



Building a New Online and Offline Hybrid Teaching Evaluation Index System and Application Research

Hui Chen and Rongjun Huang^(✉)

Dongguan City University, Dongguan 523419, Guangdong, China
632161547@qq.com

Abstract. With the deep integration of Internet information technology and education, online and offline hybrid teaching is getting more and more attention from university teachers. The reasonable construction of a hybrid teaching evaluation index system plays an important role in effectively ensuring teaching quality. Based on the principles of scientificity, comprehensiveness, quantifiability, and plurality, this paper constructs a quality system for online and offline hybrid teaching evaluation in colleges and universities, and uses the online and offline courses of customs practice as samples for practical application, verifying that the index system has high reliability and validity, which can provide reference and reference for similar institutions to conduct hybrid teaching quality evaluation.

Keywords: Online and offline hybrid teaching · Evaluation index system · Educational Technology Applications · Teaching Reform

1 Introduction

Under the teacher-centered traditional classroom education model, the evaluation objectives, evaluation subjects, and means are single, and teachers' evaluation of students is mainly based on students' final examination results and their usual classroom performance, especially their usual classroom performance, which can only be evaluated in a general, subjective and abstract way, and cannot make an objective and quantitative evaluation of students' ideological quality and comprehensive ability. Therefore, the Ministry of Education pointed out in the "Overview of National Basic Education Curriculum Reform Project" that "a new evaluation system should be built with diversified objectives, diversified evaluation subjects and evaluation means, and attention to results as well as processes" [1]. The blended teaching based on the combination of online and offline emphasizes students' active participation and interactive teaching and communication between teachers and students. The multiple intelligence evaluation models based on constructivist formative evaluation + summative evaluation can better evaluate the teaching quality of blended teaching courses [2]. Li Xin pointed out the need to develop a flipped classroom teaching quality evaluation system adapted to different educational levels, teaching objects, subject contents, and learning objectives, and also proposed a

technical route to construct a hybrid teaching quality evaluation index system, which provided a general method for the construction of a hybrid teaching quality evaluation index system [3]. Liu Zhiyong et al. conducted a study on the teaching evaluation method of SPOC-based blended teaching mode and constructed a teaching quality evaluation index system from three aspects, including environment factor, learning factor, and teaching factor [4]. However, according to Professor Hu, although people are aware of the one-sidedness and limitations of traditional evaluation models, they still use them because they are “easy to operate” [5]. Therefore, the construction of a scientific, convenient, and easy-to-use evaluation index system is conducive to the promotion of online and offline hybrid teaching.

2 Principles for the Construction of a New Online and Offline Hybrid Teaching Evaluation Index System

2.1 Scientific

The traditional teaching evaluation often judges students’ course performance only based on examination results, failing to assess students’ process learning, and teachers fail to understand students’ suggestions and opinions on the teaching process, which cannot reflect the scientific and objective nature of the evaluation system. In contrast, the hybrid teaching evaluation index system adds process evaluation to the traditional summative evaluation and assesses students’ moral development, learning methods, and abilities in the learning process, and the summative evaluation is no longer limited to examination papers but can be in the form of examination papers, essays, and projects according to the characteristics of the course, making the evaluation system more scientific.

2.2 Comprehensiveness

The design of process evaluation and summative evaluation indexes should comprehensively cover both online and offline, mainly from several indicators such as moral development, learning methods, and abilities, professional knowledge and abilities, etc. Meanwhile, teachers can Combine students’ suggestions and opinions to improve teaching to achieve teaching and learning.

2.3 Quantifiable

The traditional evaluation can only make the subjective and abstract evaluation of students’ comprehensive ability and overall quality. In the evaluation index system of hybrid teaching mode, the above two are visualized and transformed into measurement indexes of quantifiable activities in the process of teaching activities.

2.4 Diversity

The process evaluation includes mutual evaluation among students and teachers’ comments on students; the summative evaluation includes students’ self-evaluation and evaluation of teachers, and teachers’ self-evaluation and comments on students. The evaluation covers but is not limited to the teacher’s teaching content, teaching methods, task difficulty, students’ learning attitude, teamwork ability, task completion, etc.

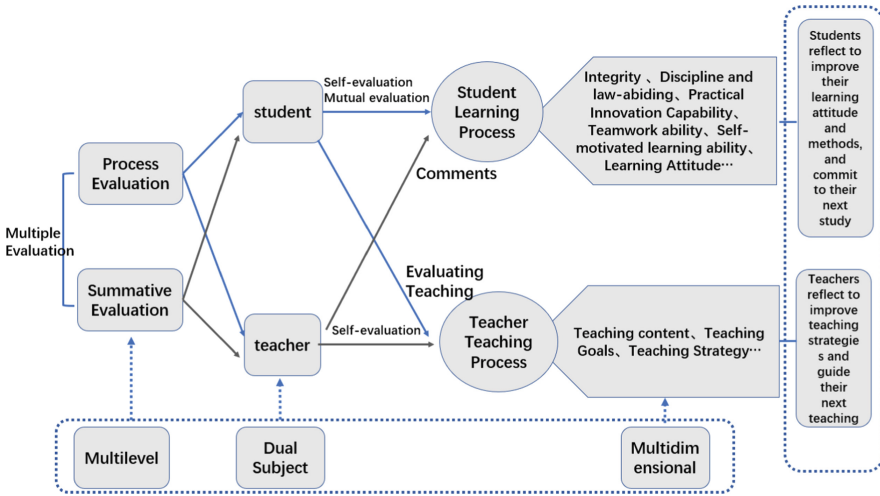


Fig. 1. Framework of online and offline hybrid teaching evaluation index system

3 Design of a New Online and Offline Hybrid Teaching Evaluation Index System

Following the principle of constructing an evaluation index system, we propose a hybrid online and offline evaluation index system (as in Fig. 1), which features a multi-dimensional, multi-level and dual-subject evaluation of evaluation objects. It aims that through evaluation and reflection, students can improve their learning attitudes and learning methods, actively engage in the next learning, and develop the ability of self-reflection and lifelong learning, and teachers can continuously improve their teaching programs and guide the next teaching, and so on in a cycle of promotion, to achieve teaching and learning.

On this basis, a preliminary indicator system is formed. The index system is divided into 3 levels: primary indexes, secondary indexes, and observation points. The first-level index system is constructed according to the general objectives of the state for talent cultivation and the specification requirements of professional talent cultivation and the role of curriculum teaching in the process of professional talent cultivation. The second-level indicators are the refinement of the first-level indicators, but still need to set the third-level indicators - observation points, so that the data can be directly obtained from the teaching platform or teaching and learning process. The indicator system is shown in Table 1.

Table 1. Online and offline hybrid teaching evaluation index system

Evaluation Methods	primary indexes	secondary indexes	Observation Points	Weights (%)
Process Evaluation	Moral Development (25%)	Integrity	On-time completion rate of learning tasks	5
			No cheating on tests and exams	3
			No plagiarism in homework	2
		Discipline and law-abiding	Class attendance rate	10
			Comply with classroom and exam discipline	5
		Learning Methods and Competency Development (25%)	Practical Innovation Capability	Simulation Projects
	Teamwork ability		Number of mission participation + group performance	3
	Self-motivated learning ability		Follow-Up Quiz	2
	Learning Attitude		Unit Testing	5
		Unit Assignments	5	
Summative Evaluation	Professional Knowledge and Abilities (50%)	Professional Knowledge and Abilities	Final Test	30
			Final Comprehensive Project	20
Overall score			100	

4 Application Practice of a New Online and Offline Hybrid Teaching Evaluation Index System

4.1 Study Implementation Process

1. Sample selection

157 sophomores majoring in international trade at Dongguan City University were chosen as the study subjects. The online and offline hybrid teaching was carried out utilizing

Table 2. Cronbach alpha coefficient

Examining Indicators	Cronbach Alpha
Moral Development	0.774
Learning Methods and Competency Development	0.783
Professional Knowledge and Abilities	0.704
Total questionnaire	0.792

Table 3. KMO and Bartlett test

KMO Sampling suitability quantity	0.718	
Bartlett sphericity test	Approximate cardinality	1010.846
	Degree of freedom	66
	Significance	0.000

the Learning Pass platform, and the online and offline hybrid teaching assessment index system was put into use.

2. Confidence test

In this study, the three secondary indicators of students' total performance and moral development score, learning method and ability development score, and professional knowledge and ability were examined as points, and the SPSS tool was used to analyze the Cronbach's alpha coefficient separately. The results are shown in Table 2.

From the data in Table 2, it can be seen that the Cronbach alpha coefficients are all above 0.7, with high-reliability coefficients and more reliable data, so it can be considered that the credibility of the teaching evaluation based on the whole process of hybrid teaching evaluation index system constructed in this paper is high.

3. Validity analysis

In general, the lower the significance threshold of Bartlett's sphericity test ($P < 0.05$), the more probable a significant association exists between the original variables. KMO values are used to compare simple and partial correlation coefficients between items and take values between 0 and 1. The validity is now tested by KMO and Bartlett's sphericity test (see Table 3.) The KMO value is greater than 0.7, and the significance of Bartlett's sphericity test statistic is $0.000 < 0.01$, which is considered good validity of the data, indicating that the structural validity of the whole process-based hybrid teaching evaluation index system constructed in this paper is good and has some scientific validity.

Table 4. Correlation analysis between Moral Development and Overall score

	Moral Development	Overall score
Moral Development	1	0.564**
Overall score	0.564**	1

** At the 0.01 level (two-tailed), the correlation is significant.

Table 5. Correlation analysis between Learning Methods and Competency Development and Overall score

	Learning Methods and Competency Development	Overall score
Learning Methods and Competency Development	1	0.866**
Overall score	0.866**	1

4.2 Research Findings

1. Students' moral development and overall performance have a strong correlation

The results of the analysis, which involved using the SPSS tool to conduct a Pearson correlation test between students' moral upbringing and general performance, are presented in Table 4.

Therefore, the above table shows that there is a significant correlation between the two moral upbringing and total achievement, where the correlation coefficient of each variable is greater than 0, indicating a significant positive correlation. The conclusion of this study shows that students with a good moral upbringing are generally diligent in their studies, but there are exceptions, such as they may have unsatisfactory learning results due to poor learning ability or learning methods, and teachers should find them and give them help in time.

2. Analysis of the correlation between learning methods and ability development and overall performance

The results of the study, which used the Pearson correlation test to examine how students learned, how their abilities developed, and how they fared overall, are presented in Table 5. Table 5 shows that learning strategies, skill development, and overall grades are significantly correlated, with the correlation coefficients of each variable being more than 0, which denotes a significantly positive link. According to the study's findings, teachers should focus on developing their students' capacity for lifelong learning in online and offline hybrid classes because these students will typically perform better academically.

5 Conclusions

The online and offline hybrid teaching evaluation index system constructed in this study evaluates 10 process evaluation observations of moral development, learning methods, and ability development, and 2 summative observations of professional knowledge and ability, and all the selected observations can collect quantifiable data and have good reliability and validity after practical testing and data analysis. It can be used as a reference for institutions to construct online and offline hybrid teaching evaluation indexes.

Acknowledgement. Research funding information: Design and application of online and offline hybrid teaching in Customs clearance practice, NO.2021xjjg223.

References

1. Jiandong Guo. (2020). Research on the construction and application of a hybrid teaching evaluation index system. *ADULT EDUCATION*,12,19-25.
2. Li Xin. (2015). Application practice of a new online and offline hybrid teaching evaluation index system. *Electrochemical Education Research*, 3,96-100.
3. Zhiyong, Liu. (2017). Research on the teaching evaluation method of blended teaching model based on SPOC. *Education Modernization*.13,99-127.
4. Zhongfeng. Hu.(2005). Educational evaluation: Contradiction and analysis--In the light of the new curriculum reform of basic education. *Curriculum. Teaching Materials and Methodology*.8,6-10.
5. Miao Zhai. (2021). Research on formative evaluation index of mixed teaching in Colleges and Universities. *Modern Educational Technology*,30,35-41.
6. Yiwen Gao. (2022). Investigation and Analysis on the effect of online and offline mixed teaching. *Continuing Medical Education in China*,14,117-121.
7. Yongjun Zhu. (2021). Research on comprehensive evaluation system of online and offline two-way Teaching. *China Computer & Communication*,24,250-253.
8. Sheng Wang.(2021). Construction and Application of Mixed Teaching Quality Evaluation System. *JOURNAL OF LIAONING HIGHER VOCATIONAL*,23,33-37.
9. Yanfang Fu.(2017). Design and practice of hybrid teaching mode based on SPOC. *Teaching and Learning Methon*,38,36-41.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

