

Influence of Formative Online Teaching Evaluation on Autonomous Learning Ability of Students Majoring in English for Science and Technology

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Xuehua Sun^(✉)

Xi'an University of Science and Technology, Xi'an, China
sunxuehua@xust.edu.cn

Abstract—The rapid development of information technology has accelerated the process of educational informatization, the level of which has also been significantly elevated. New teaching informatization modes, such as mobile terminal and online learning, can meet learners' trans-time-and-space and personalized learning needs. As the main form of teaching evaluation, formative evaluation can provide students with timely and efficient feedback, change teachers' teaching progress, effectively improve the teaching effect and students' learning effect, and comprehensively promote students' autonomous learning ability. In this study, undergraduate students majoring in English for Science and Technology (EST) in five universities of science and engineering in Xi'an city of China, were chosen as research object to explore the influence of formative evaluation (self-evaluation, peer review, and teacher evaluation) on students' autonomous learning ability in online learning. Thereafter, the moderating effect of self-efficacy on the influence of formative evaluation on students' autonomous learning ability was analyzed. Results showed that the Cronbach's α coefficient value of the questionnaire designed in this study was 0.852 and the KMO value was 0.831, indicating its excellent reliability and validity. Evidently, self-evaluation and teacher evaluation can promote the improvement of autonomous learning ability. Self-efficacy plays a moderating role in the promoting effect of formative evaluation on autonomous learning ability. The effect of formative evaluation on autonomous learning ability varies significantly with its frequency of use. Conclusions in this study are of significant reference values for improving the teaching quality of EST through formative evaluation, enhancing the enthusiasm and motivation of college students, and improving the online classroom evaluation system.

Keywords—online learning, formative evaluation, English for Science and technology, autonomous learning ability, self-efficacy, moderating effect

1 Introduction

Emerging information technologies, such as 5G and mobile communication, are fully integrated into the field of education, facilitating educational informatization to enter a higher-quality development stage and endowing the full integration of education and

the Internet with a more rapid development momentum. Given the rapid development of modern multimedia and network technology in the direction of digitalization, traditional college English teaching concepts and teaching models, particularly teaching methods, are facing numerous competitions and challenges. This situation will inevitably affect the teaching effect of college English. As an important human resource, college students can further realize the high-performance level of English learning by cultivating good autonomous learning ability under the background of English as the main second foreign language. Moreover, the ultimate goal of the integration of English teaching and information technology in colleges and universities is to enable more college students to acquire stronger autonomous learning ability. The continuous improvement of informatization level in English teaching has prompted colleges and universities to focus more on the development of online teaching platform resources, accompanied by significant reforms in English teaching models. From offline teaching to blended teaching reform and to the online teaching model thereafter, college students' autonomous learning ability is heavily relied upon to master efficient learning methods, maximize learning resources, and improve their online learning performance.

In the current teaching practice of English for Science and Technology (EST), the improvement of college students' autonomous learning awareness and autonomous learning ability is consistently an important evaluation aspect of educational effectiveness. In the process of gradually improving college students' English autonomous learning, dependence on teachers' traditional teaching should be reduced. However, many college students are influenced by the cramming-type teaching model in middle schools, and their autonomous learning awareness is not strong and their autonomous learning ability is low. This reality leads to students' lack of enthusiasm for English learning and low learning initiatives. In the traditional offline teaching, students' test scores are used as measurement standard, which is inconsistent with the modern educational concepts of "student-oriented" and OBE. Hence, college students fail to enter a good state of English learning. The more scientific adoption of formative evaluation is to focus more on all aspects of teaching activities, which can promote learners' learning ability. In the teaching of students majoring in EST, formative evaluation, if applied in systems science, can fully stimulate their learning motivation, reduce procrastination and laziness in learning, gain more learning motivation, promote their autonomous learning awareness, strengthen their autonomous learning behavior, and enhance their autonomous learning ability in the daily teaching process. EST is a compound major aiming to master English knowledge and science and technology, requiring students of this major to improve their autonomous learning ability in an all-around manner. Formative evaluation is integrated into classroom teaching, so that college students, peers, and teachers can form the main group of teaching evaluation, give effective and timely feedback to college students, and improve their self-awareness, independent thinking, and self-regulation ability. In knowledge teaching for EST majors, teachers need to be clearer about the degree of college students' knowledge absorption and mastery in the learning process and evaluate their language skills. Meanwhile, if participating in peer reviews effectively, then college students can be stimulated to further actively participate in classroom teaching and become one of the components of learning evaluation. College students' self-evaluation of their learning performance can help mine their endogenous motivation and promote the sustainable improvement of their autonomous learning ability.

2 Theoretical basis and hypotheses development

2.1 Theoretical basis

Humanistic and constructivism teaching theories, which are important educational teaching theories at present, serve as theoretical bases for improving autonomous learning ability. Humanistic teaching theory emphasizes that every student is an independent subject with personality, and it is impossible to simply measure students' learning status and development level with a unified benchmark, which is its main viewpoint. Teaching evaluation should fully respect personality and individual differences and form different evaluation levels. This theory also advocates that teachers should, starting from the needs of students, focus on teaching them their favorite and meaningful knowledge points. In closed-loop teaching, teachers can learn effective information, such as students' progress, learning interests, and learning habits, from evaluation feedbacks, as well as encourage learners to adopt more targeted learning strategies. Humanistic learning theory emphasizes that teaching results should focus on examining students' practical ability and encourage them to complete the learning process carefully. According to learners' learning results, teachers should propose suggestions for improvement in time, so that students can have a stronger interest in learning, encourage learners and their peers to establish a harmonious learning atmosphere, and promote learners' willingness to learn and improve their intrinsic motivation [1]. The second theory is constructivism. After behaviorism relatively develops, cognitivism is more widely accepted to become the main idea in the field of education. Piaget, the main research scholar, believes that constructivism is the result of interaction among the relevant elements of individual learners. For the core idea, constructivism suggests constructing the process of learners-centered active knowledge acquisition with the help of teachers or peers. Formative evaluation promotes effective teaching by strengthening the interaction between teachers and students [2].

2.2 Hypothesis development

Formative evaluation aims to urge all teachers and students to carry out activities that can provide feedback information for improving teaching activities. According to different evaluation subjects, formative evaluation methods can be divided into self-evaluation, peer review, and teacher evaluation. Therefore, this research considered three aspects of formative evaluation the main factors affecting college students' self-learning ability. In particular, self-evaluation enables students to evaluate themselves positively and objectively. Hence, they can correctly understand themselves, deepen their self-understanding, be willing to take the initiative to learn, and develop an active evaluation consciousness. Peer review refers to mutual evaluation among students, which is considered in online platforms. Peer review means that college students can learn from each other and make progress, and scientifically evaluate the learning of other students. In the entire educational activity, teacher evaluation still plays a dominant role, which is mainly attributed to the position of teachers and their own roles. Teacher evaluation is the core way to making an objective and comprehensive evaluation of students' learning activities and performance.

For self-evaluation of autonomous learning, Lo [3] explained that learners can participate in multi-field learning and practice autonomous learning by adopting reflective portfolios, thereby enhancing their awareness of autonomous learning. Papamitsiou et al [4] showed that goal setting and time management have a strong positive impact on autonomous control, and effort exerted into adjustment have a moderate positive impact on learners' autonomy, which, however, is highly negatively influenced by help-seeking. Chan [5] stated that students' attitude and preparation for autonomous learning determine the level of autonomy they can achieve in the learning process. Yoo et al [6] asked medical students to evaluate their catheterization performance through video recording. The results showed that students in the experimental group scored higher in autonomous learning ability and communication skills than those in the control group, indicating that the self-evaluation method of reviewing video tapes can effectively cultivate nursing students' self-awareness of performance and improve their clinical skills. Sainato et al [7] indicated that children's self-evaluation can significantly improve their behaviors. Liu [8] found that self-evaluation can improve the teaching effect, provide students with learning motivation, and encourage them to develop independent and efficient learning habits. Wang [9] analysis results showed that electronic files and logs can serve as a form of self-evaluation and can eventually improve autonomous learning ability. Therefore, the following hypothesis is proposed:

H1: Self-evaluation in online learning has an evident influence on the improvement of students' autonomous learning ability.

In terms of how peer review affects autonomous learning ability, Moussaoui [10] explained that peer review can facilitate learners to participate in social interaction in the evaluation process, reduce their fear of writing, and improve their self-efficacy in writing. Ariza et al [11] held that in the English learning process, learners are easily influenced by the personalities and attitudes of their peers. Brutus et al [12] asked 389 undergraduates to evaluate their learning partners using a network-based system. The results showed that peer review can improve learners' learning effectiveness and performance. Panadero et al [13] believed that anonymous evaluation should be considered in peer review, and the results of case studies showed that peer review does not significantly promote learners' autonomous learning ability. Shen [14] research results manifested that autonomous learning ability is not evidently influenced by peer review. Wang [15] conducted a comparative experiment, and the results showed that differences are observed in the effect of peer review on improving autonomous learning ability. Jin [16] showed that peer review can improve the learning ability of senior high school students, but the interaction among the different influencing factors should be considered. Hence, H2 is proposed:

H2: Peer review in online learning has an evident influence on the improvement of students' autonomous learning ability.

In terms of how autonomous learning ability is affected by teacher evaluation, Turkan et al [17] thought that teacher evaluation plays an extremely important role in the comprehensive evaluation of learners. Babaii et al [18] showed that mismatch between learner and teacher evaluations can be minimized by teachers providing

scoring standards for learners. Ekmekçi et al [19] found that native and non-native English teachers show almost the same scoring behavior when evaluating English students' oral proficiency, hinting that a unified teacher evaluation standard should be adopted in the teaching process. In China, teacher evaluation is considered an element in the teacher support behavior for research. Liang [20] manifested that academic and emotional support from teachers can significantly improve students' autonomous learning ability. Lin [21] revealed that teachers' involvement in the teaching process can improve learners' autonomous learning ability. An [22] thought that teachers' autonomous teaching ability has a relatively positive impact on the cultivation of students' autonomous learning ability. Dai et al [23] conducted an empirical research and found a significant positive correlation between teachers' teaching behavior and autonomous learning ability. Accordingly, the following hypothesis is formulated:

H3: Teachers' evaluation in online learning has an evident influence on the improvement of students' autonomous learning ability.

Numerous domestic and foreign research documents have recognized the important effect of self-efficacy in learners, learning tools, and learning environments, so self-efficacy was incorporated as a moderator variable in the current research. Ponton et al [24] found that self-efficacy plays a complete mediating role in learners' better self-evaluation. Tabrizi et al [25] indicated that positive correlations among Iranian English learners' beliefs in listening self-efficacy, listening autonomy, and listening comprehension. Li [26] found that self-efficacy is linearly correlated with English autonomous learning ability, but the influencing relationship is not particularly evident. Li et al [27] found that self-efficacy can play a partial mediating role in the influence of learning goals on English autonomous learning ability. Yue et al [28] explained that self-efficacy can affect learners' learning performance, but the influencing degree varies with gender. Li et al [29] stated a significant positive correlation between self-efficacy and autonomous learning behavior. Chen et al [30] demonstrated a positive correlation between self-study achievement and self-efficacy under the network environment. The preceding studies indicated that self-efficacy presents a relatively evident correlation with autonomous learning behavior. Therefore, the current study believed that self-efficacy plays a moderating role in the influence of formative evaluation on autonomous learning ability. Therefore, the following hypothesis is presented.

H4: Self-efficacy plays a moderating role in the evident influence of teacher evaluation on students' autonomous learning ability in online learning.

3 Methodology

3.1 Questionnaire design

The existing research hypotheses were used as bases to design a questionnaire titled "The Influence of Formative Evaluation on the Autonomous Learning Ability of English Majors in Science and Technology." The questionnaire included the following three parts, with a total of 54 question options. The first part provided the basic information

of the respondents, particularly in four aspects: gender, grade, age, and frequency of formative evaluation. The second part was the core part of the questionnaire, including formative evaluation and autonomous learning ability. Formative evaluation was divided into three aspects, namely, learners' self-evaluation, peer review, and teacher evaluation, with 5, 4, and 6 measurement questions (total of 15 options) designed, respectively. Autonomous learning ability was measured using the classical questionnaire of Lin [31] which is widely used in pedagogy and psychology in China at present. The three aspects were measured by choosing 8, 9, and 10 questions in the questionnaire, totaling 27 options. The third part was the measurement of the moderator variable. The current research measured self-efficacy using these questions from Garcia et al [32] with a total of 8 options. All questions were measured using a 7-point Likert scale.

3.2 Research objects

Shaanxi Province is a large educational province in Western China. In recent years, Shaanxi Province has implemented the Ten-year Development Plan of Education Informatization in Shaanxi Province (2011–2020). The current overall informatization level is relatively high by comprehensively strengthening the schematic design and implementation guidance of education informatization construction projects. Therefore, this research selected as research objects undergraduate students majoring in EST in five universities of science and engineering in Xi'an, Shaanxi Province. From October to November 2021, the research group conducted a paper questionnaire survey among EST students in the five universities. A total of 345 questionnaires were distributed, with 321 recovered. Eventually, 297 valid questionnaires were obtained after invalid ones were excluded for an effective recovery rate of 86.09%. The concrete descriptive statistical results are listed in Table 1.

Table 1 shows that the proportions of male and female EST students were relatively balanced, among whom sophomores responded to the questionnaire more actively. In addition, more EST students tended to evaluate online learning courses by means of formative evaluation for 6–7 times. This result indicated that students' learning motivation is improved by EST teachers in the five universities of science and engineering in Xi'an more through the formative evaluation method.

Table 1. Descriptive statistical results

Name	Option	Frequency	Percentage (%)	Cumulative Percentage (%)
Gender	Male	146	49.16	49.16
	Female	151	50.84	100
Age	Below 18 years old	39	13.13	13.13
	19 years old	67	22.56	35.69
	20 years old	94	31.65	67.34
	21 years old	50	16.84	84.18
	22 years old	33	11.11	95.29
	23 years old or above	14	4.71	100

(Continued)

Table 1. Descriptive statistical results (Continued)

Name	Option	Frequency	Percentage (%)	Cumulative Percentage (%)
Grade	Freshman	45	15.15	15.15
	Sophomore	149	50.17	65.32
	Junior	30	10.1	75.42
	Senior	73	24.58	100
Frequency of formative evaluation	0 time/week	5	1.68	1.68
	1–2 times/week	10	3.37	5.05
	3–4 times/week	79	26.6	31.65
	5–6 times/week	84	28.28	59.93
	6–7 times/week	105	35.35	95.29
	Over 8 times/week	14	4.71	100
Total		297	146	49.16

4 Result analysis

4.1 Reliability and validity analyses

Questionnaire reliability refers to the repeatability of questionnaire measurement results (i.e., difference between data obtained from the questionnaire and the average value). Reliability analysis is used to investigate the reliability and accuracy of quantitative data. In general, Cronbach’s α coefficient >0.8 means high reliability.

Table 2 shows that the overall reliability coefficient of the questionnaire was 0.852, which was above 0.8, indicating the high reliability quality of the research data.

Table 3 shows that the CR values of the 7 factors were above 0.7, and their AVE (except autonomous learning behavior) was over 0.5, reflecting high convergent validity.

According to the analysis of discriminant validity (Table 4), the AVE square root of seven factors was greater than the maximum absolute value of the correlation coefficient between factors, indicating favorable discriminant validity.

The KMO and Bartlett tests were used to verify the validity. Table 5 shows that the KMO value was 0.831, which was over 0.8. This result indicated that the overall questionnaire validity was good, and the research data were suitable for information extraction.

Table 2. Cronbach’s α coefficients

Variable	Number of Questions	Cronbach’s α Coefficients	Cronbach’s α Coefficients
Self-evaluation	5	0.927	0.852
Peer review	4	0.938	
Teacher evaluation	6	0.856	
Self-management and learning ability	8	0.874	
Autonomous learning psychology	9	0.910	
Autonomous learning behavior	10	0.876	
Self-efficacy	8	0.925	

Table 3. AVE and CR results of the model

Variable	Average Variance Extracted (AVE)	Composite Reliability (CR)
Self-evaluation	0.730	0.931
Peer review	0.547	0.869
Teacher evaluation	0.793	0.939
Self-management and learning ability	0.502	0.859
Autonomous learning psychology	0.537	0.909
Autonomous learning behavior	0.453	0.864
Self-efficacy	0.541	0.895

Table 4. Discriminant validity: Pearson correlation and AVE square root

	Self-Evaluation	Peer Review	Teacher Evaluation	Self-Management and Learning Ability	Autonomous Learning Psychology	Autonomous Learning Behavior	Self-Efficacy
Self-evaluation	0.730	0.931	0.854	–	–	–	–
Peer review	0.547	0.869	0.338	0.739	–	–	–
Teacher evaluation	0.793	0.939	0.076	0.051	0.891	–	–
Self-management and learning ability	0.502	0.859	0.255	0.291	0.093	0.709	–
Autonomous learning psychology	0.537	0.909	0.049	–0.001	0.003	0.079	0.733
Autonomous learning behavior	0.453	0.864	0.191	0.332	0.074	0.285	0.143
Self-efficacy	0.541	0.895	–0.058	–0.037	0.074	–0.079	0.273

Note: Figure on the diagonal represents the AVE square root.

Table 5. Validity test results

KMO Value		0.831
Bartlett's test of sphericity	Approximate chi-square	13106.953
	<i>df</i>	1225
	<i>p</i>	0.000

4.2 Correlation analysis

Table 6 shows that self-evaluation and teacher evaluation were evidently correlated with the two aspects of autonomous learning ability. However, peer review showed unevident correlation coefficient. The mainly reason is that teachers tend to interact and communicate more with students in online learning without design of teaching forms, such as student interaction and group discussion. Consequently, student interaction is insufficient in online English teaching, and peer review fails to exert a clear effect on the improvement of autonomous English learning ability.

Table 6. Correlation coefficient

Variable	Autonomous Learning Psychology	Self-Management and Learning Ability	Autonomous Learning Behavior
Self-evaluation	0.049	0.255**	0.191**
Peer review	0.003	0.093	0.074
Teacher evaluation	-0.001	0.291**	0.332**

Note: ** $p < 0.01$.

4.3 Regression results

Table 7 presents the following results.

(1) H1 holds. Evidently, self-evaluation can promote the improvement of autonomous learning ability. The main possible reason is that in online learning, learners rely more on self-learning, so self-evaluation can stimulate their learning initiatives and fundamentally promote students to maximize their autonomous initiatives. In formative evaluation, they actively keep independent learning records, actively participate in classroom evaluation, keep weekly dairies, and take reading notes. Moreover, formative evaluation is concretely implemented in more universities by adopting student archives. In the process of independent implementation and cooperative learning with teachers and students, the supervision mechanism of the formative evaluation model will further play a clear role. With the gradual improvement and enrichment of classroom teaching evaluation materials, college students will further enhance their practical and thinking abilities, and strengthen their confidence and initiative in English learning.

(2) H2 is not supported. Peer review did not significantly promote the improvement of autonomous learning ability, which is consistent with some studies. The main possible reason is that, although peer review is adopted in online teaching of many courses, it accounts for a low proportion in the total score and has not attracted sufficient

attention from students. Meanwhile, some students think that mutual evaluation is a mere formality and their own consciousness is weak. Hence, their consciousness of mutual evaluation is not high and they lack time for mutual evaluation, leading to students' resistance and reducing their motivation for autonomous learning. In online learning, there are many online learning resources in some courses, thereby posing immense academic pressure on learners. Hence, peer review will further increase the burden and time pressure on students.

(3) H3 holds. That is, teacher evaluation can clearly promote the improvement of autonomous learning ability. At present, teacher evaluation runs through the entire English teaching process in China. By demonstrating good learning methods and publishing evaluation methods in advance, teachers design more valuable questions according to the teaching purpose, and evaluate students learning performance before, during, and after class in a scientific way. For example, the potential promoting effect of teacher evaluation can be fully exerted by providing certain waiting time for students to raise questions, and enriching the classroom questioning forms and content.

Table 7. Linear regression results

Variable	Standardization Coefficient	T	P	VIF	F
Constant	–	17.079	0.000**	–	F (3,293) = 14.385, p = 0.000
Self-evaluation	0.259	4.477	0.000**	1.130	
Peer review	0.062	1.135	0.257	1.007	
Teacher evaluation	0.161	2.769	0.006**	1.133	

Note: **p < 0.01.

4.4 Moderating effect analysis

H4 holds, as shown in Table 8. This result reflects that self-efficacy plays an evident moderating role in the promoting effect of formative evaluation on the improvement of autonomous learning ability. In Model 1, regression analysis was mainly performed on the independent and dependent variables. Model 2 adds self-efficacy as a moderating variable on the basis of Model 1. Model 3 adds the product of the independent and moderating variables as a cross-term on the basis of Model 2. In Model 1, formative evaluation has a significant effect on the improvement of autonomous learning ability ($t = 5.653$, $p = 0.000 < 0.05$), indicating that formative evaluation has a significant influence on autonomous learning ability. On this basis, the moderating effect was analyzed by the significance of the interaction terms in Model 3. Note that the interaction terms between formative evaluation and self-efficacy in Model 3 were significant ($t = 2.251$, $p = 0.025 < 0.05$). That is, formative evaluation affects autonomous learning ability to different degrees at different levels of self-efficacy. Figure 1 shows that self-efficacy can effectively adjust the influence of formative evaluation on autonomous learning ability. The main reason is that college students with different levels of self-efficacy will have different attitudes when facing English learning difficulties, which also inspires our teachers to improve the self-efficacy of English majors in core

English courses through active guidance and evaluation. Teaching methods, such as experimental teaching and group discussion, can be considered to thoroughly stimulate exploration desire and learning motivation, increase students' personal feelings, and ultimately help EST students to improve their sense of self-efficacy.

Table 8. AVE and CR results of the model

	Model 1	Model 2	Model 3
Constant	4.538** (137.093)	4.538** (137.262)	4.537** (138.206)
Formative evaluation	0.244** (5.653)	0.244** (5.659)	0.245** (5.722)
Self-efficacy	–	0.040 (1.315)	0.043 (1.412)
Formative evaluation* self-efficacy	–	–	0.089* (2.251)
ΔR^2	0.098	0.005	0.015
ΔF value	F (1,295) = 31.958, p = 0.000	F (1,294) = 1.728, p = 0.190	F (1,293) = 5.068, p = 0.025

Notes: *p < 0.05, **p < 0.01.

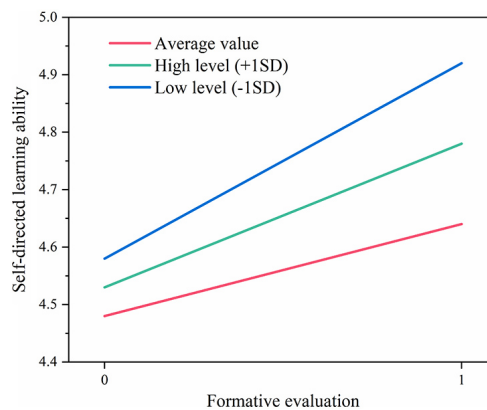


Fig. 1. Moderating effect of self-efficacy

4.5 Difference analysis

Table 9 shows that the difference in the influence of the formative evaluation frequency on autonomous learning ability was investigated through the nonparametric test method (mainly based on the Kruskal–Wallis test statistics). Moreover, the formative evaluation frequency showed a significance level of 0.05 for autonomous learning ability ($p = 0.026 < 0.05$), and the difference could be understood by comparing medians. The main reason is that in online learning, English teachers often adopt formative evaluation methods. Hence, college students become more familiar with such evaluation methods, stimulating them to complete online learning content and improving their autonomous learning ability thereafter. However, there was no evident difference in autonomous learning ability among English EST students of different grades and ages.

Table 9. Difference analysis

Autonomous learning ability	Age median M (P25, P75)						H value of Kruskal-Wallis test statistics	p
	1.0 (n=39)	2.0 (n=67)	3.0 (n=94)	4.0 (n=50)	5.0 (n=33)	6.0 (n=14)		
	4.381 (4.0,4.8)	4.631 (4.2,5.0)	4.546 (4.1,5.1)	4.419 (3.9,5.0)	4.465 (4.2,5.3)	4.330 (3.7,4.9)	5.817	0.324
	Grade median M (P25, P75)						H value of Kruskal-Wallis test statistics	p
	1.0 (n=45)	2.0 (n=149)	3.0 (n=30)	4.0 (n=73)	1.0 (n=45)	2.0 (n=149)		
	4.467 (4.1,5.0)	4.564 (4.1,5.1)	4.450 (3.9,4.8)	4.517 (4.1,5.0)	4.467 (4.1,5.0)	4.564 (4.1,5.1)	1.53	0.675
	Frequency median of formative evaluation M (P25, P75)						H value of Kruskal-Wallis test statistics	p
	1.0 (n=5)	2.0 (n=10)	3.0 (n=79)	4.0 (n=84)	5.0 (n=105)	6.0 (n=14)		
	4.848 (4.6,5.2)	4.381 (3.9,5.1)	4.465 (4.0,4.7)	4.501 (4.0,5.0)	4.527 (4.1,5.1)	4.803 (4.6,5.3)	12.756	0.026*

Note: *p < 0.05.

5 Conclusion

The education–information fusion level has become increasingly high owing to the comprehensive application of emerging information technologies in the field of education. An important goal of college English teaching is to continuously enhance autonomous learning ability through informatization. Autonomous learning ability can be effectively promoted by giving timely and efficient feedback to students through comprehensive formative evaluation during the cultivation of EST students. In this research, EST undergraduate students in five universities of science and engineering in Xi'an, Shaanxi Province were chosen as survey respondents. The objective is to measure the influencing degree of formulative evaluation on the autonomous learning ability of EST students during online learning. The research results showed that self-evaluation and teacher evaluation can clearly promote the improvement of autonomous learning ability. Self-efficacy plays an evident moderating role in the promoting effect of formative evaluation on autonomous learning ability. Continuous in-depth research is suggested, including in the aspects of perfecting the measurement method in formative evaluation, expanding research samples, and incorporating teacher–student cooperation in formative evaluation.

6 References

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7 Author

Xuehua Sun, Master's degree, is a lecturer in Department of English, College of Humanities and Foreign Languages, Xi'an University of Science and Technology. She research interests focus on English language teaching and applied linguistics. (sunxuehua@xust.edu.cn).

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