Research on rapid evaluation of class study style in colleges and universities based on weighted grade point

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Abstract: The evaluation of study style is one of the key and hot issues of ideological and political research in colleges and universities in recent years. The existing evaluation systems of study style involve many parameters and depend on questionnaire data, which are difficult to achieve a simple and fast evaluation on college students' study style. To this end, the paper proposes a rapid evaluation scheme of college students' study style. It first puts forward a concept of weighted grade point by combining the course grade point and professional ranking.Then, it constructs an evaluation modelof class study style,termed as the class study style index,by taking the weighted grade point and thepass rate of College English Test Band Four/ Six (CET4/6) as parameters, thus the classstudy style as well as its evaluation can be evaluated. The example analysis shows that the proposed scheme can realize rapid and efficient evaluation of class study style in different time spans, such as single semester, multiple semesters and so on.

Key words: Study style evaluation; Weighted grade point; College English Test Band Four/ Six (CET4/6) pass rate; Study style index

Introduction

The study style denotes the common mode and atmosphere formed by individuals or groups in the process of learning, teaching and research, including the style of study, the style of teaching and the academic atmosphere . In a narrow sense, the study style of college students refers to the learning style. Academic circles generally believe that the study style of college students is influenced by many factors such as society, family, campus, teachers, individuals and so on, and it is a complex system engineering to evaluate the study style of college students. Up to now,there is no widely recognized and universal evaluation scheme for the study style of college students. From a perspective of the goal of study style construction, improving the learning effect is the core. As a result, rapid evaluating the college students' study style according to the academic recordsbecomes one of the important research topics in the field of higher education.

1. Research status

In recent years, many scholars have made research on the evaluation methods and evaluation system of college students' study style. The literature[1] analyzed the connotation of college students' study style. The Literatures[2-3] studied the influence of campus, teachers, students, family, society and other factors on college students' study style with questionnaires. The Literature[4] studied the influence of learning attitude on learning effect, thus put forward the "1234 mode" and "one grasp and three release principle" of learning style construction. The Literatures[5-8] studied the impact of class and dormitory learning style on academic performance through statistical analysis of course records. In literature[5], the authors pointed out that there is a significant correlation between the class style of study and academic performance.The literature[6] studied the correlation between learning achievement and 22 factors of learning style construction. The literature[7] pointed out that the sub-environment of classes and dormitories has a great effect on academic performance. The literature[8] employed the Feynman learning method to cultivate and evaluate the learning style of the class. The literature[9] explored the evaluation method of study style based on data mining.

The literatures[10-15] studied the construction of the evaluation system of college students' studystyle. Among them, the literature[10] selected 26 indicators from four areas, management system, learning atmosphere, academic development, and learning planning, to build an evaluation system of college class learning atmosphere. The literature[11] selected 15 indicators from five levels, learning environment, learning status, student management, education carrier, and teachers' ethics, to build a class study style evaluation system. The literature[12] established an evaluation system of study style in colleges and universities by comprehensively applying analytic hierarchy process and multi-level fuzzy evaluation method. The literature[13] explored the construction of college study style and its performance evaluation system in order to find the key issues in the construction of studystyle. The literature[14] selected 25 indexes from the security system, teaching style and student statethree major aspects, of which the index weights aredetermined by AHP, to construct anevaluation system ofuniversity studystyle. The results showed that the teachers' teaching style has a strong impact on the study style of students. The literature[15] employed the analytic hierarchy process to determine the weight of the evaluation index of the style of study, and uses the weighted average method to give the calculation formula of the class style of study.

To sum up, the existing researches on evaluation of college study style mostly construct the multi-parameter evaluation model and set the influence weight of each parameter based on questionnaire, which is difficult to understand the students' study style from academic performanceintuitively. To this end, this paper studies the evaluation of study style based on the course grade point and pass rate of CET-4/6, where a weighted grade point is used to reflect the learning status of students, and the passing rates of CET-4/6 are used to reflect the learning foundation and development planning of students, thus a simple and efficient quantitative analysis model to evaluate the class study style of college students is presented.

2. Evaluation model of class style of study

(1) Class weighted grade point

In view of the fact that the course grade point can reflect the students' learning situation, and the professional ranking can reflect the position of students' learning situation in their major, this paper designs a new learning situation index weighted grade point to comprehensively reflect the students' learning situation combined with these two parameters.

Definition 1: A student's weighted grade point (WGP) is defined asthe product of the student's course grade point GP_k and its weighted ranking of the major, $W(RA_k)$, namely

$$WGP_k = GP_k \cdot W(RA_k), \quad (1)$$

where RA_k indicates the ranking of the major, and $W(RA_k)$ can be calculated as

$$W(RA_k) = \frac{N_g - RA_k}{N_g}. \quad (2)$$

Definition 2: the class weighted grade point (CWGP) is defined as the average of the weighted grade points of all students in the class, which is calculated as

$$CWGP = \frac{\sum_{k=1}^{N_c} WGP_k}{N_c} = \frac{\sum_{k=1}^{N_c} GP_k \cdot W(RA_k)}{N_c}, \quad (3)$$

where N_c is the total number of students in the class and k is the student number of students in the class.

In addition to the weighted grade point, the pass rate of CET-4 and CET-6 is also an important indicator to reflect the learning situation. It can reflect the foundation and internal drive of students to a certain extent. It is defined as follows.

Definition 3: The passing rate of CET-4 and CET-6 in a class, denoted as $CPRE_4$ and $CPRE_6$ respectively, are defined as the ratio of the number of students passing the CET-4 and CET-6 to the total number of students in the class, i.e,

$$CPRE_4 = \frac{\sum_{k=1}^{N_c} 1_{[E_{4,k} \geq 425]}}{N_c}, CPRE_6 = \frac{\sum_{k=1}^{N_c} 1_{[E_{6,k} \geq 425]}}{N_c}, \quad (4)$$

where N_c is the total number of students in the class and k is the student number of students in the class. $E_{4,k}$ and $E_{6,k}$ denote thestudent K's CET-4 and CET-6 scores respectively. $1_{[x]}$ is an indicating function, which equals to 1 when x is true, otherwise zero.

(2) Study style evaluation model

In this section, a new class study style index (CSSI) is designed by combining three parameters, namely, the weighted grade point of the class, the pass rate of CET-4 and the pass rate of CET-6.

Definition 4: The class study style index is the weighted sum of the weighted grade point of the class and the passing rate of CET-4 / CET-6, which is calculated as:

$$CSSI = \alpha CWGP + \beta(1-\alpha)CPRE_4 + (1-\beta)(1-\alpha)CPRE_6, \quad (5)$$

where CWGP Calculated by equation (3); $CPRE_4$ and $CPRE_6$ are calculated by equation (4). α and β are a non-negative coefficients, which are used to characterize the calculation weights of the three indicators. The specific solution method is described as follows.

Let $CSSI \in [0, I_{\max}]$, Where $I_{\max}$ indicates the upper limit of $CSSI$. It is obvious that $1 \leq I_{\max} \leq 5$. Since $CSSI$ is a increasing function of $CWGP$, $CPRE_4$ and $CPRE_6$, it reaches maximum when the three indexes reach maximum at the same time.That is, all students in the class get the maximum grade point 5 and make the first ranking in major as well asthey all pass the CET-4 and CET-6,thus the $CSSI$ reaches maximum $I_{\max}$. Supplementary provisions, when $CWGP$ 、 $CPRE_4$ reaches the median at the same time and $CPRE_6$ is the half of $CPRE_4$, $CSSI$ gets the median $I_{\max}/2$. Now the equations are established as follows:

$$\begin{cases} 5\alpha \dfrac{N_g - 1}{N_g} + (1-\alpha) = I_{\max}, \\ \dfrac{5}{2}\alpha + \dfrac{1}{2}(1-\alpha)\beta + \dfrac{1}{4}(1-\alpha)(1-\beta) = \dfrac{1}{2}I_{\max}, \end{cases} \quad (6)$$

where N_g is the number of professionals.

Inview of $N_g \gg 1$, the coefficient α and β can be derived from equation (6) as:

$$\alpha = \frac{N_g(I_{\max} - 1)}{4N_g - 5}, \quad \beta = 1 - \frac{10(I_{\max} - 1)N_g}{(5 - I_{\max})N_g - 5}. \quad (7)$$

Substituting equation (7) into equation (5), the CSSI is finally modeled as:

$$CSSI = \frac{N_g(I_{\max}-1)}{4N_g-5}CWGP + \frac{(5-I_{\max})N_g-10I_{\max}+5}{4N_g-5}CPRE_4 + \frac{10I_{\max}-5}{4N_g-5}CPRE_6 \quad (8)$$

3. Case analysis

Based on the proposed model, the study style of a class X in a university can be analyzed. The students in Class X count up to $N_c = 34$. The total number of students in the same grade of the major is $N_g = 582$ .Assume that the upper limit of CSSI is $I_{\max} = 3$. Table 1 shows the statistical data of learning situation and study style of class X in three semesters from September 2020 to January 2022.

Table 1 Statistics of learning situation and study style of class Xin the first three semesters of University

Semester serial number (TN)	Class weighted grade point (CWGP)	Class grade 4 pass rate (cpre4)	Class grade 6 pass rate (cpre6)	Class learning style index (CLSI)
1	1.70	0.47	0	1.08
2	1.48	0.88	0.21	1.17
3	1.38	0.94	0.35	1.15
1~3	1.46	0.94	0.35	1.20

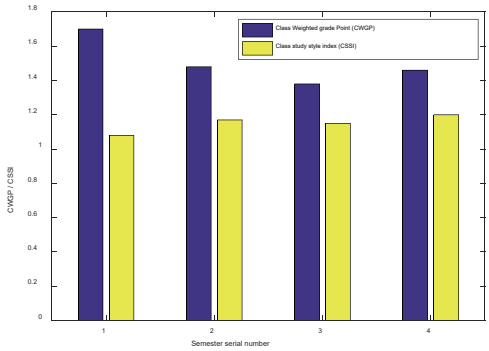

Figure 1 the relationship between the learning situation and style of study of class X in the first three semesters of University

Figure 1 further depicts the weighted grade point of class X and the evolution of class study style in the first three semesters in University, in which the fourth group of histogram represents the average value of 1-3 semesters. As can be seen from the chart, with the evolution of the semester, the weighted grade point of class X decreased slightly, while the style of study in the class increased steadily, which shows that: 1) students' foundation is good, but the deepening of the difficulty of higher grade courses has brought some challenges to the learning of students in the class, and students' learning adaptability needs to be improved; 2) The increase in the passing rate of level 4, especially level 6, shows that most students have preliminary thoughts on future planning, but their development goals are still unclear, which is not enough to stimulate the internal drive of learning.

4. Concluding remarks

This paper studies the evaluation of College Students' learning style based on the weighted grade point of the course, puts forward the concept of weighted grade point, and constructs the class learning style evaluation model with the weighted grade point and the pass rate of CET-4 and CET-6 as the parameters, which realizes the simple and rapid evaluation of College students' learning style. The model can be extended and applied to the analysis of study style in different dimensions such as grade and dormitory.

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On the improvement of Higher Vocational Students' English learning efficiency from the perspective of mobile learning

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Abstract: with the continuous development of science and technology, the development of mobile technology and mobile devices provides more possibilities for higher education and teaching, and has a far-reaching impact on English learning environment and learning methods in higher vocational colleges. As a new learning method, English learning based on mobile learning terminal can create good learning conditions for students, provide richer curriculum knowledge, effectively expand students' horizons, and meet the needs of teachers and students for multimodal teaching modes such as vision and hearing. Mobile learning is in line with the development trend of the times. The personalized function of mobile terminals can meet the learning needs of different students, mobilize students' learning enthusiasm, promote students to carry out multiple interactive and autonomous inquiry learning, and improve students' learning efficiency. Based on this, this paper analyzes the strategies of improving higher vocational students' English learning efficiency from the perspective of mobile learning, in order to provide reference for educators.

Key words: Mobile Learning horizon; Higher vocational education; English; Learning effectiveness

Introduction: Higher Vocational English teachers should pay attention to the innovation of teaching methods, change the traditional teaching methods by using mobile learning terminals, stimulate students' learning initiative, and effectively promote students' comprehensive learning ability. Higher vocational students' English foundation is relatively weak. Using mobile terminals to guide students' learning can effectively make up for the adverse factors in traditional teaching and deepen students' understanding of course knowledge. With the popularization and promotion of intelligent terminals, college students now basically have the conditions for mobile terminal learning, which enables them to use their spare time to stimulate learning anytime and anywhere, share learning content, and realize the development of comprehensive ability. Mobile learning software can provide students with more opportunities for independent exploration, promote students to carry out informal learning, lifelong learning, and effectively exercise students' foreign language application ability and cross-cultural communication ability.

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