant research efforts on the impact of collaborative preparation on students’ critical thinking skills. The results of this pilot study would seem to support this conclusion.

Keywords: Analysis, Brainstorming, Collaboration, Collaborative preparation, Critical thinking, Synthesis.

บทคัดย่อ

บทความนี้นำเสนอผลการวิจัยโครงการนั่งเรียนในหลักสูตรการเรียนเขียน

วิชาการของนักศึกษามหาวิทยาลัยอัสสัมชัญเป้าหมายการศึกษาใน

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กลุ่มสกัดผลต่อคุณภาพการคิดเชิงวิชาการในการเขียนของนักศึกษาหรือไม่ ข้อสรุป

ทางวิเคราะห์เกี่ยวกับแนวคิดเชิงวิชาการแสดงความเห็นที่แตกต่างหลากหลายวิชาการ

เมื่อรับในการวิจัยที่สามารถที่ช่วยผลักดันการเตรียมความรู้ของนักศึกษา

เพื่อทักษะการคิดเชิงวิชาการผลการศึกษาเรียนเรียนนี้คือข้อสรุปสนับสนุนข้อสรุปนี้
Introduction

"How can you write clearly if you do not think clearly?" (Gesiakowska, 2009) I am sure many colleagues would resonate with this teacher’s "cri de coeur" - the depth of critical thinking revealed in both essay and paragraph writing by a good many students for whom English is a foreign language (EFL) is often disappointing. Over the ten years of teaching Academic Writing with Faculty of Arts graduating students, this issue has been a constant companion. Various overt and covert strategies have been attempted to encourage students to look more deeply into and discuss the issues layered in their writing topics. They have been encouraged, even required to read more broadly with little fruit shown for the efforts. Then, early in the 2009 academic year, a former colleague from DePaul University Chicago was in Bangkok for an extended time as a visiting professor in Assumption’s graduate school. Gesiakowska is a veteran Chicago suburban high school and college instructor. Her field is research writing. The pilot study conducted across the fifteen week second semester of 2009 is one of the products of many conversations.

Having studied a sample of published literature on critical thinking, as well as collaboration and critical thinking, there was some reluctance to plunge directly into a full research study of the impact of collaboration on critical thinking in the Academic Writing students’ assignments. The literature surveyed showed much disagreement in and across the board discussion of critical thinking. As will be seen, there are many definitions of what is critical thinking itself. Various schools of thought question if it can be “taught”, disagree about if and how it might be equitably assessed, and finally, if small or large group discussion of a topic beforehand has any impact on the quality of the subsequent individually written presentation. One particular study which was closely followed as a guide boldly stated, “Research has failed to prove the effectiveness of programs especially devised to improve critical thinking (higher-order) skills” (ten Dam & Volman, 2004: 359). Which end of a crocodile infested billabong was one really wanting to dive into? The answer was to design the following pilot project and see what would be revealed.
Purpose of the Study

All 27 students in the class were given five major writing assignments across the semester. Four different preparation strategies were introduced. These were then collected and assessed, with writing samples taken of a focus group of 8 students. The purpose was to observe the evidence of critical thinking presented in the writing after the use of four different preparation strategies.

Research Questions

The questions which informed the pilot study:
1. What evidence of critical thinking is shown in the students’ writing?
2. Does a collaborative preparation strategy have a more positive impact on the students’ writing than an individual one?
3. What general conclusions can be deduced about a relationship between collaborative preparation and critical thinking in the students’ writing?

Working Definition of Terms (more fully elaborated later)

*Clustering brainstorming:* a preparation method used to generate ideas to be used in later writing. The central idea or topic is written in the middle of the page and circled. Around this, ideas related to the topic are arranged or “clustered” (Oshima & Hogue, 2006: 269).

*Collaborative preparation:* guided preparation carried out by students in small groups of three or four people before working individually on a writing assignment.

*Critical thinking evidence:* evidence shown of “analysis, synthesis, and evaluation” of particular ideas under discussion (Gokhale, 1995: 23).

*Free writing brainstorming:* a brainstorming process used to find a specific focus by spontaneously noting, without any grammatical, vocabulary or organizational self-censoring, everything which occurs to one while writing. Each idea will prompt the next (Oshima & Hogue, 2006: 268).

*Group brainstorming:* a process where all members of a group share ideas and suggestions spontaneously in order to solve a problem, “a conference technique of... amassing information, stimulating creative thinking..."
(“Brainstorming”, 2010).

Guidance: the art and act of explaining and demonstrating the principles, standards and/or methods to be used in order to reach a desired goal (Fowler & Fowler, 1958: 537).

Individual brainstorming: a relaxed thinking process engaged in by a person to solve a problem “by rapidly generating a variety of possible solutions” (“Brainstorming”, 2010).

Individual preparation: preparation for a writing assignment carried out alone by the student, whether guided or open style.

Listing brainstorming: a writing preparation method used to find a topic focus by listing as many ideas, words or phrases related to the topic and then arranging the ideas into common groupings (Oshima & Hogue, 2006: 266)

Methodology and Research Design

At the start of the semester, the class of 27 students were informed that a pilot study on the quality of critical thinking in their writing would be conducted during the semester, and that their regular assignments would be used to extract data for observation and research. It was explained that a cross section of an unnamed eight students would be chosen to be observed and an invitation given for any to deselect themselves if they wished. No one self-excused. Next, their first writing assignment was used as a standard to divide the students into three broad groupings; students displaying writing characteristics which were described as:

* strong - creative word choice, few grammar problems, insightful analytic and deductive skill,
* average - appropriate but not striking word choice, grammatical weakness which did not impair comprehension, occasional evidence of analysis of a topic, and
* weak - poor word choice, frequent incoherence because of grammatical and vocabulary error, use of broad unsupported propositions.

Eventually, eight Thai nationals - three strong, three average, and two weak - were chosen for observation. The class was then directed to divide into permanent small groups for the collaboration work. Students chose which group they would each enter.

Across the semester, all students in the class were given the same assignments, the preparation method was changed and the writing results of
the eight students studied and recorded. The preparation methods used were:

1st Assignment - No guide. Common topic, students prepared and wrote individually.

2nd Assignment - After being taught three brainstorming methods (Free writing, Listing and Clustering) for a writing exercise, they were given a topic for which they prepared an individual brainstorm plan. They then wrote an individual essay.

3rd Assignment - Power point presentation on the given topic (mainly pictorial), followed by group brainstorming plan preparation and individual essay writing.

4th Assignment - Students were given an article which was read in class. A common research question, related to the article, was assigned. Students then met in their groups (30 minutes) for discussion of the topic, the article and the formation of a writing plan. They then separated to write individually.

5th Assignment - 2 short articles were distributed and read. Group planning for 30 minutes, followed by individual writing of a researched response to the common question.

Following the model of Neustadtli & May (1988), the writing guidelines given to the students, particularly for the last two research assignments were:

Step 1: Identify what you know, presume, do not know about the topic.
Step 2: Identify what information you would need to change “presume” and “do not know” into “know”.
Step 3: Share group knowledge/analogy of topic from history or personal experience.
Step 4: List the similarities and differences between analogy and current issue (273-275).

Literature of Previous Research Studies of Collaboration and Critical Thinking

Attention on the topic of critical thinking was definitely focused by reading, “...critical thinking is not an aim of education but the aim. It is more like a ‘quality’ of what is taught and learned” (Paul, 1992: 303-4). Pava (2008) would seem to support this, questioning “...might education itself serve a necessary and critical function in opposition to the excesses of globalization?” (287) Perhaps many instructors, including this writer, often understand critical
thinking as a skill which enables students to probe the implications of their questions more deeply and then discuss findings and their ramifications more persuasively. Here, Paul is offering a challenge to think more deeply (critically?). Paul regards critical thinking as an educational quality - very much in line with the famous quotation of Scottish poet, James Beattie (1735 - 1803) which describes the “aim of education should be to teach us rather how to think than what to think, --rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men”. Most of the definitions of critical thinking seem to lie more in the “skills” direction. However, most likely, the majority of instructors would not be negative towards regarding critical thinking as an academic, indeed a life, quality. For example, Stapleton (2001) succinctly presents an overview of definitions. Critical thinking can be seen as “skills” which enable students to identify their assumptions, and use a methodology which clarifies and focuses their ideas, assisting them to keep their discussion relevant to the topic at hand (Kennedy et al. 1991). On the other hand, Siegel (1997) has a broader understanding. Critical thinking is seen as “attitudes and habits of mind and character traits that incline one to seek reasons and evidence carefully, while rejecting partiality” (3). Later, on the same page, Siegel describes the critical thinker as one who is “moved by reasons”. Towards a more philosophical mode, Norris and Ennis (1989) prefer to describe critical thinking as “reasonable and reflective thinking” which guides the writer to sharpen understanding of what one believes and what action needs to follow from this. Lipman (1991) succinctly states that critical thinking is a “healthy scepticism”, and Resnick (1987) begins with a comforting, critical thinking is “difficult to define”. Further, “Thinking skills resist precise forms of definition”. More, Ramage & Bean (1999) hold that a certain “persuasiveness” is a fruit of critical thinking, even if such persuading presumes that the writer already knows the mind of the audience and therefore can influence their thinking (Stapleton, 2001: 511). Still again, following along Thelin’s (2005) argument, is the critical thinking instructors desire from their students equivalent to ‘consciousness-raising’ (115)? Moving the discussion into the information age, Stuckey (2006) holds that rather than reducing the need for strong critical thinking skills, negotiating “the shoals of the networked world” requires them more than ever for learning how to ask the difficult questions that most likely have no simple answers. (This is) what critical thinking requires…” Finally, as far back as 1970, in a pre-internet era, Saalbach can be found advocating the strengthening of critical thinking in young writers in order to eradicate plagiarism in their writing (46). In summary, common amongst the various definitions are the following characteristics: the abil-
ity to discern key ideas and their presuppositions as well as the interconnections and relationships amongst the ideas, accurate uncovering of arguments, following the arguments to their conclusions, balanced evaluation of these conclusions as well as that of the data presented as supporting evidence or authoritative argumentation (ten Dam & Volman, 2004: 362).

A simple and challenging elucidation of the critical thinking and college level writers debate can be found in the Abstract of Stapleton's (2001) article. Coming straight to the heart of the debate, he states what is often heard in university staffrooms, “Asians.....don’t display critical thought in their writing in English” (506). On the other hand, Stapleton also offers that “Asians display critical thinking abilities differently than Western learners” (ibid). Because he was presenting findings from critical thinking research he had conducted amongst 45 Japanese undergrads, Stapleton was a good guide to follow. Amongst his conclusions, “...the quality of critical thinking depends on the topic content, with a familiar topic generating better critical thinking...” (ibid). Finally, Stapleton also had some interesting comments to make contrasting Asian and Western students’ thinking skills. He pointed out the influence of cultural and child raising differences. Japanese students are socialized to show empathy and conformity with their mothers appealing to group harmony when correcting their youngsters. On the contrary, Western students are encouraged to develop their own “personal writing voice”, expected to and rewarded for expression and explanation of a personal opinion (509). As this writer was reading “Japanese” he was thinking “Thai”. Eventually, from amongst such a smorgasbord of definitions, Gokhale’s (1995) standard for evidence of critical thinking: “analysis, synthesis, and evaluation” of particular ideas under discussion was chosen for use when evaluating the writing of students in this pilot project (23). This standard helps the writing instructor to think beyond limiting definitions of critical thinking which can tend to confine it to evidence of problem solving or as a type of 'active learning' (ten Dam & Volman, 2004: 366).

Next to be considered, when evidence of critical thinking is found (or not) in our student’s work, how is it to be evaluated or assessed? Much has been written on the value and drawbacks of various strategies used to evaluate the critical thinking quality of students’ writing. Ten Dam and Volman (2004) come right to the point. They describe how very often a rationalistic approach is used (especially by Western instructors?) where the evaluator is seeking evidence of “logical thinking”. However, they argue that such an approach “excludes other sources of evidence or forms of verification (experience, emotion, feeling)” (363). To strengthen this argument, ten Dam and Volman cite research by Burbules & Berk (1999: 57). As well, they cite Kaplan (1991)
and Thayer-Bacon (1993) to make the point that too heavy a logic standard in writing evaluation can ignore the “importance of care and commitment to a particular subject” which will influence the depth of thinking and elaboration by the writer (363). Finally, a too narrow reliance on a logic standard may also ignore gender differences in ways of knowing, or “women’s ways of knowing”, as well as be governed by ‘class and cultural bias’. (ten Dam & Volman, 2004: 363). Furthermore, research conducted by Fishman et al. (2005) - who worked on some 3,000 student writing samples in the first year of their research and double that in the second year (229) - demonstrates that deeper thought and analysis by a student is sometimes seen more clearly in non-classroom writing. The question they examine concerns whether or not academic writing provides the best evidence of critical thinking skill. For example, they discuss at length the analytical and evaluative skills revealed when students “perform” their writing pieces. (229-234)

A persistent question discerned from the research seems to centre on the reliability of a generalized or standardized test for critical thinking. Davidson and Durkam (1997) assure that standardized tests do exist, however they question their utility as the tests tend to be useful only for a particular topic or are “text specific” (Stapleton, 2001: 515) Stapleton discusses the value and usefulness of one such test, “The Ennis-Weir Test of Critical Thinking” (Ennis & Weir, 1986), concluding that for all its strengths, “it has no wider applicability” for use outside the immediate topic of the “parking example” used by the testers (515). Alternatively, McPeck (1990) discusses the content and value of various multiple choice instruments he has surveyed (an impressive 26 in all) for the assessment of critical thinking evidence. Like Stapleton, McPeck concludes with a sceptical, “They do not allow any probing of the reasoning behind the examinee’s answer” (Stapleton, 2001: 515)

Furthermore, a clarification by Storch (2005) could be very helpful to keep in mind when assessing students’ writing samples. Evidence of “grammatical accuracy” and “grammatical complexity” is to be distinguished when assessing a writing sample. For example, “...accuracy may be achieved as a result of a learner not taking any risks in their writing and relying on simple, well-controlled forms. At the same time a trade off may exist between complexity and accuracy. The more complex the sentences produced, the more likely they are to contain errors (Foster & Skehan, 1996). Complexity reflects the writer’s willingness to engage and experiment with a range of syntactic structures, moving beyond coordination to more complex structures which include subordination and embedding...” (158). In other words, grammatical inaccuracy may conceal a discerning original thought. (Of course, it
also may simply be what it looks like.) Storch offers the encouragement that a plodding and patient evaluator is often rewarded; the reward of discovering an original gem almost effectively hidden behind a maze of grammatical confusion.

Lastly, ten Dam & Volman (2004) engage in some brief discussion about the merits of teaching students to self-report about two key aspects of critical thinking in order to evaluate depth of thought in their own writing. They note that as students can better catch their own presuppositions, as well as become more able to supply alternative examples in their presentations, so does their critical thinking skill deepen (370).

Eventually, though with some reservation because of its complexity to use with big stacks of weekly assignments, Stapleton’s (2001) model was engaged to evaluate the evidence of critical thinking in the writing of students taking part in this pilot study. This five step model identifies 5 critical thinking elements:

1) number of arguments
2) extent of evidence
3) recognition of opposing arguments
4) corresponding refutations
5) number of fallacies (515).

1) Number of arguments, Stapleton posits, is simply indicated by the number of conclusions evidenced in the student’s writing (516). A conclusion may be expressed as an agreement or disagreement; however, it can also be evidenced by a statement of indecision. “Critical thinking provides reasons and evidence for one’s indecision” (516). For example, “Critical thinking goes beyond what is already stated (in the original text)” (515-17). Use of conjunctions (because, therefore) would be indicators. An example of a conclusion being reasoned might be seen in Student 2’s sample from the pilot project:

*The only negative effect the software may produce is the limitation of employees’ learning abilities in terms of the processes within the business if the employees lack certain knowledge in I.T.*

Whereas Student 19 has promise if not yet quite there:

*Many developers try to modify games to be more realistic which is a two-edges (sic) sword.*

2) Extent of evidence shows the writer’s ability to apply a general rule or situation to particular examples or circumstances. Here, Stapleton
says, the writer will illustrate proof of a position through “personal experience, statistics, research, authentic consequences...” (517) For instance, Student 13 reasons

...it is better not to have role models because they can have negative effects on society and also because they are just like everybody else, human.

And Student 23 argues less persuasively that

some animal fur (sic) and leather raw materials are the customers top choices when they go shopping.

3 & 4) Recognition of opposing arguments and their corresponding refutations. Here a clear comparison of views is made (or not). This recognition and refutation may be announced through transitions such as, “Some people claim”, “However”, “It is said that...”, “On the other hand.” Such indicators demonstrate that the writer is aware of opposing views. Browne and Keeley (1994) offer that unqualified observations defending initial positions - with or without reasons - are signs of “weak critical thinking”. Whereas, a questioning of all claims, including the writer’s, would indicate evidence for “strong critical thinking skill” (Stapleton, 2001: 517) For instance, Student 13 argues skilfully,

Most teenagers are students so they may not have the time, money or resources to raise a child. They are just not ready....

However, support from others has a possibility of altering their decisions.

Sometimes, even though the appropriate transitions are used, the argumentation is not so compelling,

Animals are living creatures is important for animal rights.

On the other hand, Requires (sic) money is against animal rights.

(Student 8)

5) Number of fallacies. Here Stapleton is highlighting evidence of errors in the writer’s reasoning. He terms them errors of Pathos (misuse of emotion in the argument, a misconnection of emotion between the writer and the audience - too much emotion, too little emotion), Ethos (‘ad hominem’ style, attacking the other’s character), Logos (flawed or absent reasoning) (518). For example, Student 16 needs to add more reasoning or explanation for effective persuasion,

...they are also problems when the lifts error or out of order, they are very dangerous for many people.

Student 19 would also display logos fallacy,

The significant benefit of animal rights is protection of ex-
tinction (sic). On the other hand, over population might be occurred because of animal rights.

The last key concept underpinning the pilot study was that of collaborative learning. As indicated earlier, the framework for collaboration was, “an instruction method in which students at various performance levels work together in small groups towards a common goal. The students are responsible for one another’s learning as well as their own. Thus, the success of one student helps other students to be successful” (Gokhale, 1995: 22). Here, experience in teaching oral presentation skills to similarly aged students was helpful as a guide. Though not without its own particular problems, group preparation and presentation, for most Asian students, seem to result in more quality oral presentations than when they work individually on such work. It seemed relevant to see if collaborative preparation where students were placed in groups of four and encouraged to discuss, question and listen to each others’ answers on the assigned topic would result in deeper critical thinking behind their written presentations. For example, the students in the groups were urged to ask each other why particular ideas or understandings of an issue were held. Observing the discussions, a mixed readiness and/or ability by the students to so engage was evident: some enjoyed questioning their peer; whereas, on the contrary, another reported that it felt “impolite”. Again, still another confided that she would only ask why if she disagreed with the position offered. One male student asserted he felt it best not to ask why because he really did not want to know why his peer held such “stupid ideas”. (A teachable moment, indeed.) However, responsibility may need to be borne by this researcher for a lack of perhaps sufficient guidance to the students in preparation for their collaboration. Citing Webb (1985), Gokhale (1995) notes that the most successful experiences of student collaboration seem to come from “those who give and receive elaborated explanation”. She explains that for her this meant clarifying with her students beforehand what were the group goals and what was included in the individual members’ accountability (25).

A good deal of the research literature seems to indicate positive effect on critical thinking when collaborative preparation is involved. Johnson and Johnson (1986) claim that there is “persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals (Gokhale, 1995: 22). Similarly, Totten, Sills, Digby, & Russ (1991) assert that collaborative preparation moves students to “take responsibility for their own learning, and thus become critical thinkers” (Gokhale, 1995: 22).
Findings and Recommendations

Ultimately, the forming of students into collaborative groups of four to brainstorm and prepare for a writing assignment was found to be a positive experience for the writers, though not one which necessarily strengthened the critical thinking skill of all.

In this study, the strong writers continued to be strong thinkers and writers, the weak writers continued to write superficially and inaccurately. In the middle - depending on the writing topic - were writers who did perhaps benefit from the collaboration, not so much in the expression as in the generation of more ideas and ways to describe these. In short, though compelling evidence did not emerge from their samples, it can be tentatively concluded that the mid-range skills writers did benefit from the collaborative preparation strategy. However, being a pilot study, convincing statistics to support this sense were not gathered. Indeed, as Davis (1992: 135) points out, there is a growing amount of "empirical evidence" to support that collaborative or cooperative strategies do improve students learning skills, even "to the skills of critical thinking. It sticks, however, to such presuppositions, empirical research is as good as lacking" (ten Dam & Volman, 2004: 366). In other words, more focused research is needed.

For example, in early November, strongly skilled Student 13 wrote:

The main reasons business companies use smartphones are size, convenience, ease with which their employees can use them to contact and send information to one another.

Towards the end of the semester, in early February, similar skills are evident:

An earthquake is a terrible thing, but an earthquake brings to the people of Haiti not only tragic destruction, but also opportunities.

Similarly, across the semester, the same level of critical thinking is evidenced in the writing of weakly skilled Student 16. In early November:

Work and Travel makes Thai students get new experience because they go to aboard (sic), they will have to work within three months. This is a benefit for Thai student about learning of work and experience.

And, in early February:

After this event, Many (sic) people in Haiti losts works, and this country became the poor area for Haiti people, their lives also changed.
On the contrary, I assessed a growth in critical thinking depth as well as breadth of expression in average skilled Student 23's work. In early November:

_However, the problem might occur when the machine breaks, or the employees are disloyal (sic) and uses other's cards to enter the company._

Whereas, in early February:

_Also, the aftermath or the remains after a natural disaster is horrifying. It destroys everything and anything around us. All the food, shelter, and other necessities are gone so the people do not have what it takes to survive._

As well, a more critical approach, through examples and use of documentation can be seen developing in the writing of average skilled Student 5. In early November:

_Technologies help the firms to do business faster and more efficiently._

Whereas, in early February:

_About 170,000 people were killed in Haiti's earthquake. (Monet) And the life of those survival people now still be in the questionmarks, 'Millions of people are now without livelihoods and the means for survival'. (Sachs, 10A)_

A major premise behind the pilot study was that critical thinking is a positive skill and attitude for students to develop, both in their oral and written presentations. Indeed, it was seen earlier that Paul (1992) sees it as "the goal" of the education process (303-4). Ten Dam and Volman (2004) see critical thinking as having an even wider application that "enables citizens to make their own contribution to society in a critical and aware manner (375). And Thelin (2005) challenges that if "critical pedagogy" is not implemented in the writing classroom, all goals to move away from a teacher-centred pedagogy can be considered undermined, even thwarted (117). These researchers offer a challenge to teachers to provide their students with opportunities to 'observe, imitate and practice' what they term 'critical agency' in all academic activities. They seem to be urging a collaboration model in all pedagogy when they observe that "Learning by participation always involves 'reflection'. The quality of the participation can be improved by reflection" (ibid). It could be further added, the quality of the participation and reflection will sensitise students to look out more consciously for the deeper layered reasons and issues surrounding the topics they are discussing. Ten Dam and Volman seem to be
suggesting that when students observe their instructor and peers so engaged their own critical thinking practice will be strengthened. However, they offer a wise observation and caution regarding students who are from Collective oriented (e.g., Asian) cultures. They advise against the choice of controversial topics being assigned for discussion and critical thinking collaboration practice as this "reflects a western, individualistic, conflict-oriented interpretation of what critical thinking is" (376). They suggest that such a counter-cultural experience may in fact "repel" the EFL student. A debating model is suggested, giving students practice in having to defend points of view they might not normally hold. In a recent Thai newspaper opinion piece, Khaopa (2010) posited that contemporary Thai students need perhaps even more basic guidance in developing critical thinking skills, distinguishing facts from opinion (11A). She reasoned that development of this skill amongst Thai students could only have benefit, for example, in current political debates.

Finally, Khaopa (2010) described recommendations from two contemporary Thai educators, Trairat Phiphatphokphon, deputy director of Prasarnmit Demonstration School (Elementary) of Srinakarinwirot University, and Suwit Moonkam, director of Nonthaburi Education Service Area Office. Their recommendations are very practical with the simple goal of creating an atmosphere where students "dare to think and speak out to share their opinions". They suggested strategies such as classroom management for an atmosphere which is warm and non-judgemental, where the teacher listens more than speaks, and assignments where students need to raise doubts and collaborate to find resolutions (ibid).

To conclude, three possible areas for future research on strategies to develop critical thinking skills in our students are recommended - one for student collaboration activities, one for teacher assessment activities, and one for teacher-student collaboration activities.

Storch (2005) notes some research done in student pairings and the impact this can have on their writing quality. On the surface, it would seem that such a strategy holds much promise, even if resulting problems can quickly arise. If the pair works well together then ideas and reasoning is soon generated and critical thinking develops in the resulting written assignment. In fact, Storch says, "pairs produced shorter but better texts in terms of task fulfilment, grammatical accuracy, and complexity. Collaboration afforded students the opportunity to pool ideas and provide each other with feedback (153). However, problems encountered lie in the challenge to find a good balance of skill in the pairings - a stronger student remaining unchallenged, a weaker student becoming perhaps withdrawn or dependent. As well, the peer feedback can
remain at the level of grammar and vocabulary and not a challenge of opinions and ideas.

Secondly, less complicated and more broadly applicable critical thinking assessment and measurement tools are needed. As noted earlier, current tools tend to be topic specific and/or lacking in depth assessment (multiple choice models). As well, working on the belief that students learn best about writing from their own writing experience, weekly writing assignments (at least) would seem fundamental pedagogy for writing instructors. However, since most writing classes probably are populated with well more than a preferred 15-20 students, an effective assessment tool must be simple and easy to apply for both the instructor and the student.

My third recommendation for future research would be to assess the impact on the quality of a student’s writing if regular weekly teacher-student writing review meetings were held. Namely, the premise offered is that the best way for a student to improve in writing is for weekly practice to be followed by individual interview and review with the instructor (Gesiakowska, 2009). A research project on such a strategy would seem highly promising. Under the guidance and feedback from the instructor, the student would receive consistent learning from their own writing, developing critical thinking skills through observance, imitation and practice.

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