Exploring Teaching Chinese As A Second Language Teachers' Informatization Teaching Ability In China: Needs And Challenges

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ABSTRACT

This study aimed to 1) explore the informatization needs and challenges of the teachers and to 2) investigate the factors that support and obstruct the teachers in their technology-integrated teaching approach. The study adopted a mixed-methods approach. By using stratified teaching and Yamane's formula of calculating the sample size, 118 teachers were selected from a population of 167 teachers teaching Chinese as a second language (TCSL) in seven schools that operated online teaching and learning during the COVID-19 pandemic outbreak in Miya city as research participants. Through the questionnaire survey and the structured interview, quantitative and qualitative data analysis methods were adopted to identify the needs and challenges of online teaching of Chinese as a second language during the epidemic period. The findings of the study revealed that all teachers had high scores in all the items with the total average of 4.74/ S.D.= 0.48 which broke down into 4.73/ S.D. = 0.46 for content, 4.71/ S.D.= 0.53 for pedagogy and 4.78/ S.D.= 0.45 for technical knowledge. It was found that the teachers got the highest score in content knowledge and the lowest score in pedagogy knowledge. It is therefore recommended that in order for the teachers to face online teaching with confidence, the teachers should be continuously professionally developed in designing appropriate online curriculums, especially for teaching Chinese as a Second Language and online student assessment. In addition, class interaction and students' learning discipline will be two major challenges for the teachers. They must adapt their teaching to promote these in their online classes.

KEYWORDS: On-line teaching, Informatization ability, TCSL teachers, needs and challenges

1. Introduction

COVID-19 has been a catalyst in the education field that has brought about faster and more radical changes in teaching and learning than earlier expected. Schools have been suspended but online teaching and learning have been adopted. Porter (2004) in the Preface of her book says "The state of online education is changing rapidly, and some educators rightly call it a revolution.". The sudden outbreak of the epidemic has cut off the offline (on-site) teaching mode of traditional education. Mobile classroom, online education and other rapid development and growth in the

market, are new teaching modes, and online teaching is the primary test of technical foundation and operation level. The current IT application platforms are faced with three major limitations: a lack of interactive network teaching, operation requirements for stable and reliable network and insufficient digital skills of the teachers and students in operating the platforms (Shuai, 2020). Besides, pedagogy commonly adopted for on-site teaching may not be a guarantee for successful online teaching and learning. Thus, it is worth identifying how the teachers cope with the changes and the demand of online teaching. Secondly, how the teachers should be professionally developed to face online teaching with confidence should be studied.

The questions for the study are as follows:

1) What are the needs and challenges for informatization of the teaching ability of TCSL teachers in Miya City?

2) What are the factors that support or obstruct them, in their technology-integrated teaching approach?

With the advancement of information technology, the teachers' informatization teaching ability is an important factor to improve teaching effectiveness and is also the core of improving the national education modernization. Indeed, the pervasiveness of digital technology in education cannot be avoided. All countries have gradually paid attention to the important role of the teachers' information of the teaching ability and started to study how to best educate their citizens. Tables 1 and 2 below show the attempts of various countries both China and abroad in trying to cope with the changes.

Table 1. Framework of Teachers' Informatization of the Teaching Ability in China

Period/Region/Scholar	The Main Results	Framework or Process
Yang, Nanjing Normal University, 2015	Comprehensive measures were taken at three levels	● Building of the core team ● Formation of appropriate curriculum implementation team ● Integration of the abilities of curriculum design and the use of technology ● Appropriate role changes to provide students with sufficient time for reflection
Zhu, 2016	Areas of development	● Adopting four stages: germination, application, integration and transformation ● Strategy to improving the informatization teaching ability of primary and secondary school teachers ● Training the teachers in their technical ability
Chen, 2020	Improving digital skills of all involved parties	● Training the teachers to improve their informatization teaching skills ● Using competition to stimulate teachers' informatization ability as the starting point ● Involving schools and teachers in building national digital resources

Table 2. Framework of Teachers' Informatization Teaching Ability Abroad

Country	Period	The main results	Framework or Process
The United States	1960s - 1970s	--The PLATO system, developed at the University of Illinois, was used in elementary schools and computer-aided instruction.	● Top-level design of the application of information technology ● Technology American National Transaction Technology Standards
The United Kingdom	1980s	--ICT, Information and Communication Technology (NGL, National Grid for Learning)	● Provision of most educational resources free of charge to schools and teachers.
Japan	1994-2001	--The Japanese government attaches great importance to the cultivation of teachers' information teaching ability. --With the rapid development of information technology, the Japanese government has carried out education information from various aspects.	● Making education informatization a basic state policy
Korea	1990s	--The education information infrastructure is complete. --The integrated application of the diversified information system to meet the learning needs of different scholars	● From infrastructure construction to the development of digital resources, to the comprehensive promotion of personalized learning, to promote the integration of technology and teaching, and thus the development of smart education ● A complete application system of basic education information system, which includes all the national education administration and all the affairs of schools.

The information obtained from both tables confirm that no one country ignored the changing world that is disrupted by technology. Based on the attempts to improve teachers' informatization teaching ability, the teachers seem to be the front-line target. They should first change their roles, update their ideas at any time, constantly improve their information literacy and teaching ability under the background of information technology, carry out teaching practice under new models and new ideas, and do in-depth theoretical research while practicing. The teaching in the digital age should be solidified and promoted through research and subject content, learn not only appropriate teaching methods, but also digital resource construction as well as online teaching pedagogy. In summary, the new era puts forward higher requirements for teachers.

Kelly, McKain and Juke (2009) predict that in the future, the power of technology will increase tremendously and the cyber schools will be in great demand. However, some of the features of such schooling have already appeared even in ordinary schools during the COVID-19 Pandemic as online teaching and learning must be adopted. The following table lists what is already happening.

Table 3. Features that Are Now Appearing in Teaching and Learning During the COVID-19 Pandemic

No.	Feature
1	Students may not be physically present in a school building.
2	Learning will come from multiple sources including a wide variety of online teachers, both human and nonhuman.
3	Students learn from a wide range of stand-alone and online digital learning resources.
4	Instruction will shift to focus on 21st century literacy skills, including. information processing skills, problem-solving, graphic design and media presentations.
5	Students will meet with their teacher-advisor using online technology.
6	Online communication will become much more natural and interactive than today.
7	Teachers do less direct teaching. Indeed, they will assume the role of a guide and an advisor.
8	All teachers will process information-processing skills.
9	All teachers will possess multimedia design skills.

Clearly, on analysis of the nine items in the table above, it is found that maybe school buildings are no longer necessary as students can learn anywhere outside the classroom. In addition, student learning is no longer a result of teacher teaching or direct transmission of knowledge that the teacher has. Students are now exposed to a variety of sources such as the Internet and countless databases. All these have led to the prediction that teaching and learning in the future will no longer remain traditional with the teachers controlling their classes with traditional types of materials.

Based on the table above, it can be seen that there is a big gap between what is expected for the teachers to be able to do and what the teachers have been earlier prepared before they begin their teaching career and when they are in the jobs. Thus, in this study, the teachers will be asked to say what their needs and challenges are and how they should plan to cope with teaching in the new era.

Figure 1 below shows the components of the Informatization of the teaching ability.

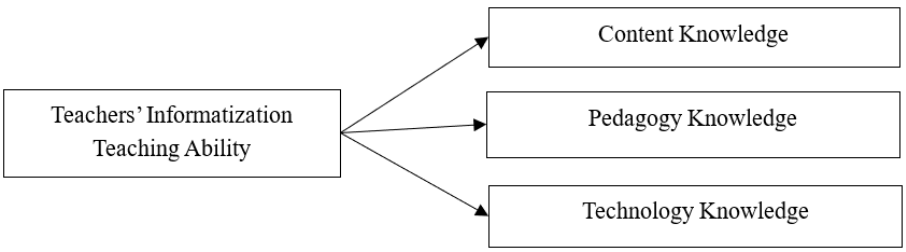

Figure 1. Components of Informatization of the Teaching Ability of the Teachers

Informatization of the teaching ability is believed to help improve teaching effectiveness. The three basic areas that they must master are content, pedagogy and information technology. This is based on Koehler et al (2007) developed a framework of the teaching ability that revealed the relationship between Content (C), Pedagogy (P) and Technology (T). In this study, the three elements were investigated separately to find out the teachers' needs and challenges for each.

2. Proposed Methodology

This study used two research instruments: the questionnaire which each respondent filled out online and the structured interview, also to collect the data about the informatization of the teaching abilities online from the sample groups in all the seven schools in Miya city because these schools have adopted online teaching and learning during the COVID-19 pandemic. In order to understand the TCSL teachers' informatization teaching ability before and after the epidemic, 167 TCSL teachers from 7 schools in Miya city were the population of the study. Based on stratified sampling technique adopted, 118 samples were selected and the sample size was calculated by Yamane formula (1970).

Sample size for ±5% precision levels where confidence level is: $n = \frac{\mathrm{N}}{1+\mathrm{N}e^2}$

Stratified sampling:

$$r(X,Y) = \frac{\mathrm{Cov}(\mathrm{X},\mathrm{Y})}{\sqrt{\mathrm{Var}|X|Var|Y|}}$$

2.1 Quantitative Data Analysis: The Questionnaire

The questionnaire survey method was a research method in which the questionnaire items were designed and constructed based on research objectives/questions.

The investigation was conducted on the teachers who taught Chinese as a Second Language at the time. The questionnaire was divided into three parts:

1) Personal Particulars of the Teacher (such as gender, age, teaching experience in teaching (years), educational qualifications, etc.) (Items 1-3)

2) Informatization Teaching Abilities in Three Major Areas-items related to content knowledge (Items 4-12), Items related to pedagogical knowledge (Items 13-22) and items related to technical knowledge (Items 23-40)

3) An Open-ended Question for additional comments and suggestions (Item 41)

The first part of the questionnaire was the personal particulars information of the participating teachers. The second part was the main part of the questionnaire, which included three investigated dimensions of the teachers' informatization of their teaching ability, namely the teachers' content knowledge, their pedagogy knowledge and their technical knowledge, which was the focus of this study. The last question (Item No. 41) was an open-ended question for any additional comments.

The questionnaire employed the Likert scale rating (1-5): each item was rated at a choice of five levels showing the level of agreement from the most to the least.

5 means "Strongly agree", 4 means "Agree", 3 means "Average", 2 means "Disagree", 1 means " Strongly disagree".

Due to the epidemic, the questionnaire was distributed electronically to teachers in 7 schools. WeChat Application was used to send the questionnaires to the respondents and collected them back. The questionnaire data with quantitative data were analyzed by using descriptive statistics in percentage, average/mean and standard deviation. The SPSS26.0 computer program was used to analyze the questionnaire data.

This part presents the analysis of the quantitative data from the 41 items questionnaire for the research the data were analyzed item by item from item 1 to 41.

Item 1 is gender. Look at the following table.

Table 4. Number and Percentage of Gender of the Participants

Gender	Number	Percentage (%)
Male	52	44.1
Female	66	55.9
Total	**118**	**1**

Item 1 the table above shows the number and percentage of gender of the participants in this study female with 66 female teachers (55.9%) and 52 male teachers (44.1%). The difference lies in 14 more female teachers (11.8%).

Item 2 is the grade do you teach. Look at the following table.

Table 5. Number and Percentage of "What grade do you teach" of the Participants

What grade do you teach	Number	Percentage (%)
Grade 1-3	28	23.7
Grade 4-6	34	28.8
Grade 7-9	33	27.1
Grade 10-12	23	19.4
Total	**118**	**1**

The table shows that although the number of TCSL teachers in different grades does not show a big difference, it can be assumed that the TCSL teachers are mainly concentrated in Grades 4-9 (67 teachers/55.9%) and 56 teachers (46.5%) taught in the secondary level.

Item 3 is the years of teaching experiences of the participants. Look at the following table.

Table 6. Number and Percentage of The Years of Teaching Experience of the Participants

Years of Teaching	Number	Percentage (%)
1 year	4	3.2
2 years	20	16.8
3 years	16	13.5
4 years	20	16.8
5 years	18	15.2
>5 years	40	33.8
Total	**118**	**1**

The table shows that the teaching experience of the teachers in the study is generally high, and more than 30% of them were senior teachers with more than 5 years of teaching experience. There were very few teachers who have just graduated not long ago. 4 teachers with 1 year of teaching experience (3.2%) and 20 teachers with 2 years of teaching experience (16.8%). The majority (94) were with 3 to more than 5 years' experience (79.3%).

Items 4-40. Look at the following table showing the mean scores and S.D. as well as the scores of each section.

Table 7. Informatization of the Chinese Language Teachers' Teaching Ability

Dimension	NO.	Questions	$\bar{X}$	S.D.	Inter pretation
Informatization of Chinese Language Teachers' Teaching Ability					
Content Knowledge	4	I know how to design an online course teaching Chinese with appropriate content.	4.68	0.52	Agree
	5	I know what type of content an online Chinese language course should have.	4.74	0.49	Agree
	6	I know what activities are appropriate for a Chinese online course.	4.71	0.50	Agree
	7	I have had regular training workshops on online Chinese language teaching.	4.70	0.55	Agree
	8	When I am not sure about any part of the course, I often consult my senior colleagues for advice.	4.74	0.46	Agree
	9	I always check with my network of friends to keep the content of my course update.	4.74	0.47	Agree
	10	I follow the curriculum requirement standards set by the Ministry of Education and the School.	4.81	0.42	Agree
	11	I believe a Chinese language course should integrate all the expected skills.	4.72	0.48	Agree
	12	My course content is geared towards communicative purposes.	4.76	0.46	Agree
Total $\bar{X}$:			**4.73**	**0.46**	
Pedagogy knowledge	13	I can design my online lessons to match the learning theories that are believed to enhance student learning (Constructivist Learning, Multiple Intelligences Theory, Project-based Education, etc.)	4.74	0.54	Agree
	14	I know how to teach Chinese language skills such as Listening, speaking, reading and writing for an online course.	4.79	0.45	Agree
	15	I am comfortable with online class management that is designed to support student-centered approach.	4.73	0.52	Agree
	16	I know how to design my online course which instill the 21st Century skills in my students.	4.71	0.49	Agree
	17	I can select online teaching strategies which are helpful to learning achievements.	4.76	0.46	Agree
	18	I can select the theories of teaching/learning which are helpful to learning achievements.	4.72	0.49	Agree
	19	I know how to assess students' Chinese language abilities through online channels.	4.66	0.56	Agree
	20	I am experienced in appropriate online	4.67	0.62	Agree

Dimension	NO.	Questions	$\bar{X}$	S.D.	Inter pretation
		language curriculum design.			
	21	I choose the teaching techniques that can attract my students' attention.	4.77	0.50	Agree
	22	I can prepare my own online lessons which are student- centered.	4.79	0.44	Agree
Total $\bar{X}$:			**4.71**	**0.53**	
Technical knowledge	23	I am confident of my IT skill in teaching an online course.	4.75	0.50	Agree
	24	I can communicate online through the Internet (E-mail, ZOOM, VOOV, etc.)	4.79	0.42	Agree
	25	I can skillfully use printers, digital cameras and scanners when I need them to support my teaching.	4.79	0.45	Agree
	26	I can use all Word Office programs: Word, Excel, Power Point, etc.) in my teaching.	4.74	0.45	Agree
	27	I know how to save data in various ways (Flash Drive, CD, DVD, My Drive, I-Cloud, etc.).	4.79	0.42	Agree
	28	I can switch back and forth among the social media available such as Facebook, Line, Messenger for my online communicative purposes.	4.78	0.45	Agree
	29	I feel comfortable giving individual students' consultation online.	4.82	0.39	Agree
	30	I can comfortably arrange an online meeting whenever I want to have class meetings with my students.	4.82	0.39	Agree
	31	I feel comfortable using the notebook or I-Pad or mobile phone in teaching online.	4.82	0.42	Agree
	32	I use different teaching methods for different expected learning outcomes (Blended Learning, Flipped Learning, Case Study, Problem Based Learning, Project based Learning etc.)	4.81	0.39	Agree
	33	I can develop online tests—classic Multiple-choice Test, True-False Test, Open-ended Essay Questions and use them online where appropriate.	4.78	0.43	Agree
	34	I choose the right online assessment techniques for my students.	4.80	0.40	Agree
	35	I am confident that my online assessment design gives accurate results.	4.75	0.46	Agree
	36	I can use multimedia technologies that are appropriate for the learning activities.	4.77	0.47	Agree
	37	I am able to put my students into online small groups to give them an opportunity to discuss with their group members.	4.81	0.41	Agree

Dimension	NO.	Questions	$\bar{X}$	S.D.	Inter pretation
	38	I understand the capabilities and limitations of the available technologies/platforms and infrastructure tools.	4.76	0.47	Agree
	39	I can select appropriate media for intended learning outcomes.	4.80	0.43	Agree
	40	I catch up with the latest updates of education technology and software.	4.74	0.48	Agree
Total $\bar{X}$:			**4.78**	**0.45**	

SPSS 25.0 software was used to conduct descriptive analysis. According to the average value of the analysis data, $\bar{X}$ the coefficient of variation is the discrete coefficient, and the calculation formula of the data is CV=E/$\bar{X}$ and E is the standard deviation (S.D.).

The average of Content Knowledge is 4.73, the average of Pedagogy knowledge is 4.71 and the average of technical knowledge is 4.78. As can be seen from the table, the Content Knowledge section (Items 4-12 had a mean score of 4.73 (S.D.= 0.53), while the Pedagogy Knowledge section scored an average of 4.71 (S.D.= 0.53) and the Technical Knowledge, a mean score of 4.78 (S.D. = 0.45). It is noticeable that the questionnaire respondents had a high level of informatization of the teaching ability. However. The highest mean score was in the Content Knowledge, followed by the Technical Knowledge. The lowest mean score of the three was in the Pedagogy Knowledge. Item 19 'I know how to assess students' Chinese language abilities through online channels got the lowest mean score of 4.66 (S.D.= 0.56). Another item from the Content Knowledge Section, Item 20 'I am experienced in appropriate online language curriculum design' was with the mean score of 4.67 (S.D.= 0.62). Item 4 I know how to design an online course teaching Chinese with appropriate content also got a lower mean score at 4.68 (S.D.= 0.52). This shows that probably the teachers in the study need to develop further in the areas of online an online course teaching, language curriculum design and assessment of students' Chinese language abilities through online channels.

Item 41 is an open-ended question for additional comments and remarks. There were no responses in this section.

To sum up, it is especially important for TCSL teachers to actively respond to the current new situations and requirements of the changing world that is moving rapidly into the digital age by constantly searching for appropriate and effective teaching models and improve their informatization teaching ability to cope with the new situations.

2.2 Qualitative Data Analysis: The Structured Interview

The teacher interview method mainly adopted the way of interview recording, combined with the author's questions and other forms to investigate and understand the in-depth reasons behind the current situation of information technology application ability as well as what they thought how they themselves and China would need to be prepared for.

Teachers with different backgrounds were selected as interviewees. Table 8 below shows the details of seven TCSL teachers with different years of teaching experience. They were 1 year (1 new teacher), 3 to 5 years (2 primary teachers), 7 to 10 years (2 advanced teachers), more than 15 years' experience (2 senior teachers). Because of the COVID-19 outbreak, all adopted the method of remote video phone calls. After that, the recorded interviews were transcribed into written scripts.

Table 8. Interviewees' Details

NO.	Name	Teaching Experience
1	A	1
2	B	4
3	C	4
4	D	7
5	E	8
6	F	17
7	G	20

Through the structured interview of the seven Chinese teachers, it was not difficult to find that the information teaching skills varied from person to person. Some teachers liked to study modern education information technology, and they used information technology more in the classroom, but there were prominent problems in the use. Some teachers might directly copy the knowledge from the book and made a simple courseware, while some teachers directly selected the online teaching resources or used the resources to teach in the classroom. During the epidemic period, teachers were busy with online teaching platforms at the beginning, but later became proficient in using them. However, to integrate technology and teaching, strengthening learning needed to be continued. Before the outbreak, several teachers interviewed felt their information ability was good, but they needed to continue to learn the real application technology. Besides, some students' courses were relatively heavy. In addition to the usual classroom teaching, the teachers also needed to finish other work assigned by the school, Teachers used the most information for multimedia courseware production. Some even directly downloaded the courseware on the Internet, slightly modified it for their classroom use, or directly applied it as appropriate. However, some teachers pointed out that in online teaching, they learned methods not used in offline courses, such as the collection of student homework, which used to be paper but now when it was electronic, the platform would automatically count the submission rate and completion of homework.

Therefore, after the development of online teaching, the old paradigm of teaching was still continued; thus, affecting the lesson quality. Some teachers reported that teachers could not learn the actual content in the information technology training workshops, most of which focused on theoretical knowledge, but the practical practice input was not enough. The interviewees voiced that relevant departments could strengthen targeted training to meet the teachers' difficulties in online teaching.

Teacher E mentioned that English teachers' participation in the teaching skills competition was generally not high. In 2020, Miya City held the English teaching skills competition, and few teachers participated in the event. Schools and education authorities also paid little attention to it. From the interviews with the teachers, it is found that teachers' informatization teaching ability was still at the level of simple basic applications, which was far below the innovation goal of the country. Therefore, it is urgent to improve the informatization teaching ability of TCSL teachers in a possible way be they policy guidance, school support, or continuous empowerment of teachers.

The following section revealed the data collected from the interviews of the

seven teachers. In this study, "Needs" means what the teachers cannot effectively do now in order to deliver their online teaching well, which will result in better student learning. Needs are seen as something lacking and immediate (Tang,2018). "Challenges" means the areas of urgent development for the teachers to cope with online teaching and learning in the digital world. Challenges are seen as something that the future world will bring, a lot of which is caused by changes in the way teaching and learning should be approached in the new scenarios of the increasingly digital world (Hu,2018). Look at the following figures that reveal the data analyses from the questionnaire and the structured interview.

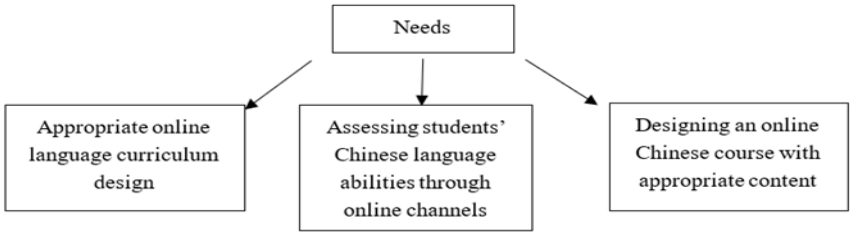

Figure 2. Needs from the Data Analysis

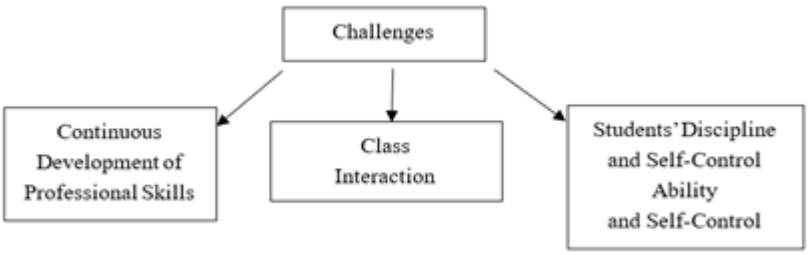

Figure 3. Challenges from the Data Analysis

To sum up, it is especially important for TCSL teachers must actively respond to the current new teaching model and improve their informatization teaching ability in the new situation. Analyzed from the national policy level, the country is also increasing its efforts to promote education informatization, and education informatization supports leading education modernization. The outbreak of this epidemic is also a catalyst to promote education technology informatization, so the policy support from the state is very important. From the school level, after the test of this epidemic, the informatization work implemented in schools in recent years has been effective, but there are still some shortcomings that put forward new scenarios and requirements for schools. Analyzed at the individual teacher level, it can be seen that teachers are more aware in the face of information technology, and although their attitude towards the use of modern technology is positive, there is a clear phenomenon of anxiety. Teachers' informatization level still needs to be improved. Even though it is easier to obtain massive data, how to make the selection of resources and apply them to classroom teaching is still an urgent problem for TCSL teachers.

Results

Responses to Research Q1

1) What are the needs and challenges for informatization of the teaching ability of TCSL teachers in Miya City?

The findings are based on the Five Likert Scale questionnaire and the 7-question structured interview. As Yan (2020) pointed

out teachers of Chinese as a Second Language should constantly improve their own theoretical literacy and professional ability, and closely integrate information technology and education and teaching with the new requirements of the current situation for education and teaching. The current new situation of education has broken the limitation of time and space and greatly improved the level of education and teaching effect. At the same time, the new situation presents new challenges to teachers from the aspects of education concept, teaching ability and learning ability. The educational information age urgently requires teachers to improve their theoretical literacy and professional ability in an all-round way.

Responses to Research Q2

2) What are the factors that support or obstruct these teachers in their technology-integrated teaching approach?

The findings are based on the questionnaire and the structured interview. In other words, it is to explore the challenges faced by the teachers when they need to teach online lessons. The teachers in the study realized what their strengths and weaknesses were.

Continuous learning to improve information literacy and adapt to the requirements of modern society. Whether young teachers or senior teachers, they should look at new things with an accepting and supportive attitude, establish the concept of lifelong learning, actively respond to the school's call for information technology training, learn about information technology and be good at applying technology to actual education and teaching, and finally achieve the desired teaching effect (Fang, 2010).

Improvement of the informatization of the teaching quality and how to attract the students to learn in online classes will be major challenges of the future. Teachers should first enrich their knowledge level, study more, and make their knowledge level have certain breadth and depth (Gai, 2020). In addition, teachers can innovate in the content of lectures, determine the form of lectures and assessments independently, adopt the right teaching methods, enhance the interaction with students, and focus on the feedback of information in the process of knowledge transfer (Feng, 2018). Only when the quality of teaching is improved and students are motivated to learn, students will have the will and interest to learn, so that teaching resources will not be wasted and the role of teachers will be fully reflected. In other words, both the teachers and students must learn to become lifelong learners.

The development and production of teaching software to provide teaching resources for the are also significant. To make teachers use modern education technology in teaching, there must be sufficient supporting software (Gao, 2018). The teaching software developed by computer companies or computer professionals, some of which do not conform to the laws of teaching, cannot be closely integrated with the textbooks and syllabus of various subjects, and are not effective in actual use. Therefore, a team of software experts, teachers with rich teaching experience and educational technology experts should be formed to research and develop teaching software, so as to produce high-quality and efficient software for teachers to use. Teachers of various subjects can also use simple small software to create teaching resources to explain the important and difficult points in teaching (Gina, 2020).

4. Discussion and Conclusion

Based on the findings of the study, a few significant issues need our closest attention. The integration of information technology into teaching has become a

problem that teachers in all fields cannot ignore. Information-based teaching refers to the bilateral activities carried out by educators and learners with the help of modern educational media, educational information resources and methods (Gu, 2008). Firstly, Information-based teaching ability is the comprehensive ability to utilize information resources, engage in teaching activities and complete teaching tasks for the purpose of promoting students' development. Secondly, the most important essence of information-based teaching ability is the teaching quality of teachers in the information technology environment. The implementation of information teaching is not only related to equipment, but also affected by many related factors (Han, 2020).

Equipment and Teaching Materials for Online Teaching and Learning

Online teaching needs digital hardware and software resources. "If a worker wants to do a good job, he must first sharpen his tools." The first necessary factor to carry out information teaching is hardware resources, that is, to have the support of equipment (Herbert, 2018). The realization of teachers' teaching concept will be affected by the degree of technical equipment support. Software resources are also essential support. Good teaching materials are also very important for teachers to implement information teaching. In the selection of materials, some teachers attach importance to students' comprehensive ability of analysis and thinking, some attach importance to the application closely connected with students' real life to solve the problems encountered by students, and some emphasize rich multimedia interaction to improve their interest in learning (Hou, 2019). Although the starting point is different, the intention of incorporating useful information into teaching materials is the same.

Policy Support

In addition to the support of hardware and software, the successful implementation of information-based teaching is also related to the support of many policies. In addition to providing excellent equipment, schools should also provide financial support, skill training, classroom assistance, after-class consultation and other supports (Hu, 2020). Through these effective supports, teachers can learn how to carry out information-based teaching. The promotion of administrative system with relevant policies will affect teachers' willingness to integrate information technology into teaching and reduce the difficulty of integrating information technology into teaching.

Colleague Support

Although peer support is not a necessary condition for teachers to integrate information technology into teaching, if there is sufficient help from colleagues, it will be of great benefit to teachers, whether it is to make teaching materials or share experience (Huang, 2020). On the contrary, if some colleagues do not support or even oppose it, it will have a negative impact on teachers' integration of information technology into teaching.

Technical Personnel Support

When teachers use information technology, they need the assistance of people with information technology ability to reduce the barriers to use. If there are full-time personnel to provide technical support, including equipment maintenance and technical consultation, it will help to improve the enthusiasm of teachers to carry out information teaching (Hui, 2019).

However, the teachers do need to be lifelong learners and are willing to improve

themselves, especially during the age where there are more requirements for the teachers.

Individual Aspiration

Many teachers with strong information-based teaching ability still make unremitting efforts despite the lack of school policy planning, funds and support from colleagues, just because the teachers themselves have a strong will. When teachers are willing to change the status quo, either voluntarily or under pressure, they are more likely to accept information technology. If teachers believe that it is necessary to use information technology to improve teaching quality, they will adopt a positive attitude towards the use of information technology and enhance their personal willingness to carry out information teaching.

Confidence in Information Technology

If the teacher thinks that information technology is controllable or can use it to do whatever he wants, the teacher will be more willing to use it. Teachers who have confidence in the integration of information technology into teaching will be more confident and have a sense of achievement because of their successful experience in the integration of information technology (Ji, 2017).

Professional Development

Innovation in information technology requires unique professional development needs. Therefore, teacher professional development is at the core of sustaining innovation. There are many ways for teacher professional development, from traditional seminars to non-traditional professional learning opportunities such as professional development, school-based training, and self-study (Li, 2015). When teachers acquire sufficient ability from these professional development approaches, they cannot only help teachers find effective ways to integrate information technology into teaching, improve students' learning results, but also enhance teachers' teaching ability of information technology and consolidate their confidence in integrating information technology into teaching (Li, 2020).

Advice for schools

Firstly, supports "hardware". Schools should try their best to provide a good hardware environment. The development of teachers' information-based teaching ability cannot be achieved without the support of good hardware and software conditions. A good hardware environment is one of the necessary conditions to ensure the professional development of teachers. On the one hand, teachers need good information technology environment support in teaching practice; on the other hand, teachers need to use hardware and network environment to develop or share teaching resources when carrying out information teaching. secondly, "software" security. Schools should formulate relevant policies to provide "software" guarantee for teachers to actively carry out information-based teaching. Firstly, formulate a series of policies to encourage teachers to carry out information-based teaching. Secondly, according to the actual needs of teachers, strengthen teacher training and innovate the training mode. Thirdly, it is equipped with corresponding technical personnel to provide timely help for teachers in the process of carrying out information-based teaching.

Promote the informatization teaching ability is one of the important tasks of school information construction work, several factors affect the informatization teaching ability of the teachers and after all, schools can play a big role in developing it for their teachers.

References

Aisha Garba Habib. *Strengthening the Human Capacity of the Muslim Youth through the MakarantarAllo (Elementary Stage of Islamic Education) for Self-Reliance, Poverty Alleviation and National Development [J]. Journal of Emerging Trends in Educational Research and Policy Studies*,2015, 6(7), 249-253.

Aishatu Ibrahim Gamaw.*Yuebo County the Role of Home Economics Education in Alleviating Poverty for Sustainable Development and Human Capacity Building in Nigeria [J]. Journal of Emerging Trends in Educational Research and Policy Studies,* 2015, 6(7), 325-330.

Angeli C., & Valanides N, *Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). Computers and Education,*2009(52), 154–168.

Angeli, C.& Valanides, N. *(2009). Epistemological and Methodological Issues for the Conceptualization, Development, and Assessment of ICT-TPACK: Advances in Technological Pedagogical Content Knowledge (TPACK). Computers & Education*, 52 (1), 154-168.

Bai Wenhui. *(2019) Practical exploration of social work intervention in the education of rural left behind children (Master's thesis, Shanxi Medical University).*

BAŞARAN, Bülent. *Examining Preservice Teachers' TPACK-21 Efficacies with Clustering Analysis in Terms of Certain Variables. Malaysian Online Journal of Educational Technology.*2020(8),

Bian Yan. *Evaluation and thinking of college students' online teaching effect under public health emergencies [J]. Journal of Higher Education,* 2020(27), 63.

C.Kuo, A.E.Walker, B.R.Belland, K.E.Schroder, *A predictive study of student satisfaction in online education programs[J]. International Review of Research in Open and Distance Learning*,2013(1), 16-39.

Cao Jianlei, Lu Bu, WANG Tingting. *Research on the influencing factors of college students' satisfaction with online learning under the background of COVID-19: A case study of "DingDing" [J]. Journal of Shijiazhuang University,* 2020(4), 71-78.

Chen Guanghan. (2019) *A study on the influencing factors of left behind children's academic achievement in poor areas of Hubei Province (Master's thesis, Jiangxi University of Finance and Economics).*

Chen Jingjing, Chen Lei. (2020). *A review of the Advantages and Disadvantages of online Teaching of Chinese language during COVID-19 [J]*. Teacher, 78-79.

Chen Wenwen, (2020), *Design of domain model for "China Profile" online course during COVID-19 [J]. International Research on Chinese Language Teaching.* 22.

Chen Yun, Xiao Zhiwei, Xu Yuezhen, et al. *Survey on online teaching satisfaction and related factors of undergraduate nursing students during the epidemic period [J]. Health Vocational Education,* 2020(24), 132-134.

Cui Xiliang, (2020), *Chinese Language Teaching in the Context of Global Public Health Emergencies [J]. World Chinese Language Teaching,* 291-299;

Deng Jianglou, Xiang Yunbo. *A multi-dimensional study on the online learning effect of middle school students during the epidemic based on 466 middle school students' satisfaction questionnaires. China Education Informatization,* 2020(24), 22-27.

Fan Zhenggen, Huang Yalan, Zhao Qiong, et al. (2020) A Mixed study on College Students' Satisfaction with Online Learning during the Epidemic Period: from the perspective of Student participation theory. *Journal of Northwest Institute of Adult Education,* (5), 25

Gilis, A., Clement, M., & Laga, L. et al. (2008). ;Establishing a Competence Profile for the Role of Student-Centered Teachers in Higher Education in Belgium. *Research in Higher Education.*

Gina Santos,Carla Susana Marques,Elsa Justino,Luis Mendes. Understanding social responsibility's influence on service quality and student satisfaction in higher education. *Journal of Cleaner Production,*2020(256), 235-245.

Gu Linsheng, Han Min, Chen Zhifen. (2008). Study on current situation of public safety education in China.*China Emergency Management,* (10), 32-37.

Han Xinnan, Chen Jiaer, Yu Lanting. (2020). Online Teaching of Chinese as a foreign language during epidemic. *Literature Education* (I), 164-165.

Hu Jingyu. (2020). Online HSK course construction under the guidance of "output-oriented Approach" -- A case study of Teaching practice in Yangtze Normal University during COVID-19 . *Journal of Multimedia and Network Teaching in China,*10(10), 137-138.

Hu XianQi. *(*2018).Safeguard measures and effectiveness analysis of online teaching in colleges and universities during the COVID-19 pandemic. *China Agricultural Education,* (2),

Huang Xing, Pan Xiaoyan, Li Menglu, et al. (2020). Investigation and analysis of students' satisfaction with online teaching during the prevention and control of COVID-19 epidemic. *China Higher Medical Education,* (7), 31-32.

Li Penghui. (2020). *Research on the participation of social enterprises in the education and welfare of rural left behind children (Master's thesis, Jilin University).*

Li Rong. (2020). Exploration and Practice of online Teaching Chinese as a foreign language in the context of COVID-19: A Case study of "Comprehensive Chinese" courses. *Journal of Shanxi University of Energy,*39-41.

Omoniyi, (2013), *M.B.I...* The role of education in poverty alleviation and Economic development: a theoretical perspective and counselling implications. *British Journal of Arts and Social Sciences,* 15(Ⅱ), 176-185.

Parker David L, De Rung Dale. (2019). Career readiness: Finding a place for health and safety education. *American journal of industrial medicine,* 62.

Yang Jing, Qiao junyang & Han Danhong. (2013). Analysis on the status quo of self-protection consciousness of left behind children -- Taking Jiusi Township and Lushui township of Laifeng County, Enshi Prefecture as examples *Journal of Hubei University of Economics (HUMANITIES AND SOCIAL SCIENCES) (10)*20, 21-36.