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Developing an Online Formative Assessment System for a Chinese EFL Course

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Abstract: This study aims to develop an Online Formative Assessment System for a Chinese EFL course to support conducting formative assessment activities and further improving learners' English language skills. Two questionnaire surveys were conducted on 653 participants at the end of the course to explore their attitude toward the course (ATTC) and perceptions of the system (POTS) respectively. The results showed that students held favorable attitude toward the course as it improved their language skills. Students also expressed their preference for the system in terms of its usefulness, ease of use, and their willingness for future use. Besides, stepwise regression analyses indicated consistency between students' ATTC and their POTS.

Keywords: Online formative assessment, language tasks, EFL, higher education

1. Introduction

Assessment plays a crucial role in the process of education for evaluating and further improving the teaching and learning. With the popularization of online and blended learning in higher education since the 21st century, effective integration of formative assessment in online learning environments was claimed to have the high potential for sustained meaningful interactions among learners and the teacher (Sorensen & Takle, 2005).

Formative assessment is increasingly being implemented through policy initiatives in the Chinese higher education setting (Chen, Kettle, Klenowski, & May, 2013). For instance, Wen (2011) and Zheng (2014) applied formative assessment to Chinese EFL courses. Though there is a refocused emphasis on online formative assessment in order to create learner and assessment centered learning environments (Pachler, Daly, Mor, & Mellar, 2010; Wang, Wang, & Huang, 2008), online formative assessment studies are still less established in Chinese EFL courses.

In the present study, an online formative assessment system was developed for supporting web-based formative assessment activities in an EFL course at a key university in North China. The system provides an innovative approach for guiding teachers to systematically and efficiently assign language learning tasks and supporting students to carry out online formative assessment activities. At the end of the course, two survey questionnaires have been conducted among 653 students who have experienced the course and the system to investigate their attitude toward the course and the system.

2. Development of the online formative assessment system

The online formative assessment system was developed in year 2009 and has been applied in the EFL course at the university for five years. As shown in Figure 1, the structure of the system consists of two major components: an "Online Course Materials Module" and an "Online Formative Assessment Module".

The "Online Course Materials Module" was designed by teachers, including three sections, namely, "Resources Center for Language Learning Tasks", "Rubrics for Online Assessment" and "Students' Demo Work". "Resources Center for Language Learning Tasks" is a database for 23 categories of language tasks. In total, 280 language tasks were designed meeting the learning objectives of 28 units in four EFL textbooks at different proficiency levels. "Rubrics for Online Assessment" are specific assessment criteria adapted from College English Curriculum Requirements (2007) to assess

learners' language performance when completing the tasks and "Students' Demo Work" is for collecting and sharing all the sample works from the students.

The "Online Formative Assessment Module" enables the teacher to assign learning tasks, conduct teacher assessment and recommend students' demo work. It also provides students with functions for completing the tasks, uploading outcomes of tasks and conducting self and peer assessment.

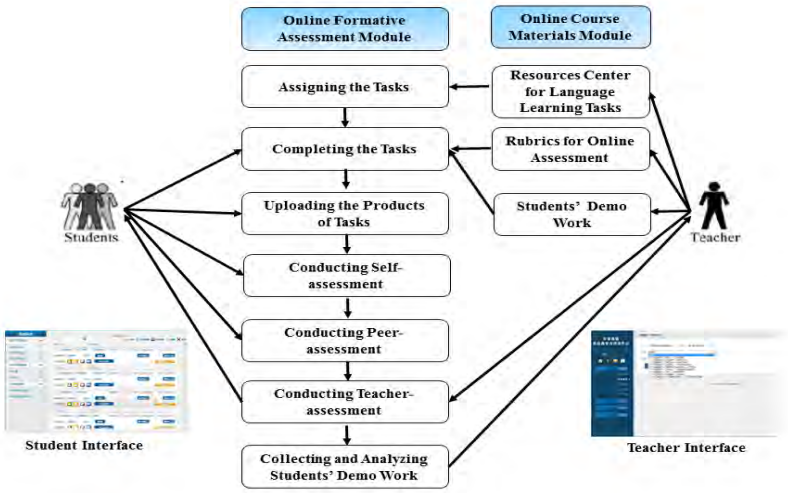

Figure 1. The Structure of Online Formative Assessment System

3. Results and Discussion

3.1 Students' attitude toward the EFL course and related course activities

After the EFL course, a questionnaire survey concerning the learners' attitude toward the course (ATTC) was conducted. In the questionnaire, students received 27 statements, each of which they rated on a 5-point scale the degree to which they agreed or disagreed (1= most strongly disagree and 5= most strongly agree). The questionnaire was modified based on the perception questionnaire designed by Fang (2010). A detailed description of the six factors is presented below:

- Leaners' attitude toward the EFL course (attitude): assessing students' general view of the course.
- Perceived usefulness for improving skills (improving skills): exploring effectiveness of the course for improving students' listening, speaking, reading, writing skills.
- Task completeness: measuring the degree to which students worked to complete the tasks.
- Extra effort: delineating students' after-class work for improving their language learning.
- Learners' attitude toward teacher assessment (teacher assessment): disclosing students' perceptions of teacher assessment activities in class.
- Learner' attitude toward peers' demo work (demo work): revealing the degree to which the peers' demon work is welcomed.

The reliability (Cronbach's alpha) for each factor is high (i.e., 0.89, 0.77, 0.75, 0.67, 0.84 and 0.75 respectively; the overall alpha coefficient is 0.91), indicating that these factors had sufficient reliability for measuring students' perceptions of the EFL course and the related student and teacher activities in class.

Students gave the highest ratings (Mean=4.56 on a 1-5 Likert scale) on the "learners' attitude toward teacher assessment" scale, implying the high importance of timely teacher feedback and assessment on learners' task performance. In addition, students have positive ratings of "task completeness" (Mean=4.13), "improving skills" (Mean=4.11), and "demonstration" (Mean=4.06), indicating their hard work for completing tasks and the effectiveness of the EFL course and peers' demo work for improving learners language skills. On the other hand, students gave relatively lower score to "attitude" and "extra effort" (Mean<4), which implied that this EFL course still had a room for improvement and students should be encouraged to make more extra efforts for completing tasks and improving overall performance.

3.2 Students' perceptions of using the online formative assessment system

The other questionnaire survey was conducted to evaluate the students' perceptions of the system (POTS). It consists of five factors, presented with strongly agree/disagree statements on a five-point Likert scale. The questionnaire was adapted from the questionnaire by Davis (1989), and Li, Dong, and Huang (2011), based on the TAM (technology acceptance model). Moreover, the researchers invited two experts in the field of online formative assessment to comment on the items of the questionnaire for face validity, and two EFL professionals to clarify the wording of all survey items. The following information is the detailed description of the five factors of the questionnaire.

- Perceived usefulness（usefulness）: assessing students' perceptions of the degree to which using the system will enhance their learning performance.
- Perceived ease of use (ease of use): exploring perceptions of the degree to which students expect the system to be free of effort.
- Learner satisfaction (satisfaction): measuring perceptions of the degree to which students will be willing to use the system and recommend it to peers.
- Effectiveness of online formative assessment (assessment effectiveness): delineating students' perceptions of the system for improving their second language learning skills.
- Willingness for future use scale (willingness): disclosing students' continuous efforts to use the system in the future.

The reliability (Cronbach's alpha) for each factor is high (i.e., 0.83, 0.78, 0.82, 0.88 and 0.71 respectively; the overall alpha coefficient is 0.92), indicating that these factors had sufficient reliability for measuring students' views toward the system. Students gave the highest ratings (Mean=4.23 on a 1-5 Likert scale) on the "perceived ease of use" factor, implying that the system has high potential supporting online formative assessment with proper user interface design. In addition, students have positive perspectives of the system and gave high ratings on the factors of "learner satisfaction", "willingness for future use" and "perceived usefulness" (all scores above 4), implying that the system has high potential for assisting students in completing online formative assessment activities, hence, students are willing to use it, recommend it to the peers and will continue to use it in the future. However, students gave the comparatively lowest score to the "effectiveness of online formative assessment" factor (Mean=3.88), indicating the need to improve the effectiveness of online formative assessment activities for improving their second language learning skills. In sum, this study can conclude that the effectiveness of system is accepted by most of the students but further efforts should be made to improve the effectiveness of online formative assessment activities.

3.3 The relations between students' attitude toward the course and their perceptions of using the system

In order to find the relationships between the above two surveys, the Pearson's correlation was conducted. As shown in Table 1, the results of the two questionnaires are highly related.

Table 1: The correlations among the factors of ATTC and POTS

	Usefulness	Ease of use	Satisfaction	Assessment effectiveness	Willingness
Attitude	0.59***	0.44***	0.42***	0.46***	0.52***
Improving skills	0.66***	0.39***	0.43***	0.49***	0.42***
Task completeness	0.49***	0.48***	0.50***	0.44***	0.41***
Extra effort	0.40***	0.26***	0.27***	0.47***	0.32***
Teacher assessment	0.35***	0.37***	0.42***	0.28***	0.33***
Demonstration	0.32***	0.25***	0.32***	0.39***	0.34***

Notes: ***p<.001

The regression analysis was performed to evaluate the predictive effects of the POTS factors on each factor of ATTC. As in Table 2, all the POTS factors are positive predictors to their corresponding ATTC factors. In other words, students with higher level of POTS tend to possess higher-level of ATTCs. Among all the POTS factors, "usefulness" could make positive prediction for all factors of students' attitude toward the EFL course and related course activities (t = 9.72, 14.34, 6.04, 4.53, 3.33, 2.42 respectively). In addition, the POTS factor "willingness" could also make significant prediction for all ATTC factors except "task completeness" (t = 6.96, 3.10, 2.20, 2.07, 4.32 respectively). Hence, we consider POTS factors "usefulness" and "willingness" as two important predictors to ATTC factors.

Table 2 Stepwise regression model of predicting ATTC (n=653)

ATTC	Predictors	B	S.E.		T	R^2
Attitude	Usefulness	0.41	0.04	0.36	9.72***	0.45
	Willingness	0.23	0.03	0.25	6.96***	
	Ease of use	0.15	0.04	0.13	3.54***	
	Assessment effectiveness	0.12	0.04	0.11	3.12**	
	Constant	0.11	0.18		0.63	
Improving skills	Usefulness	0.48	0.03	0.51	14.34***	0.49
	Assessment effectiveness	0.13	0.03	0.15	4.34***	
	Willingness	0.08	0.03	0.11	3.10**	
	Ease of use	0.07	0.03	0.07	2.11*	
	Constant	1.02	0.14		7.11***	
Task completeness	Satisfaction	0.20	0.04	0.23	5.36***	0.37
	Usefulness	0.21	0.04	0.23	6.04***	
	Ease of use	0.19	0.04	0.19	4.89***	
	Assessment effectiveness	0.10	0.03	0.12	3.16**	
	Constant	1.26	0.15		8.30***	
Extra effort	Assessment effectiveness	0.41	0.05	0.34	8.33***	0.27
	Usefulness	0.24	0.05	0.19	4.53***	
	Willingness	0.09	0.04	0.09	2.20*	
	Constant	0.26	0.21		1.26	
Teacher assessment	Satisfaction	0.17	0.04	0.23	4.78***	0.22
	Usefulness	0.11	0.03	0.14	3.33**	
	Ease of use	0.13	0.04	0.15	3.33**	
	Willingness	0.06	0.03	0.09	2.07*	
	Constant	2.64	0.15		18.01***	
Demonstration	Assessment effectiveness	0.27	0.04	0.27	6.20***	0.20
	Willingness	0.16	0.04	0.18	4.32***	
	Usefulness	0.12	0.05	0.11	2.42*	
	Constant	1.90	0.18		10.49***	

Notes: *p<.05, **p<.01, ***p<.001

4. Conclusion

This paper reports on the development of an Online Formative Assessment System in an EFL course and examines the effectiveness of the course and the system. The research results indicate that the EFL course adopting formative assessment in online learning environment is well received by students. It is also evident that most students find it rewarding to use the system. Besides, students also expressed their preference to the system in terms of its usefulness, ease of use, and their willingness for future use. The regression results reveal that students' perceptions of the system could make significant prediction for their responses of attitude towards the course. In particular, POTS factors of "willingness" and "usefulness" were significant variables for predicting students' attitude toward the course. However, it should be noted that the present study mainly employed quantitative measures. More in-depth qualitative studies are recommended to explore the issue further.

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