

Determinants of Satisfaction of Open Online Courses

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Abstract. With the rise of online education platforms, the online education industry has also developed rapidly. From the perspective of students, this research investigates the current status of student's satisfaction of online massive open courses (MOOC) and corresponding determinants based on their comments. This paper uses the method of text mining to analyze the reviews relating four courses on MOOC website, which are Web front-end development, Introduction to Artificial Intelligence, C language, and data structure. It is revealed that factors such as famous of teacher, course characteristics, detailed contents, easy to understand, and learning reference are crucial for students to keep satisfaction on online course. These findings are helpful for online courses operators to enhance the service quality and keep learner's devotions.

Keywords: text mining, semantic network, online-education, MOOC

1. Introduction

With the rise of big data, the education model has undergone earth-shaking changes. As an important form of "Internet + education", online education and training have played an important role in promoting the healthy and orderly development of the entire online education industry. With the joint efforts of the government, society, and industry, the current online education industry has made great progress. According to data, the market size of online education in China is expected to reach 235.1 billion yuan in 2018, and it is expected to reach 272.7 billion yuan in 2019, with a growth rate of 16%. According to the "Statistical Report on the Development of the Internet in China", as of June 2018, the number of online education users in China has reached 172 million, accounting for 21.4% of the total number of Internet users, and the number of monthly active users of online education and training apps has exceeded 2.2 billion.

From the first year of MOOC (Massive Online Open Course, MOOC, called "MU Class" in Chinese) in 2012 to 2018, MOOC has been used by more and more people, and discussions continue on whether MOOC will bring about a revolution in the education sector. Warm up. With the vigorous development of MOOC in China, platforms such as Chinese University MOOC, MOOC College, and Good University Online have emerged one after another.

MOOC brings great convenience to learners with the characteristics of free courses, diversified resources, ease of use of courses, and wide audiences of courses. The main form is that teachers teach on the platform, and students choose courses on the platform according to their needs. However, how students choose courses based only on the information given by the teacher on the platform is definitely one-sided. Then, the evaluation of the teachers by the students who have listened to the course is crucial to the subsequent students' choice. Teachers can also get feedback on the course through these texts, so that their courses are more popular with students. How to dig out the hidden information from the numerous online reviews is very important.

The online reviews of students express their buying opinions in the form of texts and pictures. These opinions include the students' evaluation of the content and methods the teacher said, and feedback on learning. This information can help teachers understand their own shortcomings and make improvements. Based on the learning feedback comments of MOOC students of Chinese universities, this article uses web crawler technology to capture four courses on the MOOC website of Chinese universities-Web front-end development, Introduction to Artificial Intelligence, C language and non-linked subjects-4 hours to complete C language and data The structure of online reviews is analyzed to find out the factors influencing consumer satisfaction.

2. Literature review

At present, many educators and scholars have analyzed the emergence and application of online education platforms based on policies and situations, compared the pros and cons of various online education platforms, and put forward their own suggestions. Jinli and Mina's analysis of the status quo of online teaching and countermeasures under the new situation puts forward that with the construction of informatization in the field of education in China, online education sharing has become a new type of educational resource. Reasonable use can significantly improve the effectiveness of classroom teaching. As a kind of teaching mode that applies multimedia and network technology, network teaching realizes teaching goals through the collection, transmission and sharing of teaching information from multiple media [1]. Zhujun pointed out in the research status and visual analysis of online education in primary and secondary schools in my country that online education has made certain research in the aspects of online course construction, teaching design research, online education resource construction, online learning platform, classroom teaching mode, etc., but not yet Enough attention has been paid, and most of the existing related research stays in theoretical analysis, foreign development experience and small-scale attempts. As a new form of education, online education needs to be further explored and researched on how to integrate, complement, and blend with traditional education, and how to change classroom teaching models and student learning methods [2]. Similarly, Zhe used college students as the research object and used the improved expectation confirmation model to conduct empirical research on MOOC continuous learning intentions, explore the relevant factors that affect learner's continuous learning intentions, and put forward questions on this basis [3]. Xiaodong et al. introduced the attachment model innovatively, starting to study the learners' willingness to continue using MOOC from both the emotional and functional attachment aspects [4]. As for the text mining research, Baek and Ahn collected 75226 online consumer review data using a web data searcher, and conducted sentiment analysis on the

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review text. The results showed that the review rating and reviewer reputation, as well as the content of the review, will affect the review's usefulness [5]. Fei uses the LDA topic model to classify review topics, and analyzes consumers' concerns through high-frequency words and semantic web [6]. Ning uses the comment text data of Ctrip's online homestays for visual analysis (word cloud map and semantic network) and LDA topic model analysis [7]. Dongshan uses the method of text mining to analyze the online comments of repeat customers on the Meituan website, uses R language to segment the text and filter the stop words, and proposes to improve the satisfaction of repeat customers [8]. Wei uses the batch processing function of text mining technology to analyze the word frequency and sentiment of hotel customers' online reviews, and uses time series analysis to predict future development [9]. Dong and Shuang used the online data of the catering industry in ten cities in Shaanxi Province to crawl through the public comment platform, combined with text mining technology and statistical methods, to calculate the overall confidence of the catering industry in Shaanxi Province as a whole and the consumption environment of various cities in Shaanxi Province. Reassured with each sub-item, and through the spatial quantile map, the spatial distribution characteristics of the consumption environment of the catering industry in Shaanxi Province are analyzed [10].

3. Data acquisition for online evaluation of online courses

Choosing the right data is extremely important for the research of this article. This article will select data from the following two aspects: the first is the selection of online education platforms, and the second is the selection of courses.

3.1. Selection of online education platform

At present, there are various online education platforms in the domestic and foreign markets, such as Chinese University MOOC, MOOC, Tencent Class, NetEase Open Class, NetEase Cloud Class, Xuetang Online, CCTV China Open Class, etc. TED, EDX, Coursera, Canvas Network, Open Yale Coures and other platforms. Since the quantity and quality of online reviews of these platforms are different, the most suitable platform must be selected from many educational platforms. This article finally chooses the MOOC of Chinese University as the data sample source platform. According to website visits and website popularity, the comprehensive ranking query (updated and reviewed on November 26, 2020) through ChinaZ website is shown in Table 1 below. From the table below, it can be seen that the Alexa rankings of MOOC and MOOC of Chinese universities are high, and the ranking of MOOC in the online education industry is higher than that of MOOCs of Chinese universities. Even so, it is found through investigation that there are very few online course evaluations on MOOC, which does not meet the research theme of this article. However, the online courses of MOOCs in Chinese universities have rich types and a large number of courses are evaluated. Therefore, MOOCs of Chinese universities are selected as the research sample.

According to the above analysis, the course evaluation of Chinese university MOOC has a good representative in the study of course satisfaction influencing factors, and useful information for the online education industry can be excavated from the content of the text evaluation. Therefore, this article selects the MOOC course evaluation of Chinese universities as the research object.

Table 1: Summary table of online education platform ranking

Platform name	ALEXA Ranking	Global Ranking	TOP in China	Industry-Online Education Ranking
MOOC	1168	761	9	
Chinese University MOOC	4458	640	31	
Netease Cloud Classroom	—	3844	42	
School online	106643	6342	62	

3.2. Selection of course type

The choice of course type includes two aspects, one is the choice of the major that the course belongs to, and the other is the choice of the course category. This article mainly studies the factors affecting satisfaction based on MOOC online reviews. Therefore, the popular major of Chinese university MOOC network-computer major is selected to crawl data, mainly because the number and quality of online evaluation of computer major is relatively high. In the choice of course category, based on the selection of courses with a large number of learners in the front, four courses of Web front-end development, Introduction to Artificial Intelligence, 4 hours of learning C language, and data structure were selected. This article selects courses with a large number of participants and high evaluation in computer majors to crawl the evaluation content.

3.3. Data crawling

The data needed in this article is the online text evaluation of the five courses of Web front-end development, Introduction to Artificial Intelligence, 4 hours of learning C language, and data structure on the MOOC website of Chinese universities. Because the octopus collector has many advantages over other software languages in terms of data crawling, such as operating interlanes, operating visualization, and enabling image and text recognition.

4. Factor analysis based on text mining

4.1. Word frequency statistics

Word frequency statistics are of great significance to the statistics of the frequency of words appearing in the entire text. From the word frequency statistics, students' satisfaction with the course can be roughly predicted. For the four selected online courses of Web front-end development, Introduction to Artificial Intelligence, C language, and data structure, the word frequency statistics are shown in table from 2 to 5.

Table 2: Word frequency statistics of web front-end development

teacher	343	Lecture	39	common	24	operating	14
course	184	Basic	38	Teacher Sun	24	After class	14
Learn	106	reward	28	getting Started	22	Time	14

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explain	82	Case study	28	Useful	19	Good	14
detailed	63	understanding	28	Development	19	Open	14
clear	61	thank	28	Sun Oiao	17	Strong	13
Knowledge	46	Knowledge points	27	Exercise	17	Start of class	13
front end	45	suitable	26	Simple and easy	16	operation	12
Learned	43	clearly	25	comprehensive	15	Combine	12
Understandable	40	Detailed	24	Vivid	15	Good good	12

Table 3: Word frequency statistics of introduction to artificial intelligence

Teacher	179	explain	43	understanding	22	Like	14
very much	107	Understandable	40	Easy	18	Compare	14
Course	93	Vivid	40	clearly	18	Image	13
artificial	92	To	35	detailed	18	Special	13
Nice	69	lecture	34	Teach	17	Abundant	12
Learn	59	can	33	Awesome	17	Detailed	12
content	54	reward	30	help	17	Benefit a lot	12
Knowledge	49	common	26	Explain the	16	Very	12
Learned	47	interesting	24	Humor	14	Expected	11
Feel	45	clear	22	Good good	14	comprehensive	11

Table 4: Word frequency statistics of C language

PhD	265	common	80	like	53	Review	35
very much	228	suitable	77	Easy	52	Focus	35
Not bad	188	content	71	a lot of	51	Awesome	33
Course	160	feel	69	clearly	49	Detailed	32
Understandable	139	clear	68	Knowledge points	48	Useful	32
teacher	132	explain	61	help	46	Simple and easy	31
Can	107	understanding	61	especially	46	clear	29
Learn	81	basic	59	End of term	40	Detailed	27
Hope	81	examination	56	Real stuff	37	recommend	26
Language	81	simple	55	Good good	36	Humor	25

Table 5: Word frequency statistics of Data Structure Course

teacher	618	explain	106	Learned	69	especiallv	59
verv much	336	Laolao	104	Oneself	69	Kind of	55
course	324	can	92	thank	65	Vivid	54
Nice	154	Reallv	91	reward	64	Programming	54
Learn	141	recommend	89	Difficultv	61	No	53
structure	139	clear	88	Strong	61	Knowledge	52
content	121	lecture	83	ChenYue	61	hope	50
data	118	Understandable	78	clearlv	61	Basic	49
a lot of	114	understanding	77	still	60	common	48
feel	108	like	72	detailed	60	especiallv	46

From the above tables, we can see the word frequency of each course evaluation. Most of the words ranked in the front are teacher, course, understandable, clear, knowledge (point). However, the order of these words in each course evaluation is different. For example, for the Data Structure Course, the order of high-frequency words are teacher, course, clear, understandable, and knowledge. For the Introduction to Artificial Intelligence, high-frequency words are teacher, course, knowledge, understandable, and clear. For the course of Web Front-end Development, high-frequency words are teacher, course, Clear, knowledge, and easy to understand. For the course of C language, high-frequency words are course, teacher, easy to understand, clear, and knowledge point. It can be seen that the factors that affect the satisfaction of each course are different.

4.2. Visual analysis based on semantic network

Semantic network is a form of expressing the structure of human knowledge in a network format. It is one of the expressions used by artificial intelligence programs. It was proposed by J. R. Quillian in 1968. It was first proposed as an obvious axiom model of human associative memory, and then used in natural language understanding in AI to represent propositional information. In ES, the semantic network is implemented by PROSPEUTOR, which is used to describe the concepts and states of objects and their relationships. It is composed of nodes and arcs between nodes. The nodes represent concepts (events, things), and the arcs represent the relationship between them. In mathematics, the semantic network is a directed graph, which corresponds to the logical representation [1].

Because the ROST CM software has strong analytical capabilities in semantic network analysis, this article uses ROST CM6.0 to perform a semantic network visual analysis on the online course evaluation. Through it, the semantic network diagram and semantic network frequency table of the four courses can be obtained. Analyze whether the relationship between words and words is close through the semantic network graph. The higher the line density, the closer the relationship between them.

Table 6 shows the semantic network diagram and the semantic network frequency table after completing the C language course in 4 hours. It can be seen from

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the semantic network diagram of the C language course in 4 hours that doctors, courses, teachers, clarity, understandable, and exams are relatively important nodes, and most branches start from these six words. Taking the Ph.D. as the node, keywords close to it include popular, teacher, lecture, and understandable words. It can be seen from this that they contain useful knowledge and meet the learning purpose (part of the purpose of the learners of this course is to pass Examinations) understandable courses and humorous and clear teachers make the learners of this course more satisfied.

Table 6: Semantic network frequency table of C language course

Understandable	→common	85	explain	→PhD	12	Learn	→Knowledge	8
Language	→PhD	28	Suitable for	→course	11	understanding	→Suitable for	8
course	→PhD	26	explain	→course	11	PhD	→Knowledge	8
thank	→PhD	24	explain	→teacher	11	explain	→detailed	8
PhD	→Learn	23	basis	→Suitable for	11	simple	→understanding	8
clear	→ideas	21	basis	→Learn	11	understanding	→Clear	8
Good	→Good good	20	basis	→PhD	11	getting Started	→Suitable for	8
Understandable	→PhD	19	basis	→course	11	examination	→Handle	8
examination	→PhD	18	Language	→teacher	11	Suitable for	→assault	8
PhD	→clear	18	Language	→course	11	Suitable for	→Understandable	8
understanding	→Learn	17	help	→Learn	11	examination	→End of term	8
course	→teacher	17	beginner	→Suitable for	11	simple	→rough	8
PhD	→teacher	17	funny	→Humor	10	student	→teacher	8
clear	→teacher	17	Humor	→teacher	10	course	→Dry goods	8
simple	→clear	16	PhD	→common	10	Can come out	→PhD	8
lecture	→PhD	16	Suitable for	→End of term	10	Language	→understanding	8
Understandable	→course	16	explain	→Understandable	10	free	→PhD	8
review	→Suitable for	15	course	→common	10	simple	→PhD	8
course	→Learn	14	course	→examination	10	Language	→basis	8
lecture	→teacher	14	simple	→course	10	clear	→teacher	8
Suitable for	→Learn	14	fully	→Dry goods	10	Knowledge points	→Clear	8
Learn	→teacher	14	explain	→Detailed	10	concise	→Understandable	8
simple	→Understandable	14	Language	→Learn	10	Focus	→course	8
plainly	→Understandable	13	explain	→clear	10	Focus	→Understandable	8
Knowledge points	→PhD	13	course	→clear	10	Focus	→PhD	8
explain	→understanding	13	lecture	→course	9	time	→Learn	8
understanding	→PhD	13	clear	→Logic	9	PhD	→Learned	7
understanding	→course	13	common	→teacher	9	lecture	→humor	7
understanding	→Understandable	13	Before the exam	→assault	9	Suitable for	→Classmate	7
Understandable	→clear	12	Organization	→clear	9	Understandable	→Learn	7
Suitable for	→examination	12	explain	→in place	8	course	→Knowledge	7
Suitable for	→PhD	12	PhD	→super	8	review	→PhD	7
PhD	→End of term	12	time	→course	8	basis	→Knowledge	7
Understandable	→teacher	12	explain	→Language	8			

The semantic network diagram and the semantic network frequency table of the Web Front-end Development course are shown in Table 7. It can be seen that teachers, courses, learning, knowledge, and explanation are important nodes, and most of the nodes are from these five Starting from each node. Taking the course as the node, keywords that are close to each other include basic, front-end, detailed, and case studies. It can be seen that the learners of this course are particularly concerned about whether the knowledge of the course is the content of the target field, whether it is basic, and whether the explanation is clear.

The semantic network diagram and the semantic network frequency table of the Introduction to Artificial Intelligence course are shown in Table 8. It can be seen that teachers, courses, knowledge, learning, and artificial intelligence are its important nodes, and most of the nodes are from here starting from the five nodes, with the teacher as the node, keywords that are closer to them are vivid, explanatory, and interesting. It can be seen that the main factor that affects the satisfaction of the learners of this course is whether the teacher's explanation is lively and interesting.

Table 7: Semantic network frequency table for web front-end development course

course	→	teacher	75	Learned	→	Knowledge	15	teacher	→	trong	10
Learn	→	teacher	49	teacher	→	Code	15	teacher	→	comprehensive	10
explain	→	teacher	44	course	→	Development	15	Understandable	→	Clear	10
course	→	Learn	43	course	→	Case study	15	explain	→	Code	10
lecture	→	teacher	37	thank	→	course	15	time	→	course	10
teacher	→	detailed	34	basis	→	Learn	15	explain	→	Learn	10
explain	→	course	32	lecture	→	course	14	teacher	→	example	10
Clear	→	teacher	30	A door	→	course	13	After class	→	teacher	10
Knowledge	→	teacher	29	basis	→	front end	13	course	→	open	10
thank	→	teacher	25	basis	→	Knowledge	13	Suitable for	→	teacher	10
Understandable	→	popular	25	vivid	→	teacher	13	shut down	→	teacher	9
Learn	→	Knowledge	24	Exercise	→	teacher	12	explain	→	Understandable	9
course	→	front end	24	Learn	→	Development	12	Learn	→	Case study	9
course	→	Knowledge	24	popular	→	teacher	12	explain	→	meticulous	9
front end	→	teacher	24	A door	→	Learn	12	time	→	teacher	9
clear	→	teacher	23	thank	→	Learn	11	Good	→	Good good	9
basis	→	teacher	23	Go deep	→	Learn	11	Knowledge points	→	Learn	9
course	→	detailed	22	Understandable	→	course	11	Learn	→	website	9
front end	→	Development	21	reward	→	teacher	11	explain	→	basis	9
Learn	→	front end	20	simple	→	teacher	11	effect	→	teacher	9
teacher	→	Case study	20	front end	→	Knowledge	11	teacher	→	Start of class	9
explain	→	Clear	19	getting Started	→	course	11	A door	→	teacher	9
Understandable	→	teacher	19	Go to class	→	teacher	11	A door	→	Go deep	9
Learned	→	teacher	18	explain	→	Knowledge	11	basis	→	Development	9
basis	→	course	18	Go deep	→	teacher	11	Exercise	→	After class	8
teacher	→	Sun Qiao	18	Go deep	→	course	11	Go deep	→	front end	8
explain	→	detailed	17	half	→	teacher	11	understanding	→	course	8
teacher	→	Development	17	Combine	→	teacher	11	course	→	problem	8
Knowledge points	→	teacher	17	Knowledge points	→	course	10	operation	→	course	8
teacher	→	meticulous	17	thank	→	explain	10	hard	→	teacher	8
teacher	→	open	17	course	→	reward	10	lecture	→	Clear	8
course	→	Clear	16	Understandable	→	Learn	10	teacher	→	practical	8
front	→	teacher	16	Exercise	→	course	10	language	→	teacher	8
understanding	→	teacher	16	course	→	Learned	10				

Table 8: The Semantic Network Frequency Table of Introduction to Artificial Intelligence

lecture	→	teacher	30	course	→	Learn	11	Understandable	→	course	7
Understandable	→	popular	29	Clear	→	teacher	10	artificial intelligence	→	basis	7
Understandable	→	teacher	27	understanding	→	course	10	lecture	→	humor	7
vivid	→	teacher	25	artificial intelligence	→	Learned	9	explain	→	meticulous	7
artificial intelligence	→	Knowledge	24	interesting	→	course	9	artificial intelligence	→	the study	7
explain	→	teacher	21	course	→	reward	9	Image	→	teacher	7
Learn	→	Knowledge	20	artificial intelligence	→	field	9	basis	→	teacher	7
artificial intelligence	→	course	19	artificial intelligence	→	understanding	9	artificial intelligence	→	Understandable	7
artificial intelligence	→	Learn	18	explain	→	course	9	interesting	→	artificial intelligence	7
course	→	teacher	18	lecture	→	Understandable	9	artificial intelligence	→	interest	7
artificial intelligence	→	teacher	18	basis	→	Knowledge	9	Understandable	→	Knowledge	7
popular	→	teacher	17	vivid	→	Image	9	A door	→	course	7
interesting	→	teacher	16	were able	→	artificial intelligence	9	teacher	→	meticulous	7
Knowledge	→	teacher	15	explain	→	vivid	8	Good	→	Good good	7
Learned	→	teacher	15	lecture	→	vivid	8	teacher	→	example	7
understanding	→	teacher	14	explain	→	detailed	8	explain	→	Clear	6
Learn	→	teacher	13	Knowledge	→	Combine	8	artificial intelligence	→	future	6
clear	→	teacher	13	basis	→	course	8	Explain profound theories in simple language	→	teacher	6
humor	→	teacher	12	Teach	→	teacher	8	lecture	→	Knowledge	6
course	→	Knowledge	12	artificial intelligence	→	Go deep	8	Go to class	→	teacher	6
interesting	→	vivid	12	Vivid	→	course	8	Understandable	→	Learned	6
Learned	→	Knowledge	12	teacher	→	detailed	8				

The semantic network diagram and the semantic network frequency table of the Data Structure Course are shown in Table 9. It can be seen that the teacher, the curriculum, the data, the structure, and the learning. Most of the nodes are based on these five nodes. The teacher is for nodes, the keywords that are relatively close include grandma (the learner's nickname for the instructor), data, curriculum, and structure. It can be seen that the learners of this course value the course content most.

5. Conclusion and suggestion

5.1. Conclusion

Through the analysis of the characteristics of the course review data in the previous article, it is found that for the course of C language, students are most concerned about the clear explanation, understandable courses and examination knowledge, especially

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whether the teacher's lectures are easy to understand, which is an crucial factor influencing student's devotion. For students in the Web Front-end Development course, whether the content of the target area is basic and whether the explanation is clear are the

Table 9: Semantic network frequency table of data structure course

data	→	structure	123	Programming	→	teacher	25	data	→	understanding	18
course	→	teacher	100	explain	→	Clear	25	basis	→	teacher	18
explain	→	teacher	63	Learn	→	structure	24	data	→	Grandma	17
lecture	→	teacher	61	Learned	→	teacher	24	Go to class	→	teacher	17
course	→	structure	57	Zhejiang University	→	teacher	24	thank	→	data	17
structure	→	teacher	56	understanding	→	structure	24	logarithm	→	structure	17
Learn	→	teacher	55	A door	→	course	23	careful	→	teacher	17
Clear	→	teacher	51	Understandable	→	course	23	interesting	→	vivid	17
course	→	Learn	49	humor	→	teacher	22	Exercise	→	course	17
thank	→	teacher	47	After class	→	teacher	22	Exercise	→	teacher	16
data	→	course	45	teacher	→	Difficulty	22	course	→	Programming	16
data	→	teacher	43	course	→	clear	21	lecture	→	course	16
Chen Yue	→	teacher	42	algorithm	→	structure	21	thank	→	Learn	16
Understandable	→	popular	42	data	→	Learn	21	noob	→	teacher	16
clear	→	teacher	41	Grandma	→	structure	20	course	→	Clear	16
understanding	→	teacher	41	thank	→	structure	20	A door	→	teacher	16
Understandable	→	teacher	39	exercise	→	teacher	20	data	→	algorithm	16
vivid	→	teacher	36	Knowledge	→	teacher	20	super	→	teacher	16
explain	→	course	33	Grandma	→	course	19	the University	→	teacher	15
understanding	→	course	32	course	→	Zhejiang University	19	vivid	→	course	15
operation	→	teacher	30	Clear	→	Ideas	19	Grandma	→	Learn	15
Grandma	→	Chen Yue	30	popular	→	teacher	19	understanding	→	Learn	15
teacher	→	detailed	29	course	→	reward	19	Clear	→	structure	15
interesting	→	teacher	27	Teacher Ho	→	Teacher Chen	19	Learn	→	reward	15
course	→	algorithm	26	algorithm	→	teacher	18	Level	→	teacher	15
teacher	→	meticulous	26	Learned	→	Knowledge	18	operation	→	course	15
thank	→	course	25	course	→	Difficulty	18	program	→	teacher	15
reward	→	teacher	25	time	→	teacher	18				

most concerned factors for students. Among them, the clarity of the teacher's explanation is an important factor for students to choose again. For students, teachers, courses, knowledge, learning, and artificial intelligence are the most concerned factors for students in the Introduction to Artificial Intelligence courses. Among them, whether the teacher's explanation is lively and interesting is an important factor for students to choose again. Data Structure Courses For students, teachers, courses, data, structure, and learning are the most important factors for students. Among them, the content of the course is an important factor for students to choose again. From the comprehensive analysis of the four types of courses, it is concluded that whether the teacher's lectures are easy to understand, whether the content is clear, and whether the explanation is lively and interesting are all important factors that affect the students' choice again, but they are different depending on the type of courses.

5.2. Suggestions

(1) Clear explanation

From the keyword extraction and word frequency statistical analysis of the four types of courses, it can be seen that the clarity is that the words appearing more frequently in the comments of the four types of courses by students, and also appearing larger in the word cloud graph. Starting from the actual situation, clear explanation is the core of the teacher's teaching. Only when the student can understand the teacher's lecture can the student continue to choose the teacher's course. Although the teacher's way of explanation cannot be affirmed by all students, it must be affirmed by most students. Teachers can increase the teaching methods, use pictures and texts, cases, etc., so that students can fully understand the content of the course.

(2) Focus on content

The word frequency of the content in the course is relatively high, and the content is also

the top word in the keyword extraction. Especially in the analysis of Data Structure Courses and Web Front-end Development courses, the impact on students is extremely important. The quality of the course content is an important factor that affects students to continue to choose the course. The diversity of content can attract more students' interest and satisfy the preferences of more students. Therefore, teachers can ensure the quality of the content as much as possible to diversify the content to attract more students' choices.

(3) Lively and interesting

The way of explanation in the statistical analysis of word frequency and keywords is also an important factor that students pay attention to. The way of explanation has a greater impact on students' listening experience. Lively and interesting lecture methods can arouse students' interest in learning, cultivate students' enthusiasm for learning, and enable them to establish learning the self-confidence of the students lays the foundation for further study. In this way, they can continue to choose the teacher's course or recommend it to other students. Teachers can carefully create learning situations to experience the fun of learning, play games, and pay attention to teaching details to make lectures lively and interesting, and attract students.

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