

Collaborative Knowledge Building Research of Web-based Teaching Discussion In the QQ Environment

Jiong GUO^{a*} , Xiushuang HUO^b & Yuhui MA^c

^a*Institute of education technology, Northwest normal university , China*

^b*Institute of education technology, Northwest normal university , China*

^c*Institute of education and physical, Bohai university , China*

guoj72@163.com

Abstract: On the base of systematically analysing and summarizing the web-based learning of the domestic and international research, by combining the research actuality of web-based learning and teaching as well as the purpose and characteristic of this study, the article designed the interaction analysis system based on the collaborative knowledge constructing in the environment of QQ Group, and analysed the teachers' chat record of three times of online discussion in the QQ group from topic space, social relations and the process of collaborative knowledge constructing by content analysis and social network analysis, finding out the problems during the teachers' online discussion which organized for promoting research project and the resistant factor which influence the interactive quality of online discussion, put forward a series of strategies for improving the quality of interaction and the effects of collaborative knowledge constructing. Such as make discussion topic clear and definite before online discussion, pose questions for further consideration in order to keep the discussion gradual in-depth; appoint someone as the organizer of the discussion; formulate the intervention system; carry out teacher training with the help of functional characteristics and technical characteristics of QQ group.

Keywords: QQ, Web-based Teaching Discussion, Collaborative Knowledge Building, Interactive analysis system, Coordinative knowledge construction

1. Introduction

Basing on comprehensive analysis and summary, the author designed the interaction analysis system, tracked and analysed the teachers' network discussion activities, found the problems in the teachers' network research, looking for the factors that blocking the network discussion interactive quality by communication with the principal(CZP) of the research group, constantly adjust discussion mode, and summarized the strategies of improving the quality of network teaching research and effect of the collaborative knowledge construction.

2. The construction of interaction analysis system in the teaching discussion depending on the QQ group environment.

Basing on the domestic and international cognition of the analysis methods of online interaction, according to the TSP analytical model of huanglingzi Liu(Liu huanglingzi , 2006),the author construct the analysis system of collaborative knowledge building,consisting of three dimensional analysis(Subject space, Social relations and Process model) and a supplementary analysis.

2.1 The analysis of the dimension of collaborative knowledge construction process model

In order to realize the network research goal and solve the problems appeared in the process of teachers' project research, it need mutually responding among the members, monitoring and evaluating and reflecting the process. That is the process of collaborative knowledge building model. We need use content analysis for completing the analysis of the collaborative knowledge construction process. The data of the content analysis is the text records from the three times discussion.

2.1.1 The coding system of the content analysis.

Comprehensively analyzing different interactive content analysis model, found that, the Henri model mainly focus on individual development, and did not reflect the interaction process of the team to participate in the study (Wever,B.D, Schellens, Valcke&Van Keer,2006 ; Hara,N., Bonk C.J.& Angeli,C,2000) ;Garrison model have not detailed explanation for classification index, the usability is low (Garrison,D.R,1992 ; Anderson,T., Archer,W,2000) ; Newman model does not provide category description to help classification (Newman,D.R., Webb,B,1995) ;By referencing above, considering the feature of this research, designed the analysis system of collaborative knowledge construction , including Sharing and comparing information; Finding and analyzing the differences and contradictions; Negotiating and constructing new knowledge; Summarizing; Self-examination; Managing ; Social.

2.1.2 The analysis units

QQ group chat is real-time written communication between many people. It is different from the post communication in forum, and it's much more complicated than the two consultation process. The research make the "meaning unit" as the analysis unit, each meaning unit may include one or more chat logs.

2.1.3 The phase of content coding

The basic analysis process is:(1) Two analysts separately coded and classified the original corpus in the forum individually;(2)Approximately analysing the 40% of the sampling remarks, two analysts checking the class system and coding results, confirm the coded categories and classifications standards again.(3) In accordance with the newly identified coding system coded the subsequent records, and then summarily evaluate the coding results at the end of the coding.

2.2 Analysis of the topic dimension

Designed topic analysis coding system corresponding each network discussion. The second is to determine the analysis unit, the author determine the "meaning unit" as the analysis unit according to the characteristics of the QQ group chat. Through the quantitative analysis of the topic, the size of the topic, the coverage degree of topic, the growth, the contribution degree of the different members in different topic can be acquired.

2.3 Analysis of the social relations dimension

In the process of analysis of the social relations dimension, pay special attention to the response relation between each record, determine the "meaning unit" as the analysis unit, each meaning unit may include one or more chat logs.

3. The empirical analysis of interactive discussion in QQ group

The three times QQ group network discussion research record that be analysed is under the different stages of the subject study.

3.1 The analysis of the first network discussion

3.1.1 The analysis of the process of collaborative knowledge construction in the first network discussion.

The author coded and analysed the text records of the first time network QQ group discussion according to analysis code system. From the collaborative knowledge construction process dimension, The level of the collaborative knowledge construction in the first network discussion is very low, the phase of “sharing and comparing information take up the most of the information record(42%), the phase of “finding and analyzing the differences and contradictions” take up 1%, the phase of “negotiating and constructing new knowledge” take up 3%, also the phase of “summarizing” take up 3%, the phase of “self-examination” take up 1%.

3.1.2 The analysis of the social relation in the first network discussion.

The first network discussion shows that there are two isolated point: HXS and ZF. The whole interaction between members is dispersed. Most of the members are free out, and there are only three members (project principal CZP, provincial research staff SGY, project manager GJ) in the network center, closely dialogue with others. If edge members do not produce interaction with other members and isolated existence, will do harm to their learning, So it is necessary to take measures to promote the edge members interaction.

3.1.3 The analysis conclusion of the first network discussion.

Through the above three dimensions analysis on the first network discussion records, we can draw the following conclusion:(1)The degree of knowledge construction is not deep, is in sharing stage, can't find and analyze difference and go in-depth consultation and discussion.(2)The social and other useless information have a high proportion.(3)The management is not strong enough, can not control interaction progress very well, can not guide the silencers to participate in the discussion effectively.(4)The topic presented by the project principal can't cause members actively participate in discussion.(5)There are too much edge members, even solitary members, didn't publish any view in the discussion.

According to the above conclusion, the author exchanged with the project principal and the experts, put forward that, the discussion facilitator role should be clear before the second network discussion; the discussion facilitator need to learn skills of how to manage coordination discussion; So as to make the discussion have continuity, guarantee the deepening discussion, every time after the conference, should put forward the questions that need to think deeply; asking for each member make ready for the discussion around the topic, and no longer remain silent.

3.2 The analysis of the second network discussion

3.2.1 The analysis of the process of collaborative knowledge construction in the second network discussion.

The amount of information of “negotiating and constructing new knowledge” in the second network seminar significantly, shown that the degree of collaborative knowledge building is deepening, teachers consciously go into a more in-depth discussion. But the information of " summarizing" and " self-examination " phase is still rare, participants haven't summarized the topics effectively, and were not reflection after discussion.

3.2.2 The analysis of the social relation in the second network discussion

It was evident that this research network is intensive a lot compared with the last time, the distribution of the network interactive structure is more uniformity. The learning network density of the second network research is 4.6154, the standard deviation is 7.1418, improved compared with the first time. The more the whole network density, the more effect to actor's attitude and behavior. Close contact network not only provide all kinds of resources for the individual, but also become an important force to limit its development, so we should continue to adopt strategies to improve the network density.

3.2.3 The analysis conclusion of the second network discussion

Through the above three dimensions analysis on the second network discussion records, we can draw the following conclusion:(1)The project principal could control the discussion process, management strength increased, and at the same time, topics also increased, but the topics is still not concrete, and thus influences the topic coverage degree and growth rate.(2)For prepared the topics, each project members can participate in discussion, but to discussion content is still not fully prepared.(3)For the project manager' participation, teachers seem to be afraid of mistakes.(4)Although the information in "negotiating and constructing new knowledge" phase increased significantly, but also appeared a lot of problems: compromise too fast or Too persists own idea etc.

According to the above conclusion, the author exchanged with the project principal and the experts, put forward that, should affirm the views of teachers as far as possible so as to improve their enthusiasm; The conductor go stealthily in the discussion, make the local research staff represent the conductor and give views; The project principal should organize the members summarizing before the end of the seminar, to ensure the consensus of the conclusion of the study.

3.3 The analysis of the third network discussion

3.3.1 The analysis of the process of collaborative knowledge construction in the third network discussion

The level of collaborative knowledge construction in the third network discussion is more deeply than the first and the second. The amount of information of “negotiating and constructing new knowledge” significantly increased to 29%. At the same time, the information of the reflection phase has ascended, Management information accounted for 18%,"social" and "other" information reduced.

3.3.2 The analysis of the social relation in the third network discussion

From the social gram (as figure 1 shows), we can find changes of three times discussion in the progress of the discussion.

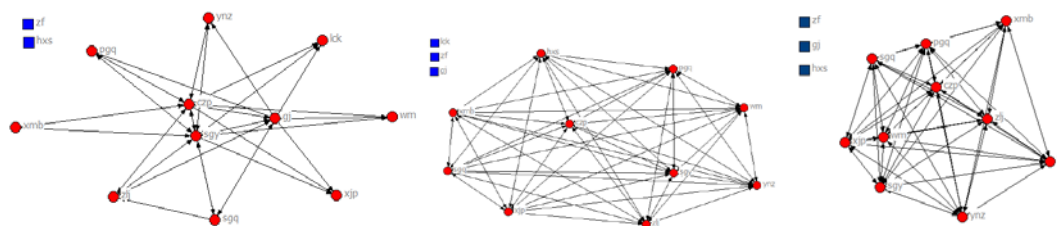


Figure 1 The social gram of the three time's network discussion

The learning network density of the third network research is 6.3526, the correlation table of the network density in three times discussion as shown table 1.

Table 1: The correlation table of the network density in three times discussion

	the first network discussion	the second network discussion	the third network discussion
Network density	1.7308	4.6154	6.3526

As the table 2 shows, central potential of the network has declined, the center potential of the third network is very low.

Table 2: The correlation table of the central potential in three times discussion

	the first network discussion	the second network discussion	the third network discussion
Network central potential	76.21%	51.58%	26.81%

3.3.3 The analysis conclusion of the third network discussion

- The level of the collaborative knowledge construction is deepening, but the process is not precise.
- The content of the international conference is clear and specific, finished all the default topic discussion, but for the emergence of accident topic in discussion there is no corresponding intervention action and strategy.
- Interaction density of group members increased, The center potential of the network reduced.

Contrast the three times network discussion research, teachers' participation enthusiasm is in a rising state. Interaction density of group members increased to 6.3526, the center potential of the network reduced, the progress no longer controlled by a minority leader, teachers' participation obviously improved.

4. The strategy to promote collaborative knowledge building in the network teaching seminars in QQ environment

4.1 Clear and definite the topics

Clear and definite the topics before the network discussion, put forward further question that needed thought deeply, so as to ensure that discussion gradually goes deeply. The discussion topics should be open and debating, designed around the teaching practice of the teachers. Teachers need to do some preparation before the discussion, to improve the participation and enthusiasm.

4.2 Designate special persons as discussion facilitator

Designate special persons as discussion facilitator, and improve their management and questioning skills. The special discussion facilitator could adjust the process of discussion, organize the topics, build support timely, so as to make discussion not wander, and ensure completing all the topics timely, improve the strength of management.

4.3 Make intervention system of discussion

The special discussion facilitator, could adjust the process of discussion, organize the topics, build support timely, so as to make discussion not wander, and ensure completing all the topics timely, improve the strength of management. Meanwhile, the organizer should study that how to mention the topic, manage and coordinate discussion, etc, in order to improve management and questioning skills.

References

- Garrison,D.R(1992)..Critical thinking and self-directed learning in adult education: an analysis of responsibility and control issues. *Adult Education Quarterly*, (3):136-148.
- Garrison,D.R., Anderson,T., Archer,W.(2000). Critical thinking and computer conferencing: A model and tool to assess cognitive presence. *American Journal of Distance Education*, (3):133-148.
- Hara,N., Bonk C.J.& Angeli,C.(2000). Content analysis of online discussion in an applied educational psychology course.*Instructional Science*, (8):115-152.
- Liu huanglingzi(2006).Collaborative Knowledge Building Research Based On Interaction Analysis.*Beijing Normal University*.
- Newman,D.R., Webb,B., Cochrane,C.(1995).A content analysis method to measure critical thinking in face-to-face and computer supported group learning. *Interpersonal Computing and Technology*, (3):56-77.
- Wever,B.D, Schellens, Valcke&Van Keer.(2006).Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computers & Education*, (1):6-28.