An Investigation on Chinese Elementary and Secondary School English Teachers’ Perceptions on AWE as Formative Assessment Tools*

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Abstract

The research is designed to examine current teaching practices and perceptions of elementary and secondary school language teachers so as to inform the design of a large-scale project on AWE (Automated Writing Evaluation) application in the Chinese classroom. The data indicated that teachers were confident in their computer use and understood formative assessment notions and their role in technology-enhanced teaching and learning. However, concerns were raised on the writing rubrics interpretation, the pedagogy on integrating AWE into teaching, and the suitability of the whole English software to Chinese learners. Solutions and suggestions were discussed. Sample lesson plans, pedagogy training and technical support were considered necessary for the participating teachers.

* The research was funded by a key MoE project titled “Using Automated Writing Assessment in China EFL Classrooms” (Project number: GFA097005).

Key words: automated writing evaluation; formative assessment; English writing; elementary and secondary school English teaching

1. Introduction

Fifteen years ago, I was lucky to have a smart and responsible teacher of English writing. I will never forget how I admired her splendid lectures as well as the detailed revision notes she left in my writing assignments, but I also remember how my heart sank a little bit every time she gave us a topic to write about. Years later, I became a teacher of writing myself and I have been lucky to have smart and ardent students, who are, however, not very good at hiding their worried faces when told they have writing assignments to finish.
after class. It is also frustrating when I have to mark out the language and structure problems again and again in my students’ assignments: “Will they ever learn to take care of their own writing and stop repeating these problems?” I always wonder, as many other English teachers who enjoy teaching writing, but hate to labor like a correction robot.

Now the development in Artificial Intelligence and Natural Language Processing technologies made it possible for the computer system to take over the correction of students’ language mistakes, and they are designed to do it even better than that. Not only can Automatic Writing Evaluation (AWE) software offer immediate and individualized grades, correction and diagnostic feedback, but they can also generate reports for teachers on the individual and overall performance of their class so that the teachers can spend more time on lesson planning or providing individual help to their students. The idea of AWE programs seems to be a dream that comes true to me. But will the other teachers be ready to embrace their hi-tech “assistants”? What are the cautions to be taken before this innovation to be widely used at elementary and secondary schools in China? These are the questions to be answered by this investigation.

The investigation on “AWE as a Formative Assessment Tool for English Writing” was designed and carried out to find out elementary and secondary level teachers’ current teaching practice, their perceptions of formative assessment notions as well as web-based writing-reading integration. The participants comprised of 19 elementary and secondary school teachers teaching English writing courses. Our major research tool was a questionnaire that focused on the teachers’ education and teaching background, their practice and perceptions of language teaching and technology in education in general. Group interviews were organized to triangulate the findings from the questionnaire answers and to allow further explanation from the teachers regarding their questionnaire answers.

Both promises and problems have been revealed through this pre-investigation. Evidence indicates that technologically, the teachers are confident in their ability to operate this innovative device. Pedagogically, they show adequate understanding of formative assessment ideas and with the help of the AWE tools, they are willing to step down from the central position in their classrooms for their students to grow into the owners of their learning. But the investigation has also brought to light some possible pitfalls if AWE tools are to be introduced in writing classes in China on a larger scale, such as the localization of the foreign software and the time investment in adapting to this new application both on the teachers’ part and the students’.

Some suggestions are made at the end of this paper to solve the problems discovered in the investigation, such as further localization of the software instructions, readjustment in grading criteria and the provision of sample lesson plans.

2. Literature Review

The investigation took place on the outset of a 3-year nation-wide project called “Using AWE as a Formative Assessment Tool for English Writing in China”. The ultimate feature
of this large-scale project was the use of AWE software in the writing course as a formative assessment tool, but there were also some other guiding principles of this project, such as teaching writing integrated with other language skills (especially reading), focusing on both the meaning and the forms of writing, and cultivating learner autonomy. These were also the theoretical basis for this small-scale investigation on the current teaching practice of a writing course as well as the teachers’ perceptions on computer-aided formative assessment in China.

2.1 Writing pedagogy of the project

2.1.1 Criteria of good writing

Writing is often regarded as the most difficult one of the four language skills (listening, speaking, reading and writing). Also, teachers and researchers’ views on what is good English writing vary. Many teachers value the linguistic features (such as grammar, vocabulary, sentence patterns) of their students’ written works over the meaning and functions of the writings (Marton, 1988: 53). Therefore they are lavish with their time spent correcting grammar mistakes and lecturing on the uses of advanced English words and expressions. Other teachers and researchers look differently. They believe the negotiation of meaning is of primary importance in writing, and linguistic accuracy comes to be secondary (Richards, 1990; Scott, 1996). This framework highlights the importance of relevant and unified ideas and logical thinking, as well as the accuracy of the language form. This more holistic understanding of good writing is one of the cornerstones of our research.

2.1.2 Chinese students’ Common Problems with English writing

Many English teachers and researchers (for example, Wu, 2007; Zhang, 2007) have discovered that the problems with English writing, especially at the secondary level, had their roots not only in writing itself. In many cases, it is the negative transfer of the learners’ cultural knowledge and mother language to English (Odlin, 1989). The Chinese ideology can interfere with students’ performances in English, with Chinese discourse development being indirect, while English discourse development being linear and direct. Shen (1989) concludes that the Chinese tradition is to reveal a topic gradually whereas the western tradition usually presents the argument directly with topic sentences. These theories can help explain the weak or missing theme in the vast majority of Chinese students’ English writings. Lin’s (2007) research studies the English writings of 160 secondary school students and finds that nearly 60% of the writings fail to present a controlling theme. A similar research is conducted by Tong (2007) with two classes of high school sophomores in Sichuan, China. He arrives at the same conclusion as Lin (2007), with the absence of theme placed at the top of his list of problems in his students’ writing. In a word, the cultural aspect of language learning should be attended in teaching and students should be given sufficient training to raise their cultural awareness and be provided with appropriate input to shape their logic in English writing.

In addition to cultural values, linguistic aspects of writing are not to be neglected
either. Researchers (Zhou & Feng, 2005; Qin, 2005; Feng, 2005) have found many common language problems with Chinese students’ English writing, such as limited vocabulary, monotonous sentence structures, poor grammar, etc. Most English teachers have tried hard to provide corrections or suggestions in the form of direct editing on their students’ writing, such as using certain symbols to indicate errors, or explaining in verbal comments. However, research and practice have shown that what can be done by correction and giving comments is very limited, especially for the low-achievers. There is usually a big time gap between the time a student finishes her writing and the time she receives feedback from her teacher, and it is impossible to provide sufficient explanations or revision suggestions next to the mistakes in a student’s writing, but to medium and low-achievers, such explanations and suggestions are crucial (Yang, 1996). Nearly 80% of Yang’s high school sophomores find their teachers’ feedback of little use or not helpful at all, because they either do not understand it or have no idea how to improve.

Finally, inappropriate learning habit is another hindrance to improving Chinese students’ English writing. While almost all teachers would recommend multiple revision of writing, Tong’s research (2007) discovers that only 6% of the students will revise their writings twice or more, less than 40% usually revise once, while over 50% of the students involved do not revise after their first draft, and they reject the idea of multiple revisions.

Therefore, the problem with Chinese students’ English writing is three fold: vast difference in way of thinking in the two cultures, incompetent language use and inappropriate learning method.

2.1.3 Ways to improve students’ writing ability
A whole host of writing skills training approaches have been introduced and utilized at elementary and secondary schools in China. Some are communicative approaches, such as different teacher interventions at different stages of writing (re-writing – while writing – post writing) (Gu, 1999) and the integration of listening, speaking and reading into students’ writing process, and others are more traditional, such as grammar and vocabulary exercises, learning sample writings by heart or simply increasing the amount of writing exercises (Lin, 2007).

a) Improving writing through reading
To target our students’ major problem of lack of ideas for writing, we decide to include reading as an important means of input for writing. Correlation studies (for example, Eisterhold: 1990; Reid, 1993; Carson, 1993) have verified the reciprocal relationship between reading and writing as a result of the common cognitive process, vocabulary and linguistic rules they share. While reading, the reader processes the information encoded in the format of spelling, grammar and punctuation, and this process helps improve the logic and cohesion of their writings. Similarly, in order to incorporate the information obtained from the reading texts in their own compositions, the reader will undergo cognitive processes such as critiquing, questioning, organizing and evaluating the ideas, connecting with their own experiences and clarifying their own thoughts in their final written product. Such a process broadens the student’s minds and can help them develop their own ideas.
It has been verified that students who read more and better usually produce writings more mature than those by students who read less (Eisterhold, 1990; Carson, 1993).

b) Improving writing through student empowerment
The fundamental proposition of constructive pedagogic paradigm is that knowledge is positively constructed by the learner rather than being inculcated passively from outside, including teachers. The students, with acquired knowledge, enter another stage as an active subject of recognition, with good theory by themselves (Frawley, 1997). The aim of pedagogy is to make students construct the activity types to solve problems and improve themselves. Many researchers (for example, Romiszowski, 1997; Thomas, 1997) emphasize that the most influential impact of the Internet on language learning is the notion of self-directed learning, which stresses a learner’s individualized needs and learning at their own pace.

Nevertheless, constructive pedagogy does not exclude teacher’s role as unnecessary. Teachers will be important as facilitators and helpers along the path where students progress at their own pace and encounter different problems that they cannot overcome by themselves.

c) Improving writing through formative assessment
The Assessment Reform Group (1999: 7) defines the construct of “formative assessment” as “open to a variety of interpretations and often means no more than that assessment is carried out frequently and is planned at the same time as teaching”. That is to say formative assessment evaluates students’ work in the process of growth toward increasing quality or degree of expertise rather than on a dichotomous, right or wrong basis (Sadler, 1989).

From both the teacher’s and the students’ perspectives, the purpose of formative assessment is to help learning, or simply, assessment for learning, instead of learning for assessment—a result some summative assessment may lead to. To be more specific, formative assessment aims to help learners to:

- have a clear learning goal
- gain familiarity with the content being taught
- become aware of their own position in the learning process
- fine-tune their understanding of the target language and culture
- set goals for the next stage of learning
(Adapted from Black & Wiliam, 1998; Assessment Reform Group, 1999; Chao, 1999; Black et al., 2002)

Formative assessment also aims to help teachers to guide learners’ effort, monitor learners’ progression/achievements, give students experience of assessment methods, diagnose the potential problems in teaching, adjust teaching plans according to the problems and provide the administrators and parents/stakeholders a clear picture of pedagogical performances (Adapted from Chao, 1999; Black & Wiliam, 1998; Assessment Reform Group, 1999; Black et al., 2002; Rea-Dickins, 1998, 2000: 384-385).

With the support of over 250 research reports from over the world, Black and Wiliam
(1998) conclude that improving formative assessment enhances learning, and thus raises the standards, and thus formative assessment is “at the heart of effective teaching” (p. 140).

Chao (1999) outlines five fundamental principles of formative assessment for language teaching and learning. They are:

- process- as well as product-orientated teaching
- integrative language assessment
- teacher guidance instead of teacher-dominance,
- learner autonomy

Based upon the above theories, the project will include reading as an important input before the students start to write. The reading materials in our large-scale research will be graded in difficulty, and the contents will be closely related to the students’ life and experience, so that the participating students will not be put off by the difficulty or the boring topics. Instead they will feel motivated to keep reading at their own pace and taking in new information, new expressions and new ideas according to their own needs and interests. They will naturally relate what they read to what they are going to write. All these inputs will provide fuel for the construction of better writing.

At the same time, with a purpose of assessing students for better learning outcome, teachers will play an important part by offering suggestions on what to read and how to read. They will watch the progression of their students as a whole, and in the meantime, they will attend to the different needs of individual students.

2.2 Application of AWE tools in language teaching and learning

2.2.1 Why AWE?

AWE systems are fine-tuned artificial intelligence tools used to grade the daily written work (except literature forms, such as poetry) based on a set of criteria, in regard to vocabulary, and sentence structure. A number of AWE systems have been developed to evaluate students’ writing quality, for example, “PEG” (Page Essay Grade), “Writing Road Map” (developed by McGraw-Hill), MY Access! (developed by Vantage Learning), “Criterion” and “e-rater” used by Educational Testing Service (ETS). The validation of these scoring engines is built upon the comparison of the subscale score distributions from human raters and from engine scoring. The score distributions of the AWE tools have lower standard deviations compared to score distributions from human raters, which is to say, the credibility of the AWE software is the same (if not higher) than human scorers (Rich et al., 2008).

In addition to immediate and consistent scoring, AWE systems are able to conduct highly sophisticated analyses and then provide diagnostic feedback regarding various rhetorical and formal dimensions of each student’s writing, such as lexical complexity, grammatical usage, word choice, syntactic variety and discourse structures. Newer AWE programs (such as Writing Road Map 2.0) are equipped with a range of editing features, including grammar, spelling, and style checkers. Students would like to write, edit and improve in such self-paced learning environment as many times as they need. In this sense,
the AWE systems are used as a formative assessment tool by the students.

At the same time, teachers are also provided with writing records of each individual student along with a summative report of all their students as a whole. These reports can help teachers to pinpoint the common weaknesses in their students and then modify their teaching plans to tackle the problems purposefully. In a word, most of these AWE applications have gone beyond being an essay scoring instrument and can serve as a writing teaching and assistance tool (Chen & Cheng, 2008).

2.2.2 Are AWE tools self-sufficient?
AWE tools can often offer more functions than an automatic grader and feedback provider. For example, WRM 2.0, the AWE program to be used in our research, comes with a whole kit of convenient writing tools, including scoring rubrics, grading system, portfolios, a thesaurus, and checkers for spelling, grammar, punctuation, and word usage.

Despite the formative assessment intentions and all the functions AWE applications can offer, recent research has found some limitations in these artificial intelligent instruments. AWE systems are usually grounded in a cognitive information-processing model, which treats the text input as merely “codes” without sociocultural meanings and hence “processes them as meaningless ‘bits’ or tiny fragments of the mosaic of meaning” (Ericsson, 2006: 36). The social and communicative dimensions of writing are not sufficiently attended. The machines “read” student essays against generic forms and preset criterion, but show no appreciation of human audiences in real-world communication.

In addition, the motivational effect of multi-revision can sometimes be below a satisfactory level. While a number of studies of the AWE tools, including Attali (2004), report quite promising results, the research conducted by Attali also reveals that a strong majority of the participants (71%) in the project submit their compositions only once, without revision. Less than 20% of the students revise two times or more.

Similarly, as observed in Warschauer and Ware’s research (2006: 16-17), “revisions do take place, but students commonly limit themselves to correcting as many as possible of the indicated spelling errors (though even this is difficult for limited-English students) and they ignore the narrative advice about improving development or organization.”

These investigations are valuable in that they show us a fact that without appropriate guidance, the effects of this AI aid may not be fully realized.

2.3 Perceptions of AWE tools
Given the above discussion on the strengths and limits of AWE tools, some researchers suggest that these tools should be used only as a supplement to classroom instruction, and there is no way that teachers be replaced by the artificial intelligence devices. After all, these devices can only detect the superficial errors in students’ writing but are usually not intelligent enough to evaluate the cultural, emotional content or the rhetorical aspects of students’ writings (Burstein et al., 2003, in Chen & Cheng, 2006). Other researchers argue that “human graders outperform electronic graders because they can provide post-grading consultation to individual students, which gives the teacher an opportunity to clarify unclear comments or to explain unlearnt language forms. This kind of rich negotiation of meaning
in the interaction can never be done by an electronic grader” (Chen & Cheng, 2006).

As can be seen from the above discussion, the AWE tools are designed to free the teachers from the tedious, and in most cases repetitive, scoring and revision work, and to motivate students to revise more, and hence to cultivate their autonomy. But to achieve this goal, more work should be done than simply adding the artificial intelligent AWE tools to the present teaching practice. Elements such as reading and writing integration and some guidance in learner autonomy cultivation are the strategies we plan to bring into this project.

3. Research Design

3.1 Guiding principle of the research design
The aim of the investigation was to identify the present teaching situation at pre-college levels and the mindset of the teachers on formative assessment notions and web-based writing-reading integration so as to make appropriate arrangement for the upcoming large-scale experiment on facilitating English writing courses with one of the AWE tools—Writing Road Map 2.0 (WRM 2.0), whose reliability has been verified in longitudinal research (Rich & Wang, 2010).

Nineteen elementary and secondary level English teachers participated in the pre-investigation because they were going to teach the grades that were to use WRM 2.0 in their writing course during the experimental study. Although the investigation did not involve a large number of teachers, the ones that participated were typical of the target demography and they had been teaching in a medium-sized city for long enough to really know the school practice. Except for three elementary school teachers who were only in their second year of teaching, all the rest of the teachers had taught English as a foreign language at elementary or secondary level for three to fifteen years. To triangulate the research results from the questionnaire answers, two follow-up group interviews were conducted and richer insight into the research questions was obtained.

The only intervention on the teachers prior to the investigation was the hands-on experience with the AWE software (WRM 2.0) to be used in the large-scale research so that they would be able to critique more practically and make more specific suggestions during the focus group interviews. The theoretical bases (for example, formative assessment and learner empowerment) and the overall design of the large-scale research had been kept away from the 19 teachers to make sure that the their reactions to the research instruments truthfully reflect their existing teaching environment and their present state of mind about the issues involved.

3.2 Questionnaire design
The questionnaire intended to find out about five major areas about teaching AWE writing: a) the demographics of the teachers (e.g., age, years of teaching, professional titles, etc.); b) their present teaching situation (e.g., how their school and students view the importance of writing and reading, their work load, their present teaching mode, etc.);
c) their self-reported computer competence; d) their understanding of English language teaching (ELT) in regard to learner-centeredness, reading-writing hybrid learning mode and formative assessment rationale and e) their opinions and comments concerning any of the above subjects.

The questionnaire was adapted from a similar study by Scharber et al. (2008) and questions on formative assessment and language teaching methodology were based on the theoretical frameworks and empirical discoveries by Chao (1999), Warschauer & Ware (2006) and Tang (2010) (See 2. Literature Review). To make sure that the teachers could fully understand all the questions and express themselves, the questionnaire was presented and answered in Chinese, their mother language, although all of the teachers were English teachers. These questionnaire were piloted and improved. Difficult or controversial terms were explained in the notes of the questionnaire to avoid misunderstanding.

There were 62 questions in the questionnaire, with 60 of them being multiple-choice or Likert Scale choices, two being open-ended questions. All the close-ended questions (multiple-choice or Likert Scale questions) had been shuffled, and about one third of the choices had been inverted in order to minimize the possibility of subconscious researcher indication. The questionnaire had been piloted with five teachers with similar background to make sure the final version is clear and objective, and the teachers were encouraged to provide their own answers if their idea had not been included in the choices provided.

3.3 Focus group interviews

After the questionnaire survey, two focus group interviews, focusing on elementary and secondary English writing and reading, were held among the participating teachers. The interviews were held in two groups, both led by a same researcher. The interview outline centered around the research questions of the investigation: how they were teaching English writing currently; what were the biggest hindrance to their teaching and their students’ writing; how they felt about introducing AWE systems into their classroom; how they anticipated the change of their roles after the AWE tools were used, etc. The teachers were encouraged to fully express their ideas, suggestions and concerns. The interview discussions were recorded and discussion notes were taken based on the recording.

The discussion notes were analyzed to triangulate the survey results and provide reasons for some of the replies to the questionnaire. Therefore, in addition to the fuller elaboration on their present teaching situation and understanding of AWE tools and reading-writing blended learning modes, the teachers were encouraged to express their concerns over the teaching and research design as well as their expectations of this project.

The data from the questionnaire survey and focus group interviews were put together to inform the nation-wide research project design. The findings and discussions are as follows.

4. Research Findings

This part will report and discuss the research findings from this investigation. The
fact that many of the questionnaire items are shuffled and some questions in different sections of the questionnaire are interrelated (for example, many of the questions about the teachers’ views on formative assessment concepts in Part Six are related to the items about their perception of English language education in Part Five) and their answers to the questionnaire are compared with the discussion notes makes it difficult to go over the questionnaire items one by one, so we will follow two general threads in this part: a) the bright side revealed in the investigation and some major concerns, and b) solutions to these problems and suggestions for the design and implementation of the large-scale research to come.

But before the discussion, a brief summary of the general background of the present teaching situation will be necessary.

4.1 Current Teaching Situation
The questionnaire investigation shows that the primary and secondary school teachers are usually teaching two classes each term, with each class having an average of 51 students. Most of the teachers have to revise one writing assignment per week for each student, so the total workload amounts to about approximately 100 writing assignments each week. The time they spend on grading/revising writing is 2.5 hours on average, which takes up 10% of their non-teaching hours. Therefore, the workload of grading student writing is quite heavy, but still, most of the teachers are not satisfied with the compositions by their students, the biggest error type being repetitive structural mistakes, such as spelling, punctuation and sentence structure. Many teachers express their frustration at the group discussion that their students do not seem to pay attention to the feedback and their time of correcting or marking out their students’ mistakes seems to be wasted.

However, the biggest problem they are facing when teaching writing, as is reported in the questionnaire, is that their students often have little idea of what to write about, followed by the teachers’ lack of time for revising students’ writings (see Table 1).

**Table 1. The main problems with writing courses**

<table>
<thead>
<tr>
<th>The biggest problem you have with teaching writing is</th>
<th>Response percent</th>
<th>Response count</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I don’t have enough time revising students’ writings.</td>
<td>33.3%</td>
<td>6</td>
</tr>
<tr>
<td>b. My students dread English writing.</td>
<td>5.6%</td>
<td>1</td>
</tr>
<tr>
<td>c. My students have no idea of what to write about.</td>
<td>38.9%</td>
<td>7</td>
</tr>
<tr>
<td>d. There’re too many grammar mistakes to correct.</td>
<td>22.2%</td>
<td>4</td>
</tr>
<tr>
<td>e. Other (please specify)</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

Fortunately, there are not only problems reflected in this investigation; there is also silver lining for a more individualized and more efficient way of teaching—AWE. In the following sections of Research Findings, we are going to report the promises and then we will discuss the concerns and problems discovered in the pre-investigation. Possible
suggestions and solutions to the problems will be presented in the end.

4.2 Promises

4.2.1 Computer competence
The questionnaire survey result shows that the majority of the participating teachers in this project think favorably about the application of computers to their teaching and they are quite confident in their computer competence. 80% of them (N = 15) think computers are playing a significant role in their work and all of them feel comfortable with daily computer operations, such as Microsoft Word, PowerPoint and Excel. 95% of them (N = 18) believe the application of AWE tools can improve their teaching efficiency, and they have great interest in trying out the new technology, if it is worth the extra time they will invest.

4.2.2 Belief in formative assessment ideas
As discussed in 2.3.2, WRM 2.0 is designed to be used as a formative assessment tool—to provide instant feedback to students and detailed performance evaluation to teachers so as to encourage students to revise and practice, and at the same time, to help the teacher spare more time in readjusting their teaching to the different needs of their students. However, previous research has shown that the use of AWE tools may not guarantee a satisfactory outcome (Warschauer & Ware, 2006). The two things the teachers should be more aware of are:

a) WRM 2.0 is to be used as a formative assessment aid, instead of simply some software to free them from observing their students’ writing.

b) Students are the center of the pedagogical activities, not the teachers, so the pedagogical activities should be about the learning outcome.

The questionnaire is to identify to what extent the participating teachers are ready for the use of WRM 2.0 as a formative assessment tool and what help (such as training or sample teaching) is needed to complete this project successfully.

We will firstly examine the teachers’ views on formative assessment in light of the four principles outlined by Chao (1999) in 2.1.3.

a) Teacher guide rather than mere grading
The questionnaire survey results shows that the teachers are generally aware of the formative assessment concepts and have even been applying some in their teaching practice already. All of them have been providing brief or detailed comments and suggestions, rather than a score only, on their students’ written assignments. Ten percent of them (N = 2) even tried to avoid giving a score at all, because they believe the scores would attract too much attention from the students and the teacher’s feedback would be neglected. None of them said they would give a score only (See Chart 1).
Chart 1. How teachers handle students’ written assignments

<table>
<thead>
<tr>
<th>After receiving your students’ written assignments, you would usually provide:</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. scores only</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>b. scores with simple comments; no suggestions or revision.</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>c. major merits and shortcomings; no suggestions or revision.</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>d. scores with comments, with in-text suggestions or revision.</td>
<td>89.5%</td>
<td>17</td>
</tr>
<tr>
<td>e. in-text suggestions or revision; no scores.</td>
<td>10.5%</td>
<td>2</td>
</tr>
</tbody>
</table>

b) Process as well as product

The above result also shows that the teachers view their students’ writings as a continuous process, rather than a series of separate learning products that can be concluded with a score only. They value the opportunities to promote their students’ learning when they grade and provide feedback to the written assignments. All of the teachers will make their students to rewrite their assignment after teacher’s review (see Table 2).

Over seventy percent of the teachers strongly agree with the suggestion that the purpose of assessment is to understand the learning progress so as to make adjustment accordingly; the other 21.1% believe this suggestion is reasonable, although not deeply believe in it (see Table 3). Therefore, it is fair to conclude that the teachers in general are ready to take each individual writing task of their students as a step toward a higher target, rather than just a target by itself.

Table 2. Teachers’ understanding and realization of formative assessment notions

<table>
<thead>
<tr>
<th></th>
<th>Often</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>My classroom questions or quizzes are designed to give hint for my students’ further understanding, rather than give pressure.</td>
<td>84.2%(16)</td>
<td>10.5%(2)</td>
<td>5.3%(1)</td>
</tr>
<tr>
<td>I ask my students to rewrite their assignment after my review.</td>
<td>100%(19)</td>
<td>0%(0)</td>
<td>0%(0)</td>
</tr>
<tr>
<td>I comment and analyze sample writings to the whole class.</td>
<td>57.9%(11)</td>
<td>36.8%(7)</td>
<td>5.3%(1)</td>
</tr>
</tbody>
</table>

c) Learner autonomy rather than external control

When teaching their students face to face in class, a significant majority of the teachers (84%) would raise a question or give a test with the intention of giving hints for their students’ further understanding, rather than to pressure the students (see Table 2).

They also believe in the involvement of students in assessment. As can be seen in Table 3, more than 80% of the teachers disagree (Strongly Disagree = 26.3%; Disagree = 57.9%) with the statement that “Only teachers can carry out assessment. Students are not to be trusted with assessing themselves or peers.” This shows the teachers’ faith in student empowerment is growing and the teachers are willing to let their students take over part of the evaluation responsibilities.

The cultivation of students’ interest and autonomy in writing is particularly
important because it is a “productive” skill (as opposed to “receptive” skills) that requires active thinking, evaluating and expressing one’s thoughts. The process of writing could be painful and frustrating if the students are unwilling to take responsibility for themselves.

d) Integration rather than isolation when evaluating students’ work

Table 3 further illustrates that the participating teachers are ready to embrace the concept of formative assessment because they believe in evaluating their students with more than one final test. The majority of the participating teachers (nearly 90%) agree that assessment should run throughout the teaching process, because they hope to keep track of their students’ progress and hence make adjustments in their teaching. The final test is very important, but not the only important way of assessing their students’ learning outcome,

**Table 3. Teachers’ acceptance of formative assessment**

<table>
<thead>
<tr>
<th>To what extent do you agree with the following statements about assessment?</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Rating average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment runs throughout the teaching process.</td>
<td>5.3%</td>
<td>5.3%</td>
<td>57.9%</td>
<td>31.6%</td>
<td>3.16</td>
</tr>
<tr>
<td>The purpose of assessment is to understand the learning progress so as to make adjustment accordingly.</td>
<td>0.0%</td>
<td>5.3%</td>
<td>21.1%</td>
<td>73.7%</td>
<td>3.68</td>
</tr>
<tr>
<td>Only teachers can carry out assessment. Students are not to be trusted with assessing themselves or peers.</td>
<td>26.3%</td>
<td>57.9%</td>
<td>15.8%</td>
<td>0.0%</td>
<td>1.89</td>
</tr>
<tr>
<td>The final test is the only important way of assessing my students’ learning outcome.</td>
<td>10.5%</td>
<td>57.9%</td>
<td>31.6%</td>
<td>0.0%</td>
<td>2.21</td>
</tr>
</tbody>
</table>

4.2.3 Teacher and students’ roles in an AWE-supported environment

Almost all the teachers involved (94.7%, N = 18) show great confidence in the introduction of AWE tools, agreeing that carefully designed AWE tools could make their teaching more efficient. Also, they seem to be ready to forfeit their role as the center of teaching, and shift to the role of a facilitator. Nearly 95% of them would assume the new role as their students’ facilitator in this new teaching and learning environment (see Table 4). This is a vast contrast with their present practice, where over 80% of the class time is occupied by teacher lecturing.

About 70% of them would envision their students as main participants and explorers when AWE is introduced. Therefore, it is safe to say that the teachers recognize the facilitating effect of the AWE tools in assisting learner autonomy and individualized learning. In a word, the teachers are ready to shift from a teacher-led classroom to a learner-centered environment with the new technology.

**Table 4. Roles of teachers and students**

<table>
<thead>
<tr>
<th>In your opinion, in an AWE system, the teacher’s role should be _______.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturer</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>42.1% (8)</td>
</tr>
</tbody>
</table>
In your opinion, in an AWE system, students' role should be _______.

<table>
<thead>
<tr>
<th>Audience</th>
<th>Manager</th>
<th>Participant</th>
<th>Explorer</th>
<th>Other Ss' facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0% (0)</td>
<td>16.7% (3)</td>
<td>77.8% (14)</td>
<td>66.7% (12)</td>
<td>50.0% (9)</td>
</tr>
</tbody>
</table>

4.3 Concerns and suggested solutions

4.3.1 Localization
In both the questionnaire survey and the group discussions, many teachers express their concerns over the adjustment to the software, especially in regard to the system instructions in English, grading criteria and interface design.

a) Language of instructions
Three teachers mention the language difficulty of the software instructions in the questionnaire replies, and many other teachers agree that this could be a serious problem during the group discussions. Almost all of the widely recognized AWE tools, including WRM 2.0 are presented in English, but for elementary and secondary level foreign language learners, the system instructions are beyond their vocabulary level. Failing to understand the requirements and “help” sections will result in frustration on the students’ part.

If the software cannot be translated within the short time before the project officially begins, extra training and trial time would be necessary for elementary and secondary school students. The teachers should be trained thoroughly so that they can explain the use of the software as well as the functions it affords. If possible, special training sessions should be planned to make sure that all of the students are aware of the many functions of the software.

b) Grading criteria
At the focus group interviews, about one third of the teachers reflect that the grading criteria of the WRM 2.0 are too demanding and their students may get very low scores, which could be rather frustrating, especially for the lower-achieving students.

This problem can be solved by using flexible criteria at the early stages of the project, especially at the initial stage. Different schools, or even individual teachers, can select a criterion that suits the majority of their students. When the students are more interested and confident in writing with WRM 2.0, the teachers can raise the criteria little by little and get closer to the standard grading criteria. The initial and final grades from all schools will be collected and compared using a standard grading criterion.

The teachers can also encourage their students to discuss and produce rubrics of their own and then compare them with the criteria provided by WRM 2.0. This activity can help the students internalize the criteria for good essays and inspire them to work up to higher standards.

4.3.2 Time constraint for the teachers
One of the other primary concerns revealed in the questionnaire answers and group
discussions is the time investment in adapting to the new technology. The teachers worry that the training and piloting of the new teaching mode will consume too much time. As can be seen from the teachers’ estimation of workload per week, the teachers will only have a couple of hours each week to accommodate teacher training, student training, piloting of the software, and teacher-researcher meetings. To fully realize the potential of the AWE tool, new teaching materials and lesson plans will have to be created (see 2.2.2).

To minimize the time required, the research group can provide a whole package of well-designed sample lesson plans that includes the weekly reading materials, progression check list, suggestions on the teaching procedures, and assignment requirements so that each individual teacher does not have to take much time to design their lessons. What they will have to do is merely go through the reading materials (which are very easy for the teachers) as well as the sample lesson plans, and if necessary, make modifications according to their teaching needs. This arrangement can also help the researchers to guarantee the unified procedure and teaching quality at different schools.

4.3.3 Lack of attention from students

During focus group interview, some teachers predict that the project may not draw enough attention from the students because writing and reading are traditionally not regarded as the most important skills in the primary and junior high school education. In high-stake examinations, such as final tests and the high-school entrance examinations, writing comprises no more than 1/5 of the whole grade. The exam-driven students may not spend so much time revising their English writing again and again, and they may not even finish the reading materials as required. The teachers’ questionnaire replies back up this concern. Out of the 18 teachers who answered this question, 14 think writing is the least important of the four, while half of them thought reading comes after speaking and listening (See Table 5).

<table>
<thead>
<tr>
<th>Table 5. Importance of the four language skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rank the importance of the following language skills?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Listening</td>
</tr>
<tr>
<td>Speaking</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Writing</td>
</tr>
</tbody>
</table>

The above ranking is clearly the backwash of the exam points distribution, which for some reason, neglects the central positions reading and writing hold. Reading is the basis for all the other skills, supplying vocabulary, comprehension ability, ideas and background information for listening, speaking and writing. Writing has been regarded as the most challenging skill by Chinese students, but as can be seen from the table, it is given the least attention.
Also, the teachers even suggest that their students may resent spending so much time on the reading materials required by this project and they may not be motivated to keep revising their writings and submitting them as expected.

To make sure the project gets sufficient attention and interest from the students, interesting and useful reading materials and writing tasks should be provided. Reading materials of different topics and difficulty levels will accommodate students with different interests and of different levels; also, the reading materials and writing assignments should be closely related to the current teaching curriculum at the schools, especially the high-stake examinations, so that the students will be motivated to invest the time needed for reading and writing.

4.3.4 Teachers’ grading habits

It is surprising to find that all the teachers prefer to grade print versions instead of on the computer, despite the clarity and convenience of file keeping, inserting revision notes and giving instant feedback the latter offers. Their reasons include:

a) laptops and the Internet connections are not easily available on campus;

b) the electronic version is generally regarded as harmful to their eyes;

c) they cannot type quickly or are not used to the novel functions provided by the AWE software.

This is a practical problem we should address if this AWE-based formative assessment research is to be carried out as expected. In addition to the initial pedagogical and technical training for the teachers, typing training should be provided to the teachers and students to help them save time typing and increase their confidence in using the new technology. Technical support should also be easily accessible so that the teachers can get their technical problems solved in a reasonable amount of time. Last but not least, it is important for the teachers to realize the necessity and importance of getting used to a major reading pattern in the modern time—digital reading.

5. Conclusion

Writing has generally been regarded as the most challenging skill by language students and their teachers. As a “productive” skill (as opposed to “receptive” skills such as listening and reading) that require high accuracy, writing poses high demand on the students’ social knowledge and language capacity, and it takes tremendous time for the teachers to revise and grade students’ writing. Many students may have lost interest in revising their writing after the lengthy wait for their teachers’ feedback. AI tools have been developed to help relieve the above conflicts and improve the efficiency of teaching and learning.

The paper presents the results of a pre-investigation of the nation-wide research on the formative application of an AWE tool—Writing Roadmap 2.0—in English writing and reading. The aim of the pre-investigation is to find out the present teaching practices and perceptions of elementary and secondary school teachers so as to predict the feasibility of the larger-scale research and to avoid the possible pitfalls.
The theoretical basis for the design of the large-scale project are discussed in literature review, with the fundamental guiding principles being a) writing is a means of communication, and good writings do not only display advanced structural features (such as vocabulary and sentence structure), but also appropriately present the rich and the meaningful ideas; b) students’ writing can be improved by increasing adequate reading input and empowering and motivating them; c) AWE tools (in this case, WRM 2.0) should be as a formative assessment tool, instead of an isolated add-on technology to the present curriculum.

The data was collected from 19 elementary and secondary school teachers in Dalian, China, through their questionnaire answers and group discussion notes. Analysis of the data shows that the positive results include the teachers’ confidence in their computer use, their understanding and application of formative assessment notions and their readiness in giving up the central position in the classroom for their students when the new technology is in place.

At the same time, concerns are raised in relation to the language of the software instructions, the grading criteria, the time constraints both on the teachers’ part and the students’, the possible scant attention and interest in the reading and writing tasks required by the project and the teachers’ grading habits. Solutions and suggestions have been discussed in this paper. Sample lesson plans, pedagogy training and technical support are necessary for the participating teachers; interesting and diverse reading materials as well as exam-related writing tasks are to be prepared so as to make sure the larger research be conducted as planned.

The introduction of new technology, such as AWE systems, into language classrooms is inevitable, but they can be used in different ways, with different purposes, and then different outcomes. Students’ learning autonomy must be enhanced in order for the new technology to achieve its desired result. Therefore, the significance of this pre-investigation is not only to prepare for the nation-wide research, but it can also provide some insights into the current teaching practices and teachers’ perceptions on a number of key concepts that concern technology and pedagogy, which can be very helpful even for daily teaching and learning in any language class in China.

References


*(Copy editing: Duncan SIDWELL)*