

# Construction of A Brand-new Learning Community Led by Independent Learning During the COVID-19 Pandemic

## -- A Study Based on Chinese Experience

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### Abstract

In 2020, as COVID-19 pandemic swept the world, schools around the world were urgently shut down. According to the data released by the United Nations Educational, Scientific and Cultural Organization (UNESCO), as of July 26, 2020, more than 1 billion students in 107 countries and regions worldwide have to stop class, thus online education has become a necessary way of education. China is the first country to suffer from the outbreak of this global pandemic, and also the first country to take an attempt on online education. In other words, China is the pioneer of online education, which attaches great importance to student safety and ensures students opportunity of taking normal education as well. Online education during the epidemic has its advantages and disadvantages. For example, teachers have no idea of students' self-learning skills and learning situations. Therefore, how to solve the problems in current online education practice has become a hot social issue. Based on these existing problems, this study focuses on a research on online education under this special epidemic period, with selection of the most representative online learning cases of students in high school and elementary school. It will specially analyse the students' independent learning ability and the stability of the learning community, at the same time, make a comparison of elementary school students between their academic performance of moral offline education and after finishing a 4-month online education. In addition, this study also aims to construct a brand-new learning community based on the online recording and broadcasting of high school students' learning evaluation results and online education through live-broadcast. This article will summarize and analyze Chinese existing experience of its practice of online education, which will be useful for the other countries in the world that are still suffering from this pandemic and needing to carry out online education.

### Keywords

COVID-19; Independent Learning; A Brand-new Learning community; Chinese Experience.

## 1. China's Online Education During the Pandemic

In September 29, 1949, Chinese government proposed in Common Program of the Chinese People's Political Consultative Conference that education in the People's Republic of China is a kind of national, scientific, and popular education. By the end of the 1960s, the number of educated Chinese people increased gradually. [2] In the 1970s, the United Nations Educational, Scientific and Cultural Organization (UNESCO) called for a socialized education. At the same time, some states in the United States launched a policy of "learning at home". The policy required schools to set some online courses and make them as compulsory courses for students which need to be counted into their credit score. That is the start of online education in America. [3] Since the Internet entered China in the 1990s, it has attracted great attention until today. In 2005, the concept of "Internet plus" was proposed by Premier Li Keqiang in the Report of the Work of the Government. Besides, some scholars had also suggested that online education developed towards the trend of gamified, which means that [5-6] gaming minutes should be added into online courses to help students better concentrate on their study. This is not only enable teacher to dominate the classroom, but also focuses on students." [4] In fact, during the period of SARS pandemic Beijing first tried a new form of education, namely "air class". However, at that time, these 9,600 classes in the air class did not have an much impact on online education.[5]

The outbreak of coronavirus epidemic in 2020 has accelerated the development of online education in China. At the same time, it has also highlighted the problems in the development process of online education, especially under the situation of pandemic. Due to the problem of limit organization time, the uneven ability of teaching staff and various equipment used by students, the experience of online education is not as perfect as we thought. In addition, unstable network situation and visual classroom also add to the problem. 6 Although these drawbacks it has, online education during the epidemic in China also possesses the following advantages:

(1) Online Education fully ensures the safety of both teachers and students, effectively block the transmission chain, and leave more time for the prevention and control of the epidemic. In addition, the implementation of online education during the epidemic broke through time and space restrictions, and students can take courses wherever they are.

(2) China attaches great importance to Internet education. the Ministry of Education of China also actively responded the guidelines mentioned in Practical Guidelines for Open Education During the Epidemic under the Guidance of UNESCO's Open Educational Resources Recommendation, which was launched by UNESCO. A research team led by Huang Ronghui and Liu Dejian, co-deans of the Smart Learning Institute of Normal University, also completed relevant online learning guidance, which gave many departments and countries a demonstration.

In short, China's online teaching practice during the epidemic effectively blocked the spread of the epidemic and bought time for the country's prevention, control, and prevention. However, for better improvement of online education, the authors have the following questions: Can online education in China during the epidemic strengthen students' independent learning ability? Is it important to improve students' leaning experience? What problem exits in our current leaning community?Do the forms of the course affect the effect of learning?

## 2. China's Basic Education Home Study Survey in 2020

During the outbreak of coronavirus pandemic in 2020, almost all educational institutions in China is implementing online education. As far as the information we acquired, students' home-based learning situation during the epidemic is not so good as study offline. The following part

will introduce the investigation process, investigation results, and teaching practices and deficiencies in China's epidemic situation.

## 2.1. Survey Design

### 2.1.1. Survey Object

In this study, teachers, parents and students from a k12 school in Suzhou and a high school in Anhui were selected as the research objects. This survey uses online questionnaire (questionnaire star). There are a total of 74 valid teacher questionnaires, 232 parent questionnaires, and 227 student questionnaires were obtained. The proportion of students in this survey is relatively reasonable, and the number of parents as a group that reflects the situation of primary and secondary schools is basically reasonable. Therefore, as a whole, the sample size and organization distribution of the data in this study are reasonable.

### 2.1.2. Research Tools

The sudden outbreak of the coronavirus disrupted the normal school opening plan in China. Educational administrative departments at all levels actively responded and adopted measures to vigorously promote the online online learning activities of "no class suspension". Under this situation, In a major epidemic, the new situation faced by elementary and middle school teaching is mainly home learning for students and online teaching for teachers. Among them, the teacher's online teaching activity is an important way for students to learn at home, and the effect of students' home-based learning is affected by factors such as teachers, parents and students' self-discipline. In order to understand the current situation and problems of primary and secondary education under the severe epidemic, we designed three kinds of questionnaire for teachers, parents and students respectively. The information of dimensions, explanations and topics of questionnaires for these three groups of people are as following tables.

**Table 1.** Questionnaire dimensions of teachers

Dimension	Explanation	Question Number
Basic Information	Educational background; how many years they have taught; which grade do they teach; which subject do they teach	1,2,3,4
Leaning community (between teachers and parents)	The frequency of communication between teachers and parents; the degree of cooperation of parents	5,6,7,8,9,10,11
Innovation in teaching approach	The innovation of teachers' teaching methods during the epidemic, the effects of teachers' self-assessment, and teacher-student interaction	12,13,14
Independent leaning ability Learning community (between teachers and students )	Teachers' guidance and effects on students' independent learning ability; teachers' follow-up measures of students' learning plans; teachers' evaluation of students' learning autonomy	15,16,17,18,19,20,21,22,23
The evaluation of leaning effect	Whether the online course experience, effort and gain are consistent with expectations	24

**Table 2.** Questionnaire dimensions of parents

Dimension	Explanation	Question Number
Basic information	Name, occupation, education background	1,2,3
Independent leaning ability	During the epidemic, parents' observation and evaluation of children's class performance, homework completion, and whether stick to their learning plan	4,5,6,7,8,9,10,11
Leaning community (between parents and students)	Parents' supervision and guidance on student learning performance and its effect, ; conflicts between parents and students under online education	12,13,14,15,16,17,18,19,20,21,22
learning community (between parents and teachers )	cooperation between parents and teachers; the frequency of communication between parents and teachers; parents' evaluation of teachers' work quality	23,24,25,26,27,28,
The evaluation of teaching quality	Parents' evaluation and satisfaction with teaching practice conducted by teachers; parents' evaluation of teachers' management ability, parents' satisfaction with students' learning effectiveness	29,30,31,32,33

**Table 3.** Questionnaire dimensions of students

Dimension	Explanation	Question Number
Basic information	Name, gender, grade, academic performance, how much they love Literature	1,2,3,4,5
a survey about teaching methods adopted by teachers	Learning tools, which way to take course; experience	6,7,8
Learning autonomy	Finish homework independently; preview independently; make learning plan independently	9,10,11,12,13,14,15,16,17
Learning methods	whether recite knowledge in their spare time; whether taking note in class	19,20,21
learning community (between teachers and students)	Teachers pay attention to your questions; whether teachers find materials from different sources to them; teachers interacts with students, set quiz	18,22,23,24,25,27,28,29,30,31,32,33
Learning community (between parents and students)	have them had contradiction in terms of study; the relation between family relationship and learning effect; whether parents pay attention to nurture well-round students	34,35,36,37
The evaluation of learning effect	Students' experience of taking courses online; whether they gain worths the effort they pain	26,38

### 2.1.3. Research Methods

The data involved in this study uses Excel and SPSS data statistics software to enter, sort and analyze the original data.

## 2.2. Data Analysis

Through single-factor variance and T-score analysis, it is found that there are significant differences in the communication frequency of teachers in elementary, junior, and high schools. There are significant differences in the frequency and distance of family conflicts between elementary school students and high school students, and there are significant differences in learning habits between elementary school students and high school students. Significant differences. In addition, parents of different occupations also have significant differences in the guidance of students' autonomy in learning. The following will analyze the results of the survey through four aspects.

### 2.2.1. The Influence of Students' Learning Habits on Learning Autonomy in Each Grade

**Table 4.** Analysis of the Difference in Study Habits between Primary School and High School Students

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
20. can you memorize important knowledge in your spare time proactively? ( in terms of study methods )	Equal variances assumed	2.511	.114	-5.441	225	.000	-.5983	.1100	-.8150	-.3817
	Equal variances not assumed			-6.049	205.839	.000	-.5983	.0989	-.7934	-.4033
21. can you take note carefully in class?	Equal variances assumed	2.962	.087	1.777	225	.077	.2154	.1212	-.0235	.4542
	Equal variances not assumed			1.784	158.099	.076	.2154	.1207	-.0231	.4538

The difference in the learning habits of students in each grade is mainly manifested in the ability to use fragmented time to memorize knowledge points. According to the results of independent sample t-test analysis, it can be seen that primary school and high school students have a P value of  $0.000 < 0.01$  in mastering the learning method of using fragmented time to memorize knowledge points, which is a significant difference.

### 2.2.2. The Influence of Family Relationship on Learning Autonomy of Students in Different Grade

**Table 5.** Group Statistics

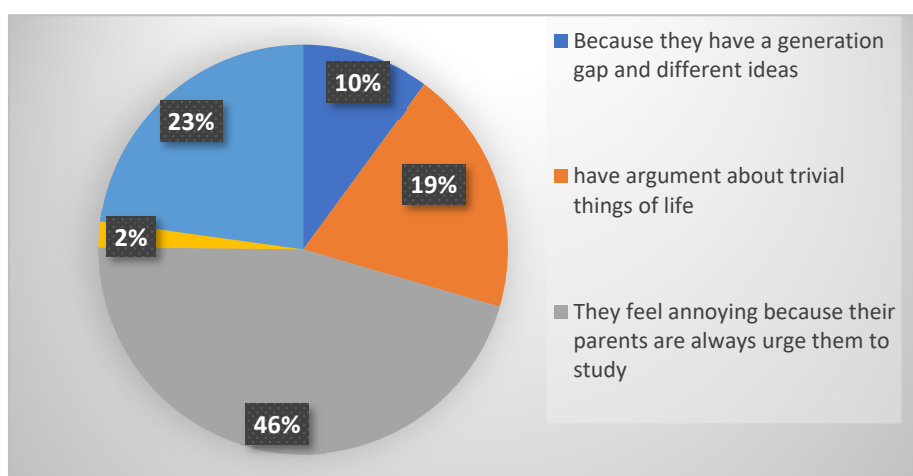
	Which grade are you going to take	Number	Mean(E)	Std. Deviation	Std. Error Mean
34. during this home-based learning period, have you had conflicts or arguments with your parents in terms of study?	Primary school	149	2.664	1.2660	.1037
	High school	78	3.487	1.2766	.1445
35. can you describe which conflicts exists between you and your parents?	Primary school	149	2.624	1.6541	.1355
	High school	78	3.295	1.4604	.1654

**Table 6.** Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
34. during this home-based learning period, have you had conflicts or arguments with your parents in terms of study?	Equal variances assumed	.286	.593	-4.637	225	.000	-.8227	.1774	-1.1724	-.4731
	Equal variances not assumed			-4.625	155.284	.000	-.8227	.1779	-1.1742	-.4713
35. can you describe which conflicts exists between you and your parents?	Equal variances assumed	7.956	.005	-3.017	225	.003	-.6707	.2223	-1.1087	-.2327
	Equal variances not assumed			-3.137	174.265	.002	-.6707	.2138	-1.0927	-.2488

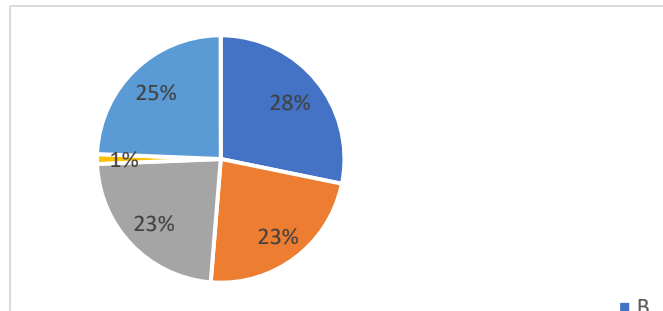
According to the analysis of the results of the independent sample t-test, it is noticeable that the P values are all less than 0.01, which indicating that there are significant differences in the frequency of conflicts with families and the causes of these conflicts between students in primary and high school. The mean frequency of conflicts between primary school students and high school students were 2.664 and 3.487 respectively. It is clear that during the epidemic, compared with primary school students, high school students are more likely to have conflicts with their parents.

From figure 1, it can be seen that for primary school students, the main contradiction with their parents is that their parents always urge them to learn and make them feel very annoying. At the same time, there are also some other reasons for them to conflict with their parents. However, high school students (figure 2) are on the contrary. They will be affected by the trivialities in daily life, and they will also be affected by the generation gap. The conflicts caused by their parents urged to study accounted for only half of the proportion of primary school students.



**Figure 1.** Primary school students have conflicts with their parents





**Figure 2.** Conflicts between high school students and their parents

### 2.3. Teaching Practices and Shortcomings under the Epidemic in China

According to the analysis of the results of the questionnaire survey, the most common form of teaching in elementary school under the epidemic situation in China is recorded and broadcast lessons (67.69%), while 84.62% of high school students learn in the form of live broadcast. However, 53.85% of high school students and 53.89% of elementary school students believed that the learning form of live-streaming Q&A with recording and broadcasting is the most efficient. During online education, many teachers would innovate their teaching methods and introduce other learning resources to students for supplement. Although many students say these supplemental materials can help their study to a certain degree, more than half of teachers think that the effect of teaching innovation is not ideal.

During the epidemic, teachers had a higher awareness of cultivating students' learning autonomy, and their follow-up was more timely. However, the feedback from students to teachers was not very good. In the learning community (teacher-student) module, although teachers have paid more to students, their feedback is poor. Teachers have also guided students to learn autonomy, and most parents will also guide students in order to improve their ability to learn independently, however, parents lack effective scientific methods, and they cannot make students learn more consciously through their own guidance ability, and produce good guidance effects. In addition, there are too many things at home that are attractive to learners, namely various kinds of electronic products, snacks, drinks, sofas or beds, etc.. These "temptations" are factors which will affect the concentration and effectiveness of independent learning for students who lack self-control.

Based on the teaching methods adopted during the pandemic and their deficiencies in China, authors of this article believe that it is necessary to build a new learning community under a learning model dominated by students' autonomous learning to balance existing teaching practices and deficiencies.

## 3. Learning Autonomy Become the Key to the Effectiveness of Home-based Learning

According to the analysis of the questionnaire, students' learning autonomy is particularly important to home-based learning. [8] Since the 1970s, education has gradually shifted from teacher-centered to student-centered. Educators and researchers began to pay attention to self-regulated learning. The learner's goal-setting, planning, stratification strategic methods, self-monitoring and feedback are all regarded as parts of students' autonomous learning. [9] In the mid-1980s, educational psychologists and pedagogical experts frequently used the term of "self-regulated learning" and worked on projects related to its conceptual framework. [10] There are many types of definitions for learning autonomy, the one taken by researchers is proposed by Barry J. Zimmerman and others, which is "autonomous learning refers to the systematic activation and maintenance of metacognitive phenomena, motivations or emotions

by students in order to achieve their own learning goals and emotions in a specific environment.” [11]

During the epidemic, there are more than 1 billion students around the world in 107 countries and regions have suffered from the shutdown of schools. Online education has become an inevitable way of education. [12] Most primary and secondary schools in China have began online education from mid-February 2020. Students changed from classrooms with teachers and students to their own homes with the supervision of parents. At home, there are a lot of temptations. Learners must learn independently in an environment which is suitable for taking leisure activities. In addition, mental environment has a great impact on learners. Since China’s epidemic prevention and control policies requires home-based isolation and home is a place for living and relaxation, learners would easily divert their attention to other things that have nothing to do with learning in the process of autonomous learning without teacher supervision, which leads to their poor learning effects.

### 3.1. The Home-based Learning Cycle Model Based on the Law of Autonomous Learning

Based on the analysis of the current situation of autonomous learning during the epidemic in China, students need to quickly adapt to the changes in the autonomous learning environment, so as to improve their home-based learning process, enhance their autonomous learning ability, and minimise the disturbance they received from environmental. Therefore, the establishment of a good new learning community led by independent learning is the key to improving learners’ learning effectiveness.

The six steps of autonomous learning in a home environment are different from the autonomous learning model in a classroom environment. In the learning process without the direct guidance of the teacher, although learners enjoy a high degree of freedom in terms of learning time and learning habits in the home environment, this more liberalized kind of learning is still based on the learners’ personal learning goals and learning content. In addition, students need reflect the selves not only on knowledgeable problems encountered in learning, but also on their self-consciousness in learning, the reasons for conflicts in communication with their parents, and other factors that affect autonomous learning at home. Therefore, students can devote themselves to a comprehensive autonomous learning cycle.

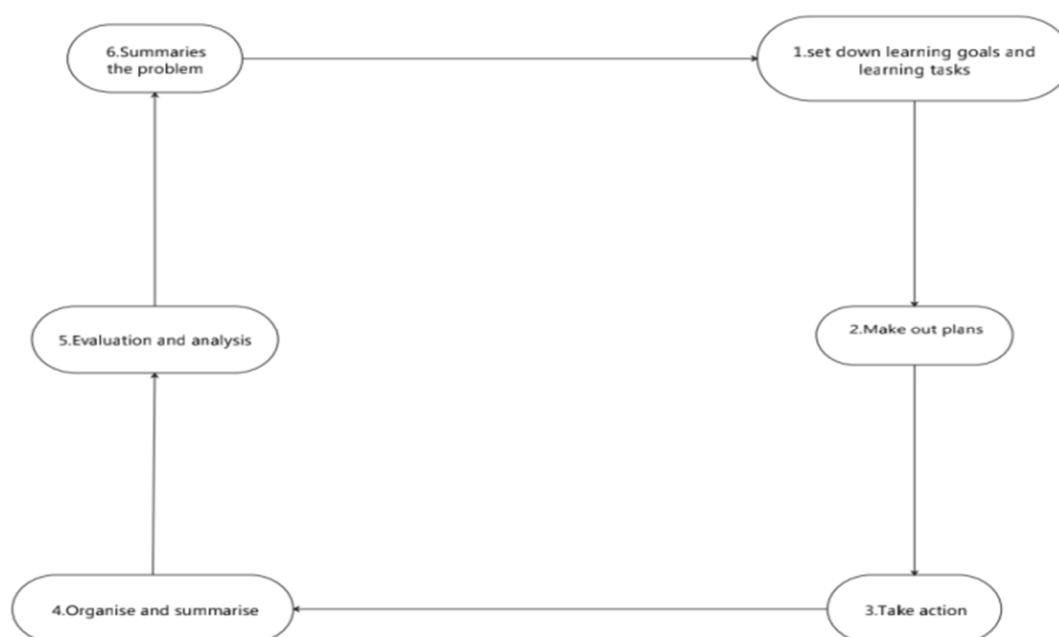


Figure 3. Comprehensive autonomous learning cycle



## 4. An Online Learning Community Model Based on Autonomous Learning

Learning community [13] refers to a learning community composed of learners and their assistants (including teachers, experts, and counselors etc.). They often communicate with each other during the learning process, share various learning resources, and jointly complete certain learning tasks, thus forming mutual influence and mutual promotion of interpersonal connections between members. That is to say, the learning community is a group formed to complete the learning task. Everyone has the same purpose, expectations, knowledge, interests and emotions. Because of these common spiritual factors, the members of the group are brought together, rely on each other, treat each other as equals, share honor and disgrace, and share benefits to the greatest extent.

### 4.1. The Transformation of Classroom Learning Mode

In 2020, due to the outbreak of coronavirus pandemic, Ministry of Education in various regions made the deployment of "stopping classes without stopping" and "stopping classes without stopping school". Both students and teachers joined online education. This was the first time for schools to conduct home-based online education. There is no doubt that it has brought convenience to students' study during the epidemic, but has some drawbacks at the same time, such as low learning autonomy of students and low home learning effects. In addition, low level of family education and home-school co-education make it difficult to adapt to the change of learning space from school to home. As a result, online teaching has many problems and the effect is not satisfactory.

When studying at home, in the actual autonomous learning mode of learners, there are some problems exist in the fourth to sixth steps. Students only learn, but lack analysis and summary, which leads to general independent learning to the students' personal learning ability, also the mastery of knowledge lacks a certain improvement. Therefore, we need to build a good new learning community dominated by independent learning.

### 4.2. Building a New Learning Community

#### 4.2.1. Imagine a New Learning Community Model

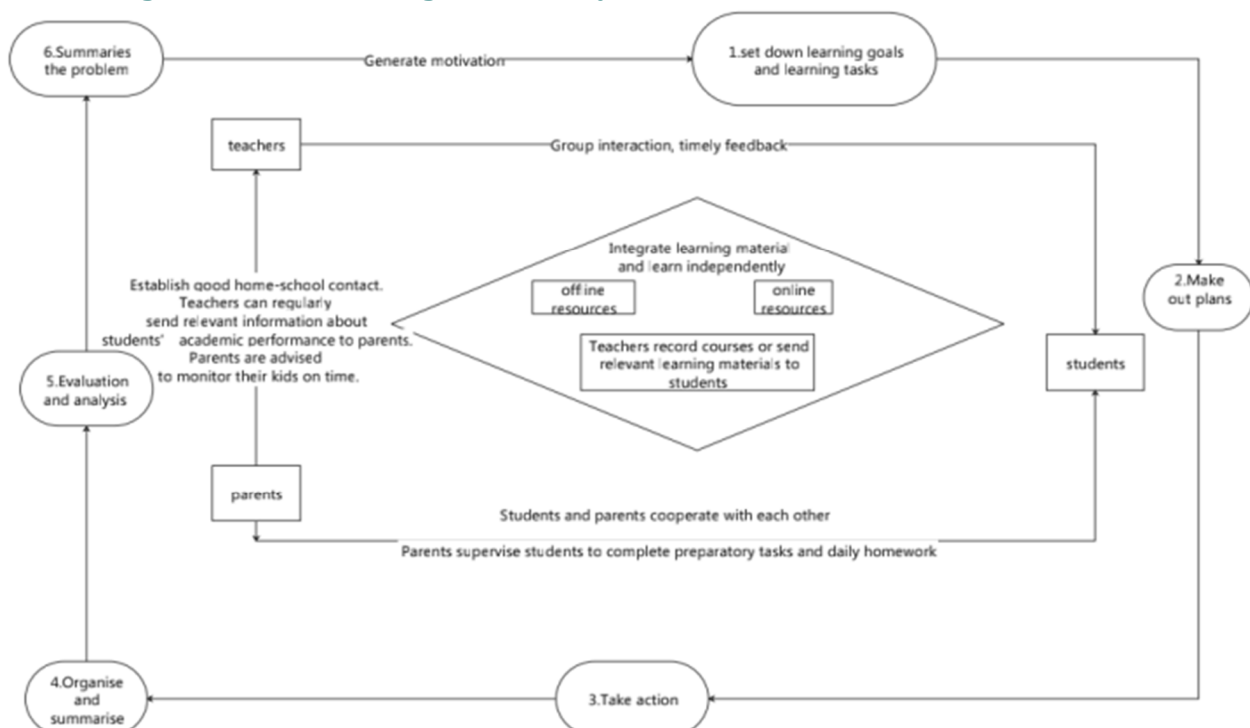


Figure 4. Learning Community Model

The new type of learning community means that students have the opportunity to study independently and think independently. In group activities, students should report to each other their study content as well as their own views and problems. In this way, they can discuss and communicate together, and learn how to listen, think, judge, and express and supplement the opinions of others; teachers can better guide and help students, and conduct hierarchical teaching based on student problems. At the same time, home-based learning can also strengthen the effective communication and cooperation between teachers and parents.

(1) The teacher arranges the course content and teaching plans on a weekly basis. They can inform parents through the We-chat group so that parents can understand teaching plan. Students set learning goals and make detailed learning plans based on the teacher's teaching content and their own need, also these plan can help parents to supervise their study. In the course preparation stage, teachers divide the students into different study group, and send handouts to the We-chat group of parents and students one or two days in advance. Though this way, teachers can let the students preview the knowledge in advance, and parents can supervise them and check their homework. In this mode, students can study independently. The questions and doubts that proposed by students can be answered in this leaning group before the class. The questions that cannot be answered will be summarized and integrated by the group managers and then be reported to the teacher. Teachers will focus on these hard question on class.

(2) When teachers conduct group activities in class, they must first limit the discussion time to improve students' efficiency in discussion. Secondly, they must try to ensure the significance and interest of the activities, and mobilize students' learning enthusiasm. Each group must communicate with the teacher during class. The communication and discussion results of each group will be displayed on the screen. During this process, teachers know about their students' views on the topic discussed and the problems they have, which is more direct and convenient for teachers to answer the students' puzzles and provide timely feedback.

(3) The teacher can summarize and make appropriate supplements to the content, and clarify the tasks after class. At the end of each class, the students' participation and enthusiasm among the students in the group activities can also be investigated anonymously. The tasks assigned by the teacher cannot be completed by one or two people, but the division of labor between the members should be clear and work together. Students are no longer the original audience in the classroom in the traditional sense. They can communicate and cooperate with classmates through the network platform and become explorers, experiencers, and collaborators in learning.

(4) After class, the teacher can give feedback on the students' academic performance in the Wechat group of parents. For these less active students in class, teachers will advise parents to strengthen supervision to their kids, making sure they complete their learning tasks and finish their learning plan. Besides, teachers can communicate with the parents, based on students' academic performance and evaluation from group members, to solve these problems with parents together. Teachers can generate personal reports for students' home-based study and provide targeted and personalized guidance.

### **4.3. Suggestions for Building a New Learning Community**

To build a new learning community with students as the main body, it is necessary to ensure the effectiveness of student's online interaction. In terms of concept, this new community takes students as the main learning body and teachers as tutors during the whole process, which emphasise the participation of all students in a virtual learning community. Secondly, taking into account of the limitations of students in terms of ability, time, energy, knowledge reserves, technology use, etc., the development method should be as flexible and orderly as possible. It should adjust at any time with the learning theme and content. This new learning community

should be good at discovering and correcting students' problems in time, and make full use of the platform, like QQ, WeChat and Ding Talk as well as other platform which answer students' questions to ensure smooth and effective daily communication between teachers and students, between students and students, between teachers, and between home and school. 14 Schools actively establish effective communication channels, which can not only promote cooperation between home and school in teaching, but also help students and teachers reduce the sense of distance during the epidemic isolation period, thereby reducing the physical and mental pressure on teachers, students, and parents.

## 5. The Enlightenment of Chinese Experience to the International

Although some countries have always advocated learner-centeredness and some education methods are better than China, the authors of this article are parts of participants of online education in China during the epidemic. Chinese teachers will help students develop learning plans during the epidemic and follow up on the implementation of student plans timely. After all, letting students become learning leaders is not an absolute only educational development trend. There is a difference between online learning at home during the pandemic and normal learning at school.

Based on the above cases and literature analysis, all learning is to verify whether students can construct learning ideas. During the epidemic, students studying at home around the world have to deal with more complicated situations than during their previous studies at school. In the past, teachers used to refine their knowledge and share them with students face to face, however during the epidemic, teachers did not refine the knowledge points due to the limit preparing time for online teaching practices. No matter who is doing online learning under the epidemic, there will be problems and obstacles. These problems will also be faced no matter they are unprivileged countries, developed countries or developing country. Although for those knowledge that does not require refined processing, students are beneficial to their development in the learning process. However, the rapid development of online education under the epidemic situation and the rush of preparation will cause students to have a series of new problems, so there is a need to build a new type of learning community.

For other countries that are still combatting with the epidemic, they may try some of China's education methods under the epidemic. Firstly, they let teachers intervene in students' learning and cultivate students' learning autonomy. After all, 95% of parents abroad pay less attention on their children's academic performance than that of China, thus the intervention of teachers would be more conducive to the stability of the learning community. Secondly, although the form of recording and broadcasting lessons saves a lot of labor costs, it still needs to cooperate with live broadcast to answer questions, so as to make students' learning more efficient. In addition, other countries can also try some of the methods in the new learning community mentioned in this article. After all, these are based on practice and are more operable. In fact, other countries in the world can also conduct specific analysis according to the specific situation they are facing, and seek more suitable solutions.

Finally, the new learning community derived from the investigation and analysis in this article is worth learning for all international education researchers.

## 6. Conclusion

Taking China's novel coronavirus pandemic outbreak in 2020 as background, this study focuses on online learning in China during the epidemic period, as well as the students' learning autonomy and learning community's coordination. Questionnaires, questionnaires and questionnaires were conducted to investigate students, parents and teachers. It is found that under the guidance and supervision of teachers, the learning autonomy of Chinese students has

been improved, and the cooperation degree of parents during the epidemic period is also very high, but there will be more conflicts between parents and students, which will affect students' learning. Therefore, this article constructs a new learning community according to the current situation of education in China under the epidemic situation. This learning community is not only applicable to China, but also applicable to other countries in the world. After all, online learning under the epidemic situation is developing rapidly all over the world, but most of the lack experience.

## References

- [1] <https://zh.unesco.org/themes/education-emergencies/coronavirus-school-closures>
- [2] Ma Luting, Liu Chenbo, Zhang Wei, Ju Guangyu. A Historical Summary of the Development Path of Socialist Education with Chinese Characteristics, 2020, 36(03):25-33.
- [3] Zhang Mengran. A study on operation model of K-12 online education in the United states. [D]. ZheJiang Normal University, 2018.
- [4] Xiao Yuwen, Wang Mingyu. Basic analysis about the current situation and development trend of online education[J]. China Business Review, 2017, (18):176-177. DOI:10.19699/j.cnki.issn2096-0298.2017.18.089
- [5] Wang Yunwu, Wang yuru, Li Yanxin, Li Dan. Countermeasures and suggestions to improve the quality of online education during the epidemic prevention and control period[J]. China Medical Education Technology, 2020, 34(02): 119-124+128. DOI:10.13566/j.cnki.cmet.cn61-1317/g4.202002001
- [6] Wang Shaofeng. Investigation and analysis of the current situation of online education in higher vocational colleges during the epidemic, Vocational Education(late issue)2020, 19 (02) :28-35. DOI:10.13565/j.cnki.issn2095-4530.2020.02.00
- [7] National Engineering Laboratory for Cyberlearning, <https://mp.weixin.qq.com/s/q5vD9uDcS6hfc5vBQ2F3SQ>
- [8] Chen Xiang, Cheng Dehua, Chen Zufen. Study on the Online Learning Effects of Students and Its Influencing Factors during the Epidemic Prevention and Control Period[J]. China Modern Education Equipment, 2020(11):14-17+21.
- [9] Liu Xianjun. On the Student-centered Ideal[J]. Journal of Higher Education, 2012, 33(08):1-6.
- [10] Low R. , Jin P. (2012) Self-Regulated Learning. In: Seel N. M. (eds) Encyclopedia of the Sciences of Learning. Springer, Boston, MA: 103.
- [11] B. J. Zimmerman Development of self-regulated learning: Which are key subprocess? Contemporary Educational Psychology, 16, pp. 6-26.
- [12] <https://zh.unesco.org/themes/education-emergencies/coronavirus-school-closures>
- [13] An Empirical Study on QQ-based Teacher Learning Community MENG Zhaokun , LAN Guoshuai, XU Meidan&ZHANG Yichun
- [14] Challenges and Solutions in Teaching and Learning in the COVID-19 Crisis: Analysis and Reflection based on OECD 's "A Framework to Guide an Education Response to COVID-19 Pandemic of 2020".