Research on Organization and Practice of Web-based Teaching and Learning in Chinese TVET Institutions under COVID-19

— A Case Study of Shenzhen Polytechnic

UNESCO UNEVOC Centre

Shenzhen Polytechnic, China

April 2020

Contents

1. Introduction

In response to the COVID-19 outbreak, the guidance and notices about web-based teaching and learning were issued in China. *The Guidance by the Office of the COVID-19 Work Leading Group under the Ministry of Education on the Organization and Management of Web-based Teaching and Learning in General Institutions of Higher Education During the Epidemic Prevention and Control Period* (Ref. No. : JGT [2020] No.2) was issued on February 4, 2020. It pointed out that, in order to help college students keep learning with classes suspended, web-based teaching and learning during epidemic prevention and control period should be implemented and ensured at higher education institutions with social participation and under the direction of government. The Department of Education in Guangdong Province, China issued the *Notice on Guaranteeing Proper Teaching Arrangements in Institutions of Higher Education and Secondary TVET Schools During the Epidemic Prevention and Control Period* (Ref. No.: YJFZ [2020] No.6) on February 4, 2020 and *the Notice on Guaranteeing Proper Arrangements of Web-based Teaching and Learning in Higher TVET Institutions During the Epidemic Prevention and Control Period* (Ref. No.:YJFZ [2020] No.43) on March 3, clearly stating the postponement of classroom teaching, the requirements for web-based teaching, and the enhancement of off-campus internship training and management, so as to ensure education provided in a stable and systematic manner.

In order to study the organization and practice of web-based teaching and learning in Chinese TVET institutions under COVID-19, Shenzhen Polytechnic(SZPT), one of the leading higher TVET institutions in China, was chosen as a case to explore how SZPT prepared, organized, operated and evaluated its web-based teaching and learning under COVID-19. In addition, the solutions, practices and experiences are analyzed from the case of SZPT.

2. Methodology

2.1 Research Aim

The COVID-19 outbreak has an unprecedented impact on the way people work, live and learn. This report aims to study the situation of web-based teaching and learning in TVET institutions in China under COVID-19, and to find out the solutions, such as programs, platforms, methodology, evaluation and experiences, which can be shared with the international TVET community.

2.2 Case Study

Case study is the main research method in this report. As the leading higher TVET institution in China and a UNESCO-UNEVOC Centre, Shenzhen Polytechnic organized web-based learning for its 23,601 full time students, and shared web-based courses to other TVET institutions in China and abroad. Therefore, studying SZPT s web-based teaching and learning system and platform operation helps to understand the organization and practice of web-based teaching and learning in Chinese TVET institutions under COVID-19.

In order to find out and provide SZPT s valuable solutions, practices and experiences for TVET institutions to develop their own web-based learning system and platform, the research questions for this case study include:

- How did SZPT organize web-based learning and ensure the education quality under COVID-19?
- Compared with the traditional face-to-face teaching and learning, what is the effect of the web-based teaching and learning?
- What can be learned and shared from SZPT s web-based teaching and learning case?

2.3 Data Collection

The research data of this report includes qualitative and quantitative data.

The qualitative data was collected to find out how SZPT prepared, organized and monitored its web-based teaching and learning. The sources of the qualitative data were from SZPT s internal documents, and SZPT s UNESCO UNEVOC Office, Academic Affairs Office and Quality Assurance Center worked together to collect SZPT s first-hand qualitative data, including summarizing working methods, experiences, problems and solution, etc.

Quantitative data was collected through a survey on the compared effects of the traditional education and web-based education. At the third week after the school starts, the Quality Assurance Center conducted a web-based teaching survey on students of Grades 2018 and 2019. A total of 15,604 questionnaires were distributed, and 13,559 were recovered, with a participation rate of 87.02%. The content of the questionnaire survey covers web-based teaching platforms, web-based teaching methods, learning effects, satisfaction over the learning, learning difficulties, suggestions, etc.

3. Findings

3.1 SZPTs Web -based Teaching and Learning Program Development

In order to fulfill the requirement set out in documents issued by provincial and municipal authorities, Shenzhen Polytechnic has developed the *SZPT Work Plan Against COVID-19* (Ref. No.: SZPT [2020] No.19), and set up a command committee for overall direction and control issues related to COVID-19 in SZPT.

Under the command committee, an office was set up, which consists of nine working teams, namely, the General Team, the Epidemic Prevention & Control Team, the Faculty Team, the Students Management Team, the Logistics Team, the Security Team, the Teaching Management Team, the Foreign Affairs Team and the Publicity Team. Specifically, the Teaching Management Team is responsible for formulating contingency plans for delaying the back-to-school time and temporary suspension of classroom teaching, adjusting schedules for course arrangement and college entrance examination, and coordinating teaching & learning and extra-curriculum activities for all students during the winter vacation and the period of classroom-teaching suspension, based on the requirements of the Provincial Department of Education, the Shenzhen Municipal Education Bureau, and the epidemic prevention and control work.

Combining with SZPT s strategic deployment for epidemic prevention and control, Academic Affairs Office of SZPT led the development of the *Shenzhen Polytechnic s Overall Emergency Plan for Teaching and Learning Organization under COVID-19*, which laid down specific requirements in various areas of teaching and learning during this period. The Academic Affairs Office is responsible for preparing teaching plans and coordinating the web-based course development and teaching arrangements; the Quality Assurance Center is responsible for teaching quality evaluation and teaching process inspection; the Information Center is responsible for course platform set-up, O&M and technical support; the departments/programs, including training centers in different schools, are responsible for managing their own teachers and curricula; teachers need to choose appropriate web-based teaching & learning methods and platforms, carry out web-based course development, improve course resources and carry out educational activities as required.

3.2 Preparation for Web-based Teaching and Learning

With the development of web-based courses, all teachers should be well prepared before the web-based teaching and learning starts, modify the syllabus, develop

teaching & learning schedules and learning assessment plans according to the course characteristics and online teaching requirements, select appropriate teaching platforms and teaching methods, and sort out and design the course resources.

3.2.1 Web-based Teaching and Learning Survey

The Academic Affairs Office undertook institutional inventory-finding work on web-based teaching and learning. A total of 1,142 valid questionnaires were collected, basically covering all courses in SZPT. According to the survey, 23% of SZPT s courses support web-based learning, which are mainly provided via teaching platforms such as Chaoxing Xuexitong, ICVE and Dascom; most teachers have provided strong support to web-based teaching and learning and put forward many feasible suggestions.
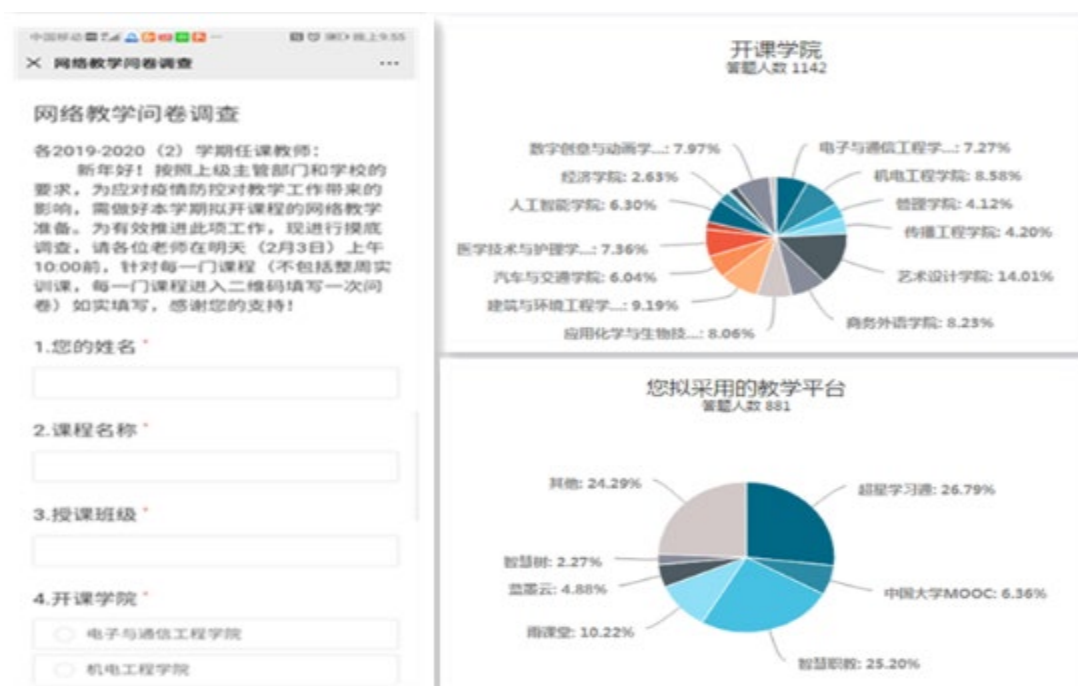

Fig. 1: Result of the survey on Shenzhen Polytechnic s web-based education

3.2.2 Analysis of the Students Feedback

The teachers in SZPT have made active efforts to collect students feedback on web-based learning. With the data from students, they made accurate analysis of students software and hardware conditions for web-based learning, their desired teaching

methods, and their suggestions for web-based teaching and learning. This analysis covered students feedback about more than 80% courses.

《计算机网络基础》网络教学情况调查表

同学们好！按学校要求，新学期我们的《计算机网络基础》课程教学将先采用网络教学的形式开展，等疫情结束大家正常返校后再逐步过渡到正常教学模式。为了更好地开展网络学习，请大家如实填写下面几个问卷问题，老师将根据大家的反馈及时调整网络教学方法。谢谢大家的支持！（任课教师：池瑞楠老师）

*1. 你目前所在的城市是

*2. 你所在的环境是否具有上网条件?
- 是
- 否

*3. 除了手机，你是否有可以进行网络学习的电脑?
- 是
- 否

*4. 你希望的网络教学是怎样的? 【多选题】
- 课堂直播
- 线上自学
- QQ、微信群讨论
- 其他

*5. 你对网络教学有什么好的建议和想法?

*6. 请选择你所在的班级
- 19云计算2班
- 19云计算3班

Fig. 2: Web-based teaching and learning questionnaire on the course of *Computer Network Fundamentals*

3.2.3 Revision of Teaching Documents

Teachers revised the existing curricula to adapt them to the web-based teaching and learning. To be specific, they need to make overall planning and adjust the instructional design based on the curriculum characteristics, and strategically reconstruct and

combine curriculum knowledge points and skills. Projects that can be completed only in practical training workshops should be completed through the network in the form of simulation and VR to the extent possible.

The teaching contents and duration of web-based courses (before students are back to the college campus) and offline courses (after students are back to school) should be re-planned according to the newly revised curricula. Theoretical teaching should be conducted ahead of time, while the actual operation will be postponed until the students return to school. The teaching schedule should be coordinated in a scientific way.

A plan for assessing the students web-based learning should be available. Students web-based class performance, engagement, completion of exercises, and performance in non-physical works and project design are subject to assessment. In principle, the web-based learning assessment requirements should not be lower than the former requirements when students learn at classrooms. Teachers should keep the assessment-supporting materials such as formative assessment data, photos and documents downloaded from the web-based teaching and learning platform.

3.2.4 Preparation of Teaching Resources

During the epidemic period, China makes sure all quality web-based courses and virtual simulation experimental teaching resources are open to higher education institutions nationwide for free. As of February 2, 2020, with the instructions from the Ministry of Education, there are 22 web-based course platforms that have developed diversified web-based teaching solutions and provided free access to 1,291 national quality web-based courses and over 24,000 web-based courses including 401 national virtual simulation experimental courses, covering 12 disciplines and 18 majors in higher TVET institutions.

In the meantime, with the "National Excellent Web-based Open Courses" and the national professional teaching resource database taking the demonstration effect, the national virtual simulation experimental teaching platform has also been open to all the TVET institutions in China for free, providing web-based teaching services and web-based experimental teaching support.

SZPT requires teachers to build on the foundation of curricula development and prepare at least eight weeks of teaching resources that fit in with web-based teaching & learning. Teachers need to update syllabus, teaching schedule, assessment plan and learning guidelines according to the course characteristics and web-based teaching and learning requirements, and guide students on how to participate in web-based learning in a vivid way.
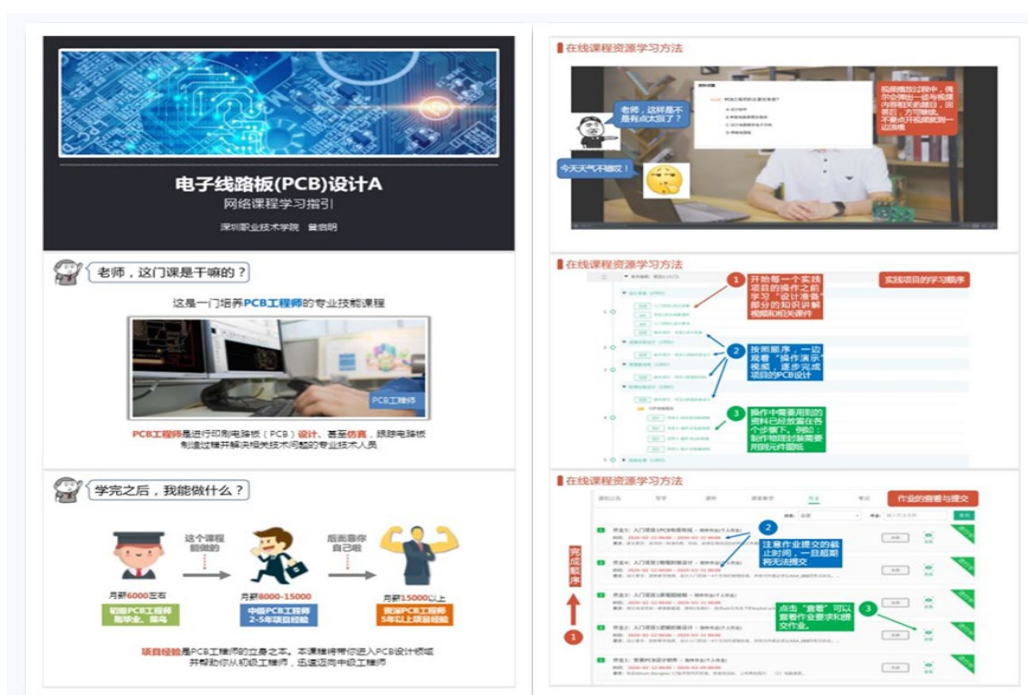

Fig. 3: Examples of training on how to learn web-based courses

3.2.5 Training and Support on Web-based Teaching Skills

SZPT has issued the *Notice on Faculty Training for Knowledge and Skills Against COVID-19,* aiming to further ensure that the faculty understand the laws and regulations

related to the prevention and control of the infectious disease, enabling them to obtain the basic knowledge, daily prevention and control skills and emergency measures in relation to COVID-19.

To address the teachers concerns about the use of the teaching platform, SZPT s Education Information Center has set up a web-based teaching supporting team, organizing experts to provide live broadcasts as a powerful technical support to the web-based teaching. As for the commonly used teaching platforms, WeChat/QQ groups was established, and dedicated technical staff are available to answer questions and provide guidance for web-based platform operation.

Fig. 4: Web-based training and support information for teachers

In addition, there have been nearly 10 sessions of training on the teaching platforms organized, under the support of cooperative institutions. Most teachers also participated in social-oriented training on various platforms, and more than 1, 000 teachers have signed up for the training. There has been an upsurge of discussions about web-based

course development and curriculum reforms throughout the institution.

Fig. 5: Live streaming training from the Professional Edition of Rain Classroom

Moreover, the Teacher Development Center in SZPT delivered quality web-based teaching and training courses to teachers to help them provide web-based teaching more effectively.

3.3   Concept, Structure and Characteristics of Web-based Teaching

and Learning

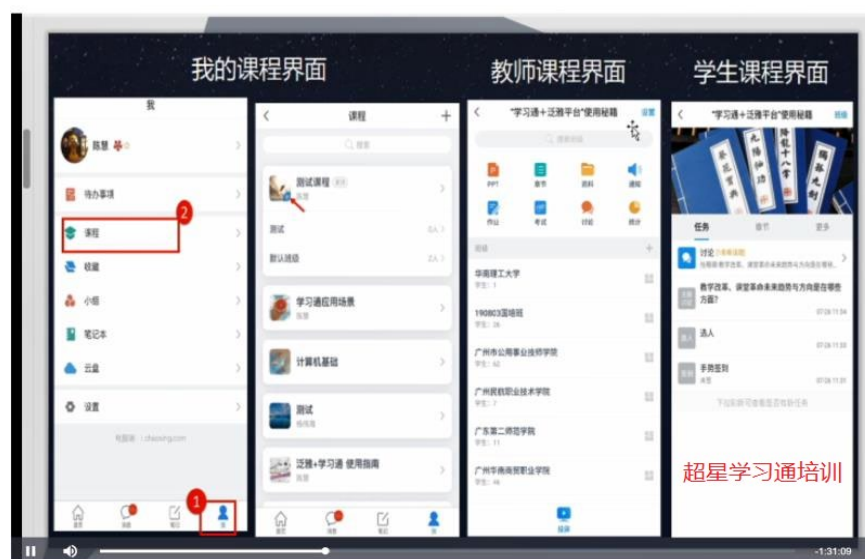To make the web-based teaching & learning as effective as offline teaching & learning in classrooms, the key to SZPT s web-based teaching and learning is to establish a student-centered educational philosophy: oriented to students learning outcomes, learning demands and learning abilities.

3.3.1 Concept and Principle of Web-based Teaching and Learning

Concept of web-based teaching and learning for SZPT: to make web-based learning as effective as traditional classroom teaching, the key is to establish a student-centered educational philosophy: centering around students learning outcomes, learning demands and learning abilities. Interaction and data collection are the two important tools to achieve positive learning outcomes. Using live streaming could provide high quality interaction between students and teachers. Collecting data through web-based learning platform is a technical tool to access their learning outcomes.

Principle of web-based teaching and learning for SZPT: during the epidemic period, the school must make sure that "students continue to receive quality education", and that the web-based teaching is as effective as the offline education.

3.3.2 Three Pillars of Web-based Education

The large-scale, real-time and interactive online teaching is built on three pillars: information transmission, learning feedback and knowledge co-creation.

Pillar 1: Information transmission is to convert knowledge and information from the teacher s knowledge base into language, which is finally received by students through their ears or eyes in a specific way. There are a variety of tools to transmit information, like different live streaming platforms, online teaching platforms, and Rain Classroom.

Pillar 2: Learning feedback refers to teachers real-time understanding of students learning effect. Learning feedback tools include voice feedback (online teaching platform), text feedback (live streaming platform, conference system, Rain Classroom) and data feedback (Rain Classroom, learning management system).

Pillar 3: Knowledge co-creation means that teachers and students set up a learning community in web-based education and create knowledge together. There are only a handful of tools for knowledge co-creation, mainly including the screen annotation function of network conference and the group discussion of network conference.

3.3.3 Three Characteristics of Web-based Education

"Fragmented", "Interactive" and "Refined" are the three elements that characterize web-based teaching and learning design.

"Fragmented": Lack of physical communication would make teachers speech less impressive, and a 50-minute class time seems too long for teachers to achieve the same teaching quality. That s why a lesson must be fragmented into 2 or 3 parts.

"Interactive": Students are more likely to be distracted when they receiving education from the Internet in their private spaces. Therefore, in each section of teaching, interactive activities more diversified than person-to-person lecturing in the classroom must be designed to get their attention back to the teaching.

"Refined": There should be a moderate shrinkage in the course contents. Teachers need to refine the teaching design, sort out the difficult points, key points and logical sequence of the course content, and provide specific guidance for students effective learning outside the class to ensure that the learning effect is the same as that in the classroom.

3.4   Choice for Web-based Teaching Patterns and Platforms

Web-based Teaching Patterns: Our teachers mainly adopt "Web-based Course", "Live Class" or a combination of the two to carry out web-based teaching.

Web-based Teaching Patterns and Related Platforms:

(1) Courses such as quality open/quality web-based open/MOOC that have been completed at school level and above are provided by means of "Web-based Course". Teachers will upload teaching materials to the teaching platform in advance, formulate a learning plan, and guide students to conduct web-based independent learning according to the teaching plan. Available teaching platforms include Chaoxing Xuexitong, Rain Classroom, ICVE, China University MOOC, Mosoteach, etc.

(2) Courses that lack web-based teaching materials and cannot be fully studied online will be conducted in the form of "Web-based Self-study + Live Class". Live Class can be performed via video or via "PPT + Voice + Whiteboard", and can be played back. Teachers prepare web-based teaching materials (including teaching videos, PPT, exercises, etc.) in advance, formulate the teaching plan and carry out web-based teaching on time. The live streaming platforms that can be used include Tencent Classroom, Dingtalk, QQ Group Classroom, etc.

(3) The "Web-based Class+ Live Class" can also be used to provide web-based education. As there are rich learning resources, multiple teaching functions and the easy access to course recordings on the web-based teaching platform, teachers can make use of different teaching aids while leverage the strengths of the live class with real-time and interactive features.

3.5   Web-based Teaching and Learning Methods

Unlike traditional face-to-face teaching, web-based teaching and learning makes it impossible for teachers and students to communicate person to person. That is why it is particularly important to adjust the teaching and learning methods to make sure web-

based learning and offline learning are of the same quality. To this end, SZPT decided to combine the Web-based self-study and Live Class to provide web-based teaching and learning.

Web-based teaching methods:

Before the class, teachers would upload the prepared learning resources such as videos, courseware, related materials and learning task list onto the web-based platform, or send them to students through the QQ group. Students will complete independently the relevant tasks according to the task list prepared by teachers. Teachers may answer the questions encountered by students in learning on the platforms or through the QQ group. Many learning platforms also provide data about students learning progress for teachers reference.

During the class, teachers will analyze and explain the frequent asked questions and help with difficulties encountered by students in the process of their learning before the class. Under the guidance of teachers, students discuss and practice on key contents, and start inquiry-based learning. Teachers and students conclude the results of the learning together.

After the class, teachers upload homework and tests on the learning platform or QQ group, and students use these learning resources to consolidate the knowledge they have learned and provide assessment feedback. Teachers collect students learning data on the platform and analyze the data to set out teaching improvement measures for optimizing the teaching design and improving the leatning oucomes.

Web-based learning methods:

In the process of web-based learning, students self-study plays a very important role in achieving the learning effect. Therefore, students must first plan what they need to do and arrange their learning time reasonably; second, they should carefully select and

make full use of various quality course resources and network resources recommended by the national and provincial education departments and teachers, and spend more time for independent learning; third, they need to figure out what problems to solve in the class, actively participate in learning interactions and express their ideas, and communicate with teachers and classmates through web-based platforms and instant communication tools after class to achieve further progress.

3.6 Web-based Teaching and Learning Supervision and Evaluation

3.6.1 Development of the Supervision Plan and Evaluation Indicators

Based on the method and characteristics of web-based teaching and learning, SZPT has formulated the *SZPT s Web-based Teaching and Learning Supervision Plan During the COVID-19 Period* and the *SZPT s Emergency Teaching Effect Guarantee Plan During the COVID-19 Period* and developed the *Teaching Quality Evaluation of Teachers in Web-based Teaching and Learning* and *Checklist for Providing Web-based Courses* to specify the supervision indicators of web-based teaching and learning. These documents are of guiding significance for the SZPT faculty to ensure the web-based teaching and learning quality and the web-based supervision quality during the epidemic period.

3.6.2 Implementation of Full-process Supervision

Before the class, the supervisors start to check the basic information about the web-based teaching and learning platform, check the teaching materials including the syllabus, teaching schedules and teaching plans submitted by all schools for the first two teaching weeks, and record the web-based course hours so as to supervise the teaching status later on, in which their supervision covers teaching organization, video courseware, teacher-student interaction, assignments and teachers' feedback. After class, they would have communication with teachers and provide the instruction on

relevant issues via WeChat or phone call, or communicate when conducting investigation into the web-based teaching.

3.6.3 Feedbacks on Teaching Performance via the *Web-Based Teaching and Learning Weekly*

During web-based education, SZPT releases the ***Web-Based Teaching and Learning Weekly***, which includes data analysis of students' use of the web-based teaching and learning platform, sharing of excellent teaching cases, network class inspection and management experience, supervisors' course evaluation report, release of the web-based learning questionnaire results from students, recommendation of articles written to improve teachers' web-based teaching skills and sharing of network training courses.

Through issuing the ***Web-Based Teaching and Learning Weekly***, the schools and teachers can not only be timely kept informed of students' learning status and other teachers' web-based teaching and learning methods, but also obtain supervisors' evaluation feedback, which will help continuously improve the web-based teaching skills and methods.

3.6.4 Assessment of Students Performance in Web-based Learning

In assessing students performance in web-based learning, in addition to the traditional periodic tests, more emphasis is placed on the assessment in the learning process. Students' attendance, online engagement, completion of assignments and web-based class performance are all important indicators of their web-based learning outcomes.

In addition, the transition from web-based teaching to offline teaching after the epidemic period also needs to be taken into consideration. It is recommended that a period test could be conducted when students return to campus classroom to know about their learning effect

in the web-based teaching and learning stage.

For example, we have set the following score ratio for the formative assessment of the course *Network Operating System (Linux)* (60% of the total score):

1. Attendance: 10% of total score. In the web-based teaching and learning stage, teachers can use the web-based sign-in data to record student attendance, and the relevant data is retained on Rain Classroom.

2. Online engagement: 20% of total score. This is to examine how active and devoted students are when they study online, and the assessment is done by using indicators such as score for completion before class, classroom quiz score, after-class questionnaire and discussion completion status. The relevant data about students' online engagement is retained on Rain Classroom.

3. Completion of assignments: 20% of total score. This is to examine students' mastery of the learning contents, and the assessment is done by checking the completion of 8 to 10 assignments.

4. Class performance: 10% of total score. This is to examine students' involvement in the class, and the assessment is done by using indicators such as questions answering and frequencies of interactions. The relevant data on Rain Classroom may be used for reference.

3.7   Web-based Teaching and Learning Quality

Since the launch of web-based teaching and learning, SZPT collects the platform data every week to analyze the teaching and learning outcomes for all courses, such as the visits, the number of courses, real-time live classes, radar charts of teaching activities, and the proportion of resources developed by each school/department, and timely informs all departments and teachers of the teaching quality-related issues.
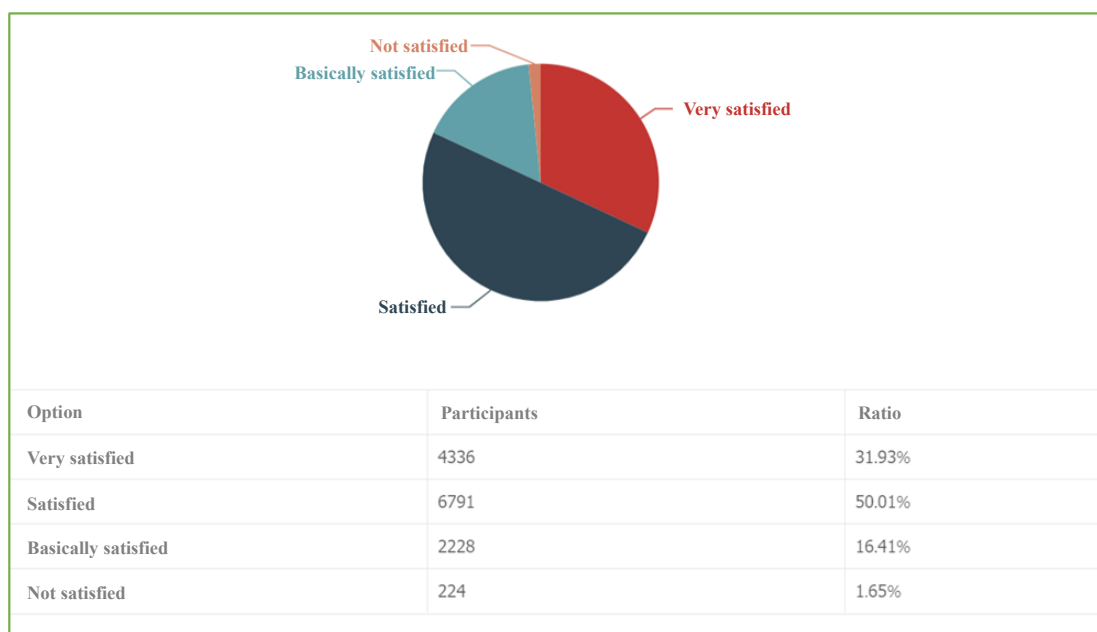
As for the overall quality, the web-based survey, which was conducted at the third week, found that 9.26% of students think that web-based teaching and learning is more effective than teaching and learning in classrooms; 24.65% think that it is equal to the teaching and learning in classroom; 25.90% think that "combination of the two would be better"; 36.70% think that it is less effective than the teaching and learning in classroom; and 3.5% think that it is not good and that self-study would be better. The main reasons include the lack of textbooks, fatigue from long-term web-based learning, etc.

Table 1: Web-based teaching and learning feedback

Option	Participants	Ratio
More effective than teaching and learning in classroom	1257	9.26%
Similar to teaching and learning in classroom	3347	24.65%
Less effective than teaching and learning in classroom	4983	36.70%
Combination of the two would be better	3517	25.90%
Not good, self-study would be better	475	3.50%
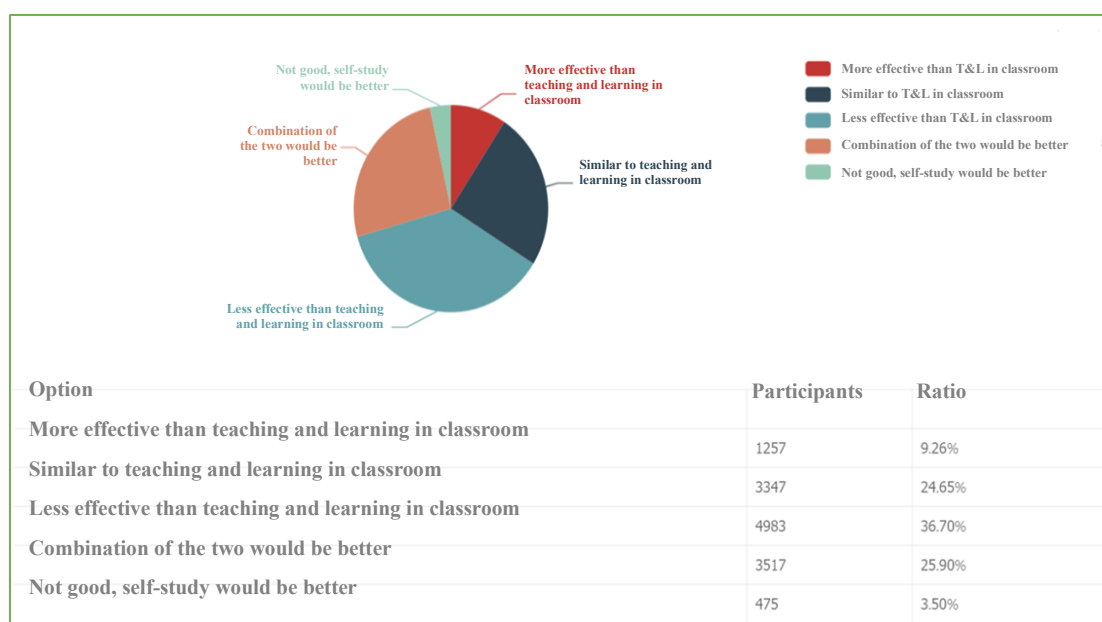
Results of the satisfaction survey of web-based teaching and learning are as below: 81.94% of the students are satisfied or very satisfied, 16.41% basically satisfied, and 1.65% not satisfied.

Table 2: Degree of satisfaction with web-based teaching and learning

Option	Participants	Ratio
Very satisfied	4336	31.93%
Satisfied	6791	50.01%
Basically satisfied	2228	16.41%
Not satisfied	224	1.65%

3.8 Web-based Education Resources Sharing with TVET Community

In this epidemic, in addition to providing web-based teaching and learning to its own students, SZPT also provides web-based course resources for students in higher TVET institutions nationwide and beyond through different teaching platforms.

3.8.1 Providing Teaching Resources for Domestic Institutions

SZPT hosted 3 national teaching and learning resource database, developed 12 national key programs, 53 national quality courses, and 43 national quality resource sharing courses. Students from 1,423 higher TVET institutions across the country can access relevant information through the Internet for study.

3.8.2 Sharing Web-based Education Resources with International TVET Communities

UNESCO statistics show that as of March 26, 2020 the epidemic has made 138 countries suspend school operation, affecting as many as 1.37 billion students and nearly 2 million teachers. UNESCO calls on the use of high-tech, low-tech and non-technical methods to help countries implement innovative distance education solutions that meet local conditions.

To actively respond to this global call and help schools in developing countries get out of the plight of education suspension, the International Centre For High Education Innovation under the auspices of UNESCO (Shenzhen, China), together with domestic and foreign universities and high-tech enterprises, officially launched the International Institute of Web-based Education (IIOE) in the Cloud in April, 2020. The project aims to increase access in developing countries to high-quality higher education and vocational skills online courses.

As one of the co-sponsors of IIOE, SZPT has provided seven English language education courses for the Institute, including HCIA-R&S (Huawei Certification Course HCIA-R&S), Electrical Engineering Technology and Training (Huawei Certification Course HCIA-R&S), 4G&5G Mobile Communication System, Cloud Service and Application, RedHat System Certification, HTML5 Development Foundation, and Introduction to AI Application, which are shared with international TVET communities, colleges and universities, and industry companies.

4. Analysis

During the class suspension period, SZPT has successfully launched web-based

teaching and learning to provide a platform for over 23,000 students to continue learning, and SZPT is also able to provide web-based learning resources for domestic and foreign higher TVET institutions students. The successful case of SZPT can be used as reference for domestic and foreign higher TVET institution.

4.1 The Institutional Web-based Teaching and Learning Plan is Essential for a Launch of Web-based Education

SZPT has taken quick actions and comprehensive deployment to ensure "uninterrupted education" during the epidemic period as required by the national government.

SZPT, within a short time, established a command committee to prevent and control the epidemic, set up different function teams, and developed a work plan for web-based teaching and learning. The work plan, with comprehensive consideration and meticulous division of functions, has provided guidance for launching web-based teaching and learning.

The epidemic outbreak has made web-based teaching a sudden and urgent task. However, SZPT, fully aware of the principle "sufficient preparation ensures work efficiency", has well prepared itself in the shortest time before starting web-based teaching and learning. All tasks like teaching survey, analysis of learning conditions, revision of syllabus, arrangement and preparation of teaching resources, and teacher training were completed quickly and orderly, which laid a good foundation for the web-based education.

Therefore, formulating a complete work plan and being well-prepared are essential for launching web-based teaching and learning.

4.2 The Regular Development of Web-based Teaching and Learning

Resources is an Important Basis for Web-based Teaching and Learning

China has previously mobilized excellent colleges and universities to develop quality programs and courses to build web-based teaching and learning resources, therefore SZPT can use the network courses already developed by itself and other institutions to quickly implement web-based teaching. That is the evidence of the importance of paying attention to the accumulation and development of web-based teaching and learning resources on a regular basis. SZPT will continue to develop web-based teaching and learning resources, so that students across the country and even the world can continue learning regardless of the time and geographical constraints.

4.3 Teachers Web -based Teaching Skills Training is a Necessary Condition for Promotion of Web-based Education

To ensure the success of web-based education during the epidemic period, SZPT and its schools organized web-based teaching skills training for all teachers. There are web-based training sessions provided for course design, characteristics and operations of different platforms, and methods for web-based education. Regarding the operation of the teaching platforms, SZPT has established WeChat/QQ groups and arranged special technical specialists to provide at any time tailored training and guidance on the platform operation, so as to ensure that all teachers are familiar with the web-based teaching and learning process and operation before the class and can solve problems in time during the class, and guarantee the operating efficiency and effectiveness of web-based education.

4.4 Web-based Platform Manuals Provides Basic Tools for Web-based Education Launch

The platforms are the most important infrastructure for web-based education. To

effectively promote web-based education, SZPT has prepared 21 web-based teaching platforms manuals which introduce the service items, operating characteristics and service contact information, and distributed them to various schools/departments. To increase the use of the web-based teaching and learning platforms, vivid and concise operation guides have been compiled to help teachers operate more easily. Serving as the basic tools for web-based education, the operation manuals have important practical value in preparing teachers for web-based teaching.

4.5 Web-based Teaching and Learning Quality Evaluation and Backwash Mechanism is Necessary to Ensure Equal Effectiveness

During the web-based teaching and learning period, SZPT attaches great importance to real-time supervision and feedback collection, and compiles the ***Web-based Teaching and Learning Weekly***. SZPT makes full use of the statistical functions and questionnaires of network platform to collect web-based teaching and learning feedback. Teaching supervisors actively participate in web-based lectures, give timely feedback and recommend excellent cases, so that teachers are enabled to improve their teaching in time. Data-based surveys and evaluations provide timely feedback and guidance for the web-based education, establishing a backwash mechanism that has played a positive role in promoting both web-based teaching and learning.

5. Conclusion

In response to the COVID-19 outbreak, TVET institutions in China have started to conduct web-based teaching and learning. Shenzhen Polytechnic, one of the leading higher TVET institutions in China, has developed its own web-based teaching and learning work plan and offered web-based courses for not only its own students but also students of other TVET institutions. In the case of Shenzhen Polytechnic, its preparation

of a web-based teaching and learning work plan, its training and guidance for teachers, its development and update of web-based teaching and learning resources, and its teaching & learning evaluation and quality assurance, are all verified to be feasible practices that could provide insight for peer TVET institutions in the global community.

6. Reference

Ministry of Education of P. R. China. *The Guidance by the Office of the COVID-19 Work Leading Group under the Ministry of Education on the Organization and Management of Online Teaching and Learning in General Institutions of Higher Education During the Epidemic Prevention and Control Period* (Ref. No. : JGT [2020] No.2) [Z] 2020-Feb.-04

The Department of Education of Guangdong Province of China. *Notice on Guaranteeing Proper Teaching Arrangements in Institutions of Higher Education and Secondary Vocational Schools During the Epidemic Prevention and Control Period* (Ref. No.: YJFZ [2020] No.6) [Z] 2020-Feb-04

The Department of Education of Guangdong Province of China. *Notice on Guaranteeing Proper Arrangements of Web-based Education in Vocational Colleges During the Epidemic Prevention and Control Period* (Ref. No.: YJFZ [2020] No.43) [Z] 2020-Mar.03

UNESCO-UNEVOC Centre, Shenzhen Polytechnic, China

Website: http://english.szpt.edu.cn

Address: Shenzhen Polytechnic, No.7098 Liuxian Avenue, Nanshan District, Shenzhen, P.R. China, 518055

Email: tvetsz@szpt.edu.cn

Tel: 86-755-26019814