ATLANTIS
PRESS

Research on the Factors Influencing Students' Participation in Online Study

Bo Qu

South China University of Technology
Email:qubo@scut.edu.cn

ABSTRACT

With the improvement of the socio-economic level and the advent of the era of information, online education which integrates both "the Internet+" and "intelligence+" technology has become the key development direction for the higher education in China and across the world. The extent of student participation serves as an important indicator of learning effectiveness. How to improve student participation in online learning has become the focus of most researchers. Based on analysing and summarizing the related literature on online learning participation, the questionnaire survey method has been adopted and the factors influencing the current situation of student participation and the online learning participation have been analysed, with the First-class Undergraduate Course opened at the platform of zhihuishu.com as the example. The result has it that students' overall satisfaction is high with great participation, which is closely related to the teaching operation and network situation. Moreover, targeted suggestions for improvement have been put forward.

Keywords: *students' participation, online learning, influencing factor, suggestions.*

1. INTRODUCTION

As the information era arrives, the traditional teaching mode can no longer meet the needs of contemporary knowledge economy and the age of information. With the application of computer technology, network technology and communication technology in teaching, network learning are born at the right moment. Functioning as an important means and tool of teaching reform, online learning system has become the extension and supplement of classroom teaching [1][2]. At present, online learning is commonly used by college students, but it also exposes some problems which should not be ignored. For example, students do not complete the course video well and fail to actively ask questions with great participation in the learning process. However, student participation is a necessary condition for student learning and the degree of participation is a vital symbol of learning effectiveness [3][4]. In this paper, with the first-class national undergraduate courses opened at the platform of zhihuishu (www.zhihuishu.com) by group teachers as the example, the online learning participation of college

students and the factors influencing their online learning have been surveyed and analysed to find out the major influencing factors.

A total of 299 related papers have been searched in CNKI by retrieving with the topic words such as "online learning" and "participation". More and more studies are conducted based on the online learning participation and the influencing factors year by year and they are receiving greater attention (Fig.1).

The research topics mainly concentrate on: (1) analysis on online learning subjects and their behaviours: online learning (21.60%), learner (9.26%), online learning (6.17%), blending learning (11.73%); (2) online learning participation and the influencing factor: studies related to participation (36.42%); (3) online learning effect and the improvement strategy (8.02%), etc. (Fig.2). In general, there are an increasing number of studies on online learning participation and its influencing factors, and they tend to pay more attention to studies from diverse perspectives such as the data concerning student behaviours [5][6][7].
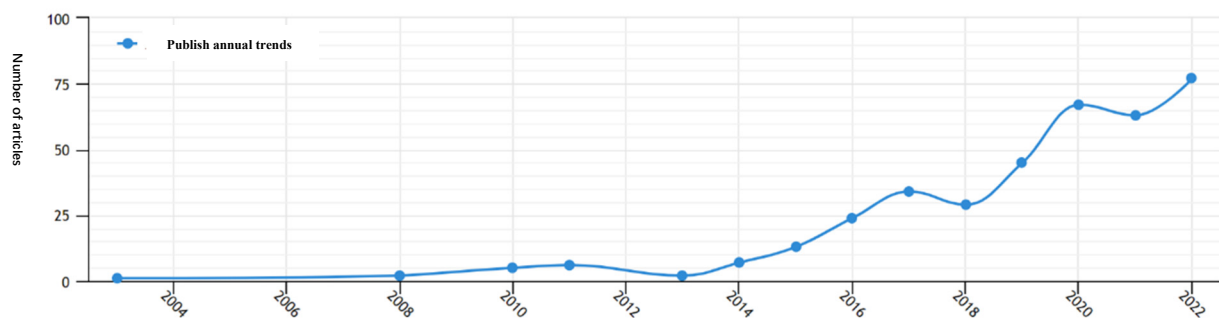
Fig 1. Annual trend of the publication of research papers on the influencing factors of student participation in online learning
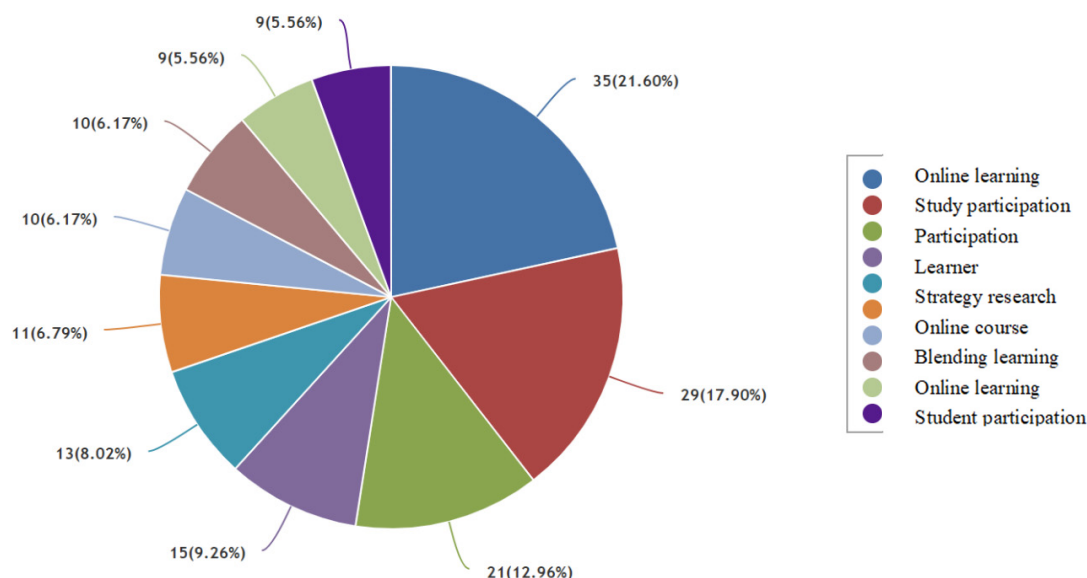

Fig 2. Distribution map of the TOP10 factors influencing student participation

2. MATERIALS AND METHODS

2.1. Literature study method

Based on research many relevant literatures, the main influencing factors as regards online learning participation are established, that is, students, learning resources, teaching design, network and so on [2][8][9][10].

2.2. Observation method

To understand the participation of students in online learning, based on researching the literature, taking the National First-class Undergraduate Course students taught by the teachers of the research group as the objects, and taking the autumn and winter semester of 2021 as the observation period according to the operation data of the zhihuishu.com platform.

2.3. Questionnaire survey method

After the courses, the all-round survey could be carried out in terms of the target and content of the courses as well as the teaching design, etc. This questionnaire is sent to all students who select the shared courses. The number of students selecting the courses totals 834 (excluding students in "other categories"). As of January 13th, 2022, 351 questionnaires have been effectively collected with the collection rate as 42.1%. Besides, the SPSS21.0 has been used to conduct the statistical analysis on the survey result.

3. RESULTS & DISCUSSION

3.1. Student learning behaviour data

By combing and observing the data of students' learning behaviour, the research group basically mastered students' online learning behaviour, including

interaction and login (Table 1), time of online learning (Table 2), teaching behaviour of core team (Table 3), and each episode of course and the viewing duration (Table 4), number of chapter video and duration distribution (Table 5), as well as the distribution of the average video viewing proportion (Picture 3).

Table 1. Student online learning behavior-interaction and logging

No.	Students No.	Interaction number per person	Logging number per person
1	180	22.17	66
2	100	2.67	98.2
3	91	33.65	55.3
4	81	0.4	29.2
5	80	46.83	76.5
6	80	54.6	480.7
7	68	3.26	27.5
8	54	1.46	47.8
9	21	0	26.2
10	16	0	49.4
11	7	53	93.3
12	6	28.33	48.8
13	5	44.2	56.4
14	4	0	283.5
15	3	0	42.3
16	3	11.67	81.3
17	2	0	35.5
18	2	0	15.5
19	2	0	65
20	1	0	10
21	1	69	60
22	1	0	56
23	1	0	25
24	1	0	42
25	1	5	14
26	1	55	12
	812	20.56	101.8

Note: Involving university privacy, hide the name.

Table 2. Student online learning behavior – duration of online learning

No.	Students No.	Average watched duration	Duration of the video	Ratio of video learning duration
1	180	09:16:14	08:22:02	110.8%
2	100	09:11:20	08:22:02	109.8%
3	91	08:57:22	08:22:02	107%
4	81	08:20:35	08:22:02	99.7%
5	80	09:02:00	08:22:02	108%
6	80	09:04:48	08:22:02	108.5%
7	68	09:28:34	08:22:02	113.3%
8	54	08:32:56	08:22:02	102.2%
9	21	09:00:20	08:22:02	107.6%
10	16	07:32:17	08:22:02	90.1%
11	7	08:35:30	08:22:02	102.7%
12	6	05:41:44	08:22:02	68.1%
13	5	08:09:20	08:22:02	97.5%
14	4	05:39:02	08:22:02	67.5%
15	3	08:08:46	08:22:02	97.4%
16	3	07:52:37	08:22:02	94.1%
17	2	08:21:14	08:22:02	99.8%
18	2	08:23:10	08:22:02	100.2%
19	2	08:22:02	08:22:02	100%
20	1	00:33:44	08:22:02	6.7%
21	1	08:22:02	08:22:02	100%
22	1	07:59:43	08:22:02	95.6%
23	1	05:02:51	08:22:02	60.3%
24	1	09:02:49	08:22:02	108.1%
25	1	08:48:50	08:22:02	105.3%
26	1	16:44:04	08:22:02	200%
	812	08:56:08	09:01:22	106.9%

Note: Involving university privacy, hide the name.

Table 3. Student online learning behavior – teaching behavior of core team

No.	Name of teacher	Logging No.	Cumulative question No.	Cumulative answer No.	Notice release No.
1	Bo Qu	41	45	0	1

Note: This table has not included the teaching behavior of the group of assistance teachers.

Table 4. Situation of the course video viewing – the single course episode and watched duration

Chapter	Duration	Students No.	Total watched No.	Average duration	Percentage of watched	Watched duration ratio
1.1	00:08:01	812	791	00:08:50	97.4%	110.2%
1.2	00:09:35	812	793	00:10:07	97.7%	105.7%
1.3	00:07:28	812	780	00:07:32	96.1%	100.9%
1.4	00:05:08	812	777	00:05:12	95.7%	101.3%
1.5	00:05:24	812	777	00:05:27	95.7%	101%
2.1	00:08:43	812	786	00:09:12	96.8%	105.6%
2.2	00:07:23	812	776	00:07:31	95.6%	102%
3.1	00:07:52	812	774	00:08:08	95.3%	103.5%
3.2	00:11:13	812	785	00:11:52	96.7%	105.8%
3.3	00:06:21	812	774	00:06:35	95.3%	103.8%
4.1	00:12:32	812	784	00:13:08	96.6%	104.9%
4.2	00:11:40	812	781	00:12:13	96.2%	104.8%
4.3	00:11:08	812	781	00:11:34	96.2%	103.9%
4.4	00:13:59	812	781	00:14:28	96.2%	103.5%
5.1	00:09:28	812	778	00:09:53	95.8%	104.4%
5.2	00:09:35	812	777	00:09:55	95.7%	103.6%
5.3	00:10:37	812	781	00:11:09	96.2%	105.1%
5.4	00:07:40	812	771	00:07:39	95%	99.9%
5.5	00:07:14	812	770	00:07:10	94.8%	99.2%
5.6	00:08:36	812	776	00:09:04	95.6%	105.4%
5.7	00:05:56	812	769	00:05:52	94.7%	98.9%
5.8	00:03:55	812	771	00:03:57	95%	100.9%
5.9	00:05:39	812	769	00:05:41	94.7%	100.6%
6.1	00:11:23	812	779	00:12:02	95.9%	105.9%
6.2	00:11:19	812	778	00:11:55	95.8%	105.3%
6.3	00:10:27	812	781	00:10:55	96.2%	104.6%
6.4	00:09:46	812	775	00:10:12	95.4%	104.4%
6.5	00:11:08	812	777	00:11:37	95.7%	104.5%
7.1	00:09:20	812	775	00:09:46	95.4%	104.8%
7.2	00:11:42	812	776	00:12:11	95.6%	104.2%
7.3	00:06:26	812	763	00:06:25	94%	99.9%
7.4	00:09:54	812	773	00:10:14	95.2%	103.4%
8.1	00:06:28	812	765	00:06:31	94.2%	100.8%
8.2	00:09:51	812	775	00:10:11	95.4%	103.5%
8.3	00:09:57	812	773	00:10:25	95.2%	104.8%
9.1	00:07:55	812	762	00:07:55	93.8%	100.1%
9.2	00:07:18	812	766	00:07:13	94.3%	99.1%
10.1	00:09:43	812	775	00:10:10	95.4%	104.8%
10.2	00:09:11	812	771	00:09:34	95%	104.3%
10.3	00:08:57	812	772	00:09:22	95.1%	104.7%

10.4	00:11:54	812	772	00:12:37	95.1%	106.1%
11.1	00:08:12	812	757	00:08:14	93.2%	100.6%
11.2	00:06:13	812	760	00:06:14	93.6%	100.3%
11.3	00:07:18	812	761	00:07:17	93.7%	99.8%
11.4	00:08:37	812	768	00:09:01	94.6%	104.8%
12.1	00:13:19	812	770	00:13:45	94.8%	103.3%
12.2	00:11:22	812	768	00:11:47	94.6%	103.7%
12.3	00:08:52	812	765	00:09:17	94.2%	104.7%
12.4	00:11:12	812	766	00:11:46	94.3%	105.1%
13.1	00:08:35	812	767	00:09:04	94.5%	105.8%
13.2	00:09:43	812	766	00:10:04	94.3%	103.7%
13.3	00:08:20	812	756	00:08:14	93.1%	99%
14.1	00:07:54	812	759	00:07:59	93.5%	101.2%
14.2	00:07:54	812	758	00:08:00	93.3%	101.4%
15.1	00:08:21	812	769	00:08:55	94.7%	106.9%
15.2	00:08:24	812	765	00:13:04	94.2%	155.7%
Overall	08:22:02	812	773	08:32:46	95.2%	102.1%

Table 5. Course video watched situation – Chapter video No. and duration distribution cut

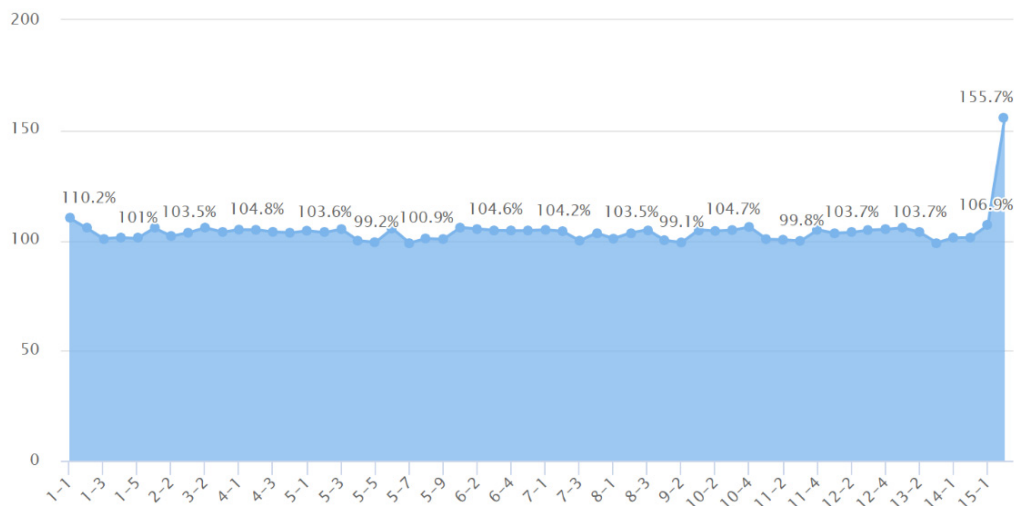| Total number Of video (episode)	Less than 10 min		10-20 min		20-30 min		Above 30 min	
56	No.	Ratio	No,	Ratio	No.	Ratio	No.	Ratio
	41	73.2%	15	26.8%	0	0%	0	0%

Fig 3. Situation of course video watched – average watched duration and ratio distribution

Note: The average video watched duration ratio = average video watched duration / video duration. Please refer to the basic information table about the single video episode and watched duration to find the data source.

Overall, students' online learning participation and completion rate are good, showing two characteristics. (1) Different universities have different differences, which may be related to the requirements of universities and the allocation of instructors; (2) There is little difference in the completion of different video knowledge points, which shows that the teaching content can meet the needs of students to a certain extent.

3.2. Overall course satisfaction

Based on the analysis on 351 valid questionnaires, the student overall satisfaction with the course has been maintained via two questions. Question 1: "Do you think the course is general, enlightening, and fruitful after study?" Question 2: "Will you recommend this course to others since you are not regretful to select it with satisfaction?" The overall recognition rate reaches 94% and 93.2% respectively which are relatively high (Table 5).

3.3. Teaching operation evaluation

The teaching operation evaluation focuses on teaching design (question 3 and 4), teaching guidance (question 5) and online interaction (question 6). Question 3: Is the online video of the course is clearly explained and organized, and the video and content are of good quality? Question 4: Is the orientation class reasonably designed with wonderful teaching and are students actively encouraged to participate? Question 5: Do you think the teacher from your own school help you a lot with his or her guidance? Question 6: Do you think the question-and-answer interaction is helpful for your study and is online answer prompt and effective? The overall recognition rate reaches 93.2% ,94%, 94.6% and 94% respectively which are relatively high (Table 6).

3.4. Network condition

The network condition is mainly about the measuring of online video and the smoothness of orientation class including two questions as follows. Question 7: Is the online course video smooth with clear sound and image? Question 8: Is the teacher-student meeting class smooth with clear sound and image? The general evaluation is good with the recognition ratio as 94.9% and 94% respectively (Table 7).

4. CONCLUSIONS

Based on the data of students' online learning behaviour, this study analyses the influencing factors of participation and satisfaction. According to the research data, the following conclusions and suggestions are offered to improve the student online learning participation and satisfaction.

4.1. Diversification of teaching materials

In line with the teaching requirements of the course, updates, or supplement hot topics along with teaching materials in real time such as cases, pictures and videos, in a bid to enhance student interest and inject new vitality into the class.

4.2. Enhancement of forum activities

Improve the activity of the question-and-answer interaction in the class. Teachers could publish the topics for discussion in question and answer to guide students to better understand the knowledge and expand their perspectives in thinking questions. Besides, they could also usually pay attention to the posts by students and ease their doubts by reply. Furthermore, teachers could give "likes" to great answers and help students accumulate answering points. Excellent questions and answers are worth rewarding.

4.3. Inspection of online teaching materials

With a view to ensuring the professional rigor of the course, teachers should carefully and repeatedly check the course video content, chapter and final exam questions and answers prior to the start of the course to ensure the accuracy of all parts of the course, so that students can learn smoothly.

4.4. Update of examination content

Considering the educational requirements of many schools and the feedback of teachers and students on the course assessment, the content of chapter tests and final exams should be properly updated and added to improve the rigor of the course assessment each term while considering the learning situation of students.

ACKNOWLEDGMENTS

REFERENCES

[1] AiLi Tian, Chunxiao Hou, "Analysis of the Development of Offline Online and Offline Integrated Education (OMO)—From the Perspective of Path Dependence and Path Creation", China Educational Technology, vol.420, pp.73-78+85, 2022.

[2] JiaWen Fang, Qi Chen, "Analysis of influencing factors of online learning participation- take the Chinese Mooc platform as an example", Journal of Hubei Normal University (Natural Science), vol.39, no.3, pp.108-112, 2019.

[3] JunXia Wang, YuQi Wang, "Research on the Factors Affecting Online Learning engagement of

Learners Based on ISM and AHP", Software Guide, vol.19, no. 11, pp.227-231, 2020.

[4] FanDi Hu, DaWei Zhang, "Research on Influencing Factors Model of Online Learning Participation Based on ISM", Computer Engineering & Software, vol.40, no.12, pp.153-157, 2019.

[5] Shuang Li, Yao Zhong, Chen Yu, Gang Cheng, ShunPing Wei, "Exploring the Online Learning Participation Behavior Pattern Based on Behavioral Sequence Analysis", China Educational Technology, vol.362, pp.88-95, 2017.

[6] LiXia Zhang, XiuMin Guo, "Influencing Factors of Learning Participation in Virtual Class and Promoting Strategies", Modern Educational Technology, vol.22, no.6, pp.29-34, 2012.

[7] XinYi Shen, WenJing Hu, Daniel Hickey, "The Research and Analysis of Strategies for Enhancing Engagement and Learning Performance in Online Context", China Educational Technology, Vol. 337., pp. 21-28, 2015.

[8] MinJun Peng, XinSheng Lu, HongYin Liu, "The Evaluation Method of the Online Learning Participation Based on the Quantity and Quality", Modern Educational Technology, vol.21, no.1, pp.103-106, 2011.

[9] Liang Hong, Jing Bi, PinPin Fu, "Research on influencing factors and promotion strategies of online learning participation", Economic research guide, vol.475, pp.85-87+108, 2021.

[10] ZhaoLi Zhang, JunRu Gao, JianWen Sun, "Research on the application of instant messaging tools in online learning system", The Chinese Journal of ICT in Education, vol.17, pp.13-19, 2019.