

Chinese Language Teachers' Readiness for Online Teaching —The Case in Singapore Primary Schools

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Abstract—This study aimed to profile and examine Chinese Language (CL) teachers' readiness for online teaching with general platforms in Singapore primary schools. 577 CL teachers answered a questionnaire asking about their self-efficacy in Knowledge in Technological, Pedagogical, and Content (TPACK), their perceived support from schools and parent involvement in online teaching, their self-reported online teaching presences and their perceived difficulties and expected support for online teaching. Teachers were found to be confident in their TPACK in CL online teaching, hold positive feedback on school support and parent involvement, and were generally satisfied in their online teaching presence. The discrepancy between teachers' online teaching presence and their expected results was further discussed, along with the different needs of support for teachers teaching different levels.

Keywords—Chinese Language (CL), Knowledge in Technological, Pedagogical, and Content (TPACK), online teaching

I. INTRODUCTION

Online teaching and learning have been continuously promoted by the Ministry of Education (MOE) in Singapore as one of the necessities of the 21st century skills. As one of those efforts, the Student Learning Space (SLS), launched in May 2018, was expected to be a general online teaching and learning platform for Singapore students. Teachers from all subjects in Singapore schools could design online lessons and learning activities on this platform for their students to perform online learning after school. Training on the use of SLS was made compulsory for all the teachers in Singapore government schools right after its launch. The training of using this platform among Chinese Language (CL) teachers was ensured to reach each school by CL master teachers through national trainings and network group seminars.

It was, in fact, until the COVID-19 pandemic and the respective implementation of social distancing protocols (when schools were temporally closed to reduce infection), an instant transition from classroom teaching to online teaching was performed by teachers in Singapore. Handling changes overnight, teachers' readiness for online teaching remained understudied, especially for those who were teaching Chinese language subject in Singapore schools. Although, despite subject taught, teachers may exhibit similar readiness in mastering the general technology for online teaching, CL teachers experienced the lack of proper content and resource for online teaching in Singapore [1]. This study was designed accordingly to understand more about CL teachers' experience, feedback and reflection on their online teaching practice, especially during and after the pandemic. Given that teaching and learning online were made an essential component of curriculum after the pandemic (in the

form of Home-Based Learning (HBL)) in Singapore, implications from this study also indicated the possible future support required from CL teachers.

II. FRAMEWORK AND PREVIOUS LITERATURE

Teachers' readiness for online teaching and learning has been extensively discussed over years. Research focus was mainly on teachers' knowledge in Information and Communications Technology (ICT) and their skills to make meaningful use of the ICT tools in their subject teaching (i.e., their TPACK) [2]. As technology is developing rapidly, TPACK was also developed considering the context as the outer circle [3], in which, teachers are expected to be aware and be prepared for the advancement of ICT tools that may be possible to be included in the teaching practices.

Extending the awareness of context, in [4], teachers' readiness for online teaching was conceptualized as personal readiness and context readiness. Personal readiness includes teachers' perception of their readiness in the in technological, pedagogical, and content knowledge (i.e., TPACK) and their perceived online teaching presence. The context readiness refers to the various support from the schools, institutes and the community. School and institutional support reflects the readiness of the context in which online teaching and learning is implemented. This context may include the support structures, resources, and professional development opportunities [5]. One of the factors to be considered as community support is parents' involvement. Because young learners may rely on parents' help and guidance in accessing ICT devices for online learning [6].

We can further elaborate on the relations of the factors and the two aspects of teacher readiness as follows. Teachers' confidence (self-efficacy) in TPACK, especially the TPK component, was found to be closely related to their effective online teaching presence [7]. Among the aspects of teaching presence, teaching behaviors that related to feedback, clear instruction, and assessment were found to relate to teachers' high teaching presence in online teaching and learning settings [8].

As for context readiness, schools' technical and pedagogical support, the vision about online teaching, and strong leadership in implementing online teaching and learning plans were all found to be important components for effective online teaching practices for university lecturers [8, 9]. They were thus to be profiled from the teachers' point of view in our study as well.

Students' age, digital skills, computer access, the flexibility of learning modes, and home support are also key considerations for the implementation of online teaching and learning, especially for primary school students learning CL

as a second language in Singapore. Younger students are dependent on their parents when it comes to technology access [6]. Home language environment is another key factor for learning CL at home. Parental involvement is thus an important factor to effective online learning for primary school students. In our study, we examined how teachers communicated with the parents for effective CL learning management.

This study aimed to profile teachers' readiness for online teaching. Based on the previous literature, a framework in Fig. 1 was drawn to guide the analyses and discussions of this study. From four aspects, categorized under personal readiness and context readiness respectively, we want to know:

- A. How confident are teachers in their TPACK for online teaching?
- B. How do teachers perceive their online teaching presence?
- C. How do teachers perceive the support from schools and institutions?
- D. How do teachers perceive parents; involvement during online teaching and learning?

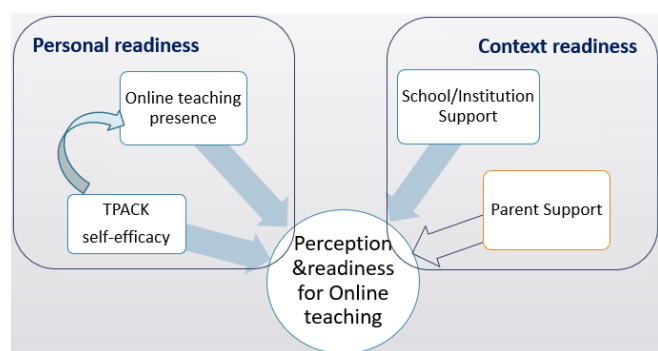


Fig. 1. Teachers' readiness for online teaching.

III. METHOD

A. Participants

A cluster sample of 577 Chinese Language teachers from 101 primary schools in different town areas in Singapore participated in the study. All of the participants received various trainings related to ICT assisted CL teaching recently, including the using of SLS to design CL learning activities and online lessons. Teachers answered an online questionnaire at their convenience.

About 23% (N = 132) of the participants were reported to teach lower levels primarily (P1 and P2), 29% (N = 170) were teaching middle levels (P3 and P4), and about 48% (N = 275) were teaching higher levels (P5 and P6) when completing the survey. Their answers to the survey items were based on their perception and experience of those specific levels.

B. Instrument

The survey questionnaire was adapted from previous studies [2, 7, 10]. The items were categorized into four aspects, asking about:

- 1) Teachers' perceived efficacy (or self-efficacy) in using ICT in CL teaching (10 items) [2, 7], which included
 - 3 items asking about teachers' Technology and Content Knowledge (TCK), e.g., "I am able to achieve the lessons' objectives in an online teaching environment."

- 4 items asking about teachers' Technology and Pedagogy Knowledge (TPK), e.g., "I am able to implement different teaching methods online" and
- 3 items asking about Teachers' Technology, Pedagogy, and Content Knowledge (TPACK), e.g., "I am able to use online assessment to understand students' learning and gaps."

2) Teachers' self-reported online teaching presence (21 items) [10] including

- 3 items asking about the Clarity of Instruction (ACT_CI), e.g., "I clearly taught important lesson contents with students."
- 7 items asking about the Cognitive Activation (ACT_CA), e.g., "I had encouraged my students to explore new concepts."
- 3 items asking about the Feedback and Assessment (ACT_FA), e.g., "I provided feedback that helped students to understand their learning gaps."
- 4 items asking about the Evaluation and Reflection (ACT_ER), e.g., "My students were actively engaged and completed the learning activities." and
- 4 items asking about ICT assisted teaching practice (ACT_ICT) e.g., "My students were provided multimedia lesson content from online platforms as the main learning resource".

3) Teachers' perceived support from schools or institutions on online teaching (4 items) (adapted from Scherer *et al.* [4] e.g., "My school had clear objectives as regards to online teaching."; and

4) Teachers' self-reported parent involvement (7 items) (adapted from [2]), e.g., "I had communicated with parents to supervise students in completing the learning activities on time".

Teachers were asked to rate each survey item/statement with a six-point Likert scale with the lowest point (=1) representing "strongly disagree" and the highest point (=6) representing "strongly agree". The internal consistency of the collected answers for all the measured factors is acceptable ($0.83 < \text{Cronbach's } \alpha < 0.91$).

Three sets of open-ended questions, 15 items in total, were asked for teachers to elaborate on the difficulties faced, gains revealed, and support needed in the aspects of teaching materials, activity designs, assessments, parent supports, and professional trainings for online teaching.

C. Data Processing

Full data was obtained from all of the participants for each of the survey questions (N = 577). Descriptive analyses (calculation of means and standard deviations) were performed for the averages of the items for each component with ratings. Group comparisons were performed on all the factors among groups of teaching levels (high, middle, and low) with the calculation of Cohen's d between groups. Correlation analysis was performed between teacher's self-efficacy of TPACK and their online teaching presence. Content analyses were performed after excluding the "nil" answers for the open-ended questions. Keywords were firstly identified and synthesized, with the most mentioned themes abstracted afterwords. Frequencies of the most mentioned three themes for each of the questions were calculated and analyzed both quantitatively and qualitatively.

IV. FINDINGS

A. Teachers' Self-Efficacy in TPACK

In general, teachers were very confident of teaching online. They were confident in presenting and teaching CL contents in the online environment (TCK, $M = 4.68$, $SD = 0.70$) and also confident in implementing various pedagogies in the online environment (TPK, $M = 4.32$, $SD = 0.73$). Although scored slightly lower, teachers were confident in conducting online teaching for CL course effectively (TPACK, $M = 4.29$, $SD = 0.79$).

No difference was found among the groups of teachers teaching different levels (lower, middle, and higher) in teachers' perceived TCK. But group differences were observed in teachers' perceived TPK and TPACK. Teachers teaching lower levels ($N = 132$) rated lower in their confidence in TPK (with small effect size, Cohen's $d = 0.24$) and in TPACK (with small effect size, Cohen's $d = 0.28$) than did those teaching higher levels ($N = 275$).

B. Online Teaching Presence

Teachers' online teaching presence was categorized into five components, namely, their practice in the Clarity of Instruction (ACT_CI), in the Cognitive Activation (ACT_CA), in the Feedback and Assessment (ACT_FA), in the Evaluation and Reflection (ACT_ER), and in the ICT assisted teaching (ACT_ICT). Generally, teachers were satisfied with their online teaching presence. The ratings in all of the five components were above the average score with small variation (see Table 1).

Table 1. Teachers' self-reported online teaching presence

Categories	Mean	SD	Effect size
			Cohen's d (H vs. L)
1 ACT_ER	4.11	0.77	-
2 ACT_CA	4.28	0.69	0.23
3 ACT_FA	4.32	0.73	0.40
4 ACT_ICT	4.38	0.71	0.31
5 ACT_CI	4.66	0.67	0.25

Group differences with small to medium effect sizes ($0.23 < d < 0.40$) were observed in four out of the five components. Teachers teaching lower levels rated lower in the Clarity of Instruction (ACT_CI), the Cognitive Activation (ACT_CA), the Feedback and Assessment (ACT_FA), and the ICT assisted teaching (ACT_ICT) than did their peers teaching the higher levels (see Table 1, the effect size column). For the Evaluation and reflection component (ACT_ER), its overall rating was slightly lower than the other components with very small group differences. This indicates that despite the levels taught, teachers are less satisfied in their teaching presence in the evaluation and reflection aspect.

Although group differences were found in the aspects of teaching presence, strong correlations between teachers' TPACK and teaching presence were found across the three groups. The correlation covariance is ranged from 0.45 to 0.72 with $p < 0.01$ for teachers teaching lower levels, from 0.44 to 0.73 with $p < 0.01$ for teachers teaching middle levels, and from 0.52 to 0.75 with $p < 0.01$ for teachers teaching higher levels. Findings in correlations from the survey

indicate that when teachers are more confident in teaching online, they are more satisfied about their online teaching presence, or vice versa.

C. Perceived School Support for Online Teaching

On average, teachers were satisfied in the support from schools or institutes for their online teaching ($M = 4.63$, $SD = 0.77$). This included supports in the administrative procedures as well as the professional trainings related to online teaching. No group difference was found in the perceived school support among the groups of teachers teaching different levels.

D. Parent involvement for online teaching and learning

Teachers reported relatively satisfactory communication with parents when performing online teaching and learning activities ($M = 4.34$, $SD = 0.83$). No group difference was found among the teaching levels in involving parents in communicating learning instructions, learning goals, supervising activities and providing feedback. However, group differences were found when teachers were asked if their students require parents' assistance in completing learning activities online. Teachers teaching higher levels were more confident in their students' online learning independently than did teachers teaching middle levels (Cohen's $d = 0.28$) and lower levels (Cohen's $d = 0.74$). In fact, teachers reported that, not only in the online environment, students in lower levels and middle levels rely more on parent's assistance in their offline learning (e.g., completing homework in hardcopies) as well, than did their peers in the higher levels (Cohen's d Mid = 0.28; Cohen's d Low = 0.50).

Both school support and parent involvement were closely correlated to the five aspects of teaching presence (correlate coefficient, $0.33 < r < 0.65$, $p < 0.01$).

E. Teachers' Perceived Difficulties, Gains, and Supports Needed for Online Teaching

When asked about the difficulties faced during online teaching, about half of the responses are "nil", which echoed the survey result that teachers are confident and satisfied about their online teaching in general. Among the other half, however, teachers reported difficulty in supervising and evaluating students' learning during online teaching.

Although generally satisfied about the communication with parents, about 63% of the teachers reported facing difficulty in involving parents in their children's online learning activities. Among the 63% cases ($N = 291$), the top reason ($N = 200$) is that most of the parents were too busy to help. The rest were found to be specific to CL course, that parents may have little knowledge of CL to help.

When asked about the gains during online teaching practices, teachers reported obtaining more knowledge and information about different teaching resources (40%) and online teaching platforms (20%). It is worth noting that teachers mentioned that preparing for online teaching together with their colleagues helped them a lot in familiarizing with the teaching platforms, designing learning activities, and developing various teaching materials.

The most required support for future online teaching were reported to be teaching resources. About 23% of the teachers reported difficulty in finding teaching resources that are suitable for their levels of students to learn CL online. 43%

teachers requested CL teaching resources, such as digitalized textbook and multimedia resource for them to better prepare an online lesson.

Although relatively confident and satisfied with the current online teaching, 42% of the teachers requested continuous professional training in online teaching, in order to be better prepared for future teaching practices.

It is interesting to find that although facing difficulty in supervising and evaluating students' online learning, teachers didn't expect much support in this area. 65% of the teachers gave "nil" response when asked about the support in the evaluation of online teaching and learning.

V. DISCUSSION

Our findings in teachers' TPACK confidence and reported teaching presence echoed findings from previous studies. We found group difference among teachers teaching different levels. For CL teachers in Singapore primary schools, the difficulties that teachers teaching lower levels encountered were also reported in previous studies from different angles. Firstly, younger children generally require parents' assistance in regulating their learning process, whether in physical class settings or online. Parents who have difficulty provide oral CL exposure to their children, may face greater challenge when they have to assist in CL homework. Secondly, most of the teachers teaching lower levels reported to be lack of suitable online learning resources, for example, audio and video clips to design oral language activities, local resources to teach Hanyu Pinyin, and activities to practice strokes for Chinese characters. Local resources, including the textbooks, for CL teaching in Singapore has been discussed in relation to the bilingualism. The diversity of children's CL abilities posted many problems for CL teachers. Lack of suitable resources that "fit all" was among them.

Lack of online resource was also reported by teachers teaching other levels. In fact, MOE has developed many resources for CL subject in SLS, but still, teachers expect more teaching resources that are suitable for targeted teaching and practice, such as resource specially for vocabulary training according to the curriculum, or materials for teaching writing online. Meanwhile, some teachers reported that they can find many resources on the internet, but except for deciding if the materials are suitable for their students, they have to be very careful about the copyright of these materials.

Teachers reported learning about the online teaching most effectively through peer discussion. Their required support from schools in the training of online teaching are more on the knowledge of the platforms, techniques and updates on the ICT forms. As for the trainings on designing activities with these ICT tools for their students, they believe more practice (of designing activities) for their own students is the key for improvement. Thus, some teachers proposed to make introduction videos of some platforms or the updates of their functions and resources on SLS, for teachers to update their knowledge about the techniques of online teaching. It is the two sides of a coin when an official platform unifies online teaching and learning. On the one side, ICT related teacher training on the use of the platform can be unified, more organized and efficient. On the other side, it is hard to fit for all, whether in terms of its affordance, or in terms of the resources it provides.

We found that teachers reported that it is very hard to involve parents in assisting online learning activities, yet they are satisfied with the communication with the parents on online learning activities. Further detail was extracted from several answers to the open-ended questions. We found that teachers and parents showed mutual understandings on students' online learning activities. On the one hand, parents expect details about their children's online learning tasks, so they can make proper arrangements. Teachers kept clear communication with parents by informing them the teaching and learning plans, task goals etc. On the other hand, teachers expect parents to provide suitable learning environment and support in using the learning devices, but they fully understand that some parents may have difficulty to provide expected support when they need to work from home, when their learning devices were not enough for all their kids to perform online learning at the same time, when they can't support CL subject, and etc.

Another finding partly explained teacher's vague expectation in the support in the effective evaluation on online learning. Some teachers reported that students tend to treat the online learning less seriously than learning in a face-to-face environment. This leads to the difficulty of understanding students' true learning results. Despite the immediate support in the technology for online evaluation, the acceptance of making online learning as a "normal" part of students' learning may be the first step to effective evaluation on online learning. Similar findings were observed in another study interviewing primary school teachers about their online teaching experience in Singapore. In [1], teachers reported worries about monitoring students' online learning process. It was argued that students' awareness of self-directed learning should be enhanced to coping with online learning. From our findings, we would also argue the enhancement in students' awareness of online learning as an inevitable learning mode that is changing our life.

VI. CONCLUSION

To conclude, this study examined CL teachers' readiness in online teaching from the personal and context readiness angles. Findings in this study showed that CL teachers in Singapore primary schools held both personal and context readiness in online teaching. Teachers teaching lower levels were found to be less confident in their online teaching presence than did their peers teaching higher levels. Although generally ready and satisfied with the current support for online teaching, teachers tended to ask for more teaching resources that are suitable for students' online learning of CL in specific levels. In terms of the training required on online teaching, teachers seemed to prefer introductions to affordances of different ICT tools.

Findings from our study complemented the findings in similar studies on the same population, which showed the complex nature of online teaching and learning. A common concern is the evaluation of the online learning result. Further exploration is required on this issue, either from the angle of students' self-direct learning skills or their readiness to accept the online learning mode as an inevitable part of their learning journey. Only teachers' self-reported perception, teaching presence and experiences were reported and analyzed in this study. Further information on teachers' actual teaching

practice could be collected from class observations and platform background data in future studies for a more comprehensive understanding in teachers' readiness for online teaching.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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