

HOW DOES EXPERIENCE OF ONLINE COLLABORATIVE LEARNING AFFECT THE VIEWS OF TRAINEE TEACHERS IN A CHINESE CONTEXT?

Man Lei¹, Jane Medwell² and David Wray³

¹*Foreign Languages College, Shanghai Normal University, Shanghai, P. R. China*

²*School of Education, University of Nottingham, Nottingham, UK*

³*Centre for Education Studies, University of Warwick, Coventry, UK*

Abstract

The Covid-19 crisis has forced swift changes in education worldwide, prominent among which has been the move towards online education. The challenge of this has not simply been in terms of delivery mechanisms for universities and teacher educators. It has also raised awareness of the need to prepare student teachers to work in complex settings and across many media. Online teaching is clearly not just face to face teaching delivered at a distance, but has brought with it the need for a sometimes profound shift in thinking about the purposes and nature of education.

In China, universities transferred teacher training exclusively to online teaching and mandated that teacher educators should acquaint student teachers with online learning and teaching as tools for use in their future careers as school teachers. In this context, the move to an online learning approach which emphasized collaboration between students, where it was not previously a major aspect of face to face teaching, may be having a significant impact on students. Online learning almost inevitably involves collaborative learning and it has been suggested that the move towards this may, in particular, have a lasting effect on teachers and students throughout the current decade. Little is known, however, about student teachers' views of online collaborative learning (OCL), in terms of its effectiveness as an approach and of the longer lasting impact it may have upon student teachers' views about teaching and learning.

In this qualitative study, we examined the views of 18 student teachers following their first experiences of OCL and explored the impact on them as learners and as future teachers. Experience of OCL had clearly impacted student teachers' views about their own learning, as well as developing their collaborative skills. It appeared also to have produced positive intentions to use OCL in future. These student teachers saw the experience of OCL as a vital part of their professional development, while recognizing the challenges it raised for them as future school teachers. This example from China identifies ways in which OCL can empower teachers and suggests that OCL can be a valuable teaching experience to shape trainee teachers' identities as learners and teachers.

Keywords: student teachers; Covid-19; online collaborative learning; teacher education; China.

1 INTRODUCTION

The Covid-19 crisis has brought rapid changes in education across the world, including a move towards online education which has challenged universities and teacher educators [1]. The situation has emphasised the need to prepare student teachers to work in complex settings and across many media [2] and it may well be that the move towards online learning may have longer lasting impact [3]. In China, universities have moved teacher training almost exclusively to on-line teaching and mandated that teacher educators acquaint students with online teaching and learning (MOE, 2019), effectively making this part of their training for teaching, as well as their personal learning. In this context, the move to an online learning approach emphasising collaboration between students, often not previously a major feature of face to face teaching, may be one of the biggest impacts of the move. This study tried to address the following research questions in order to begin to understand the impact of Online Collaborative Learning (OCL) on the next generation of educators in China:

1. How did a group of student teachers evaluate the collaboration in which they were asked to engage?
2. Did their experiences of OCL change these students' views about learning and their future teaching intentions?

3. To what extent did they see OCL as a desirable aspect of their future teaching?
4. What value for their future teaching did they recognise in their experiences of OCL?

1.1 Introducing peer collaboration into teacher training

As part of their four-year full-time Undergraduate Degree in primary English language education, 48 Year-2 student teachers followed a course covering language teaching theory and practice over two semesters:

Semester 1 involved weekly 90 minute, teacher-led face to face classes, followed by individual tasks, and two school visits.

Semester 2 moved to an OCL model of session participation demanding student collaboration. The student teachers watched online lectures then were divided into smaller group “rooms” to discuss the material with structured prompts and instructor interventions. They also met in online groups without the instructor, for collaborative product construction.

These two semesters each included the same amount of teaching time but the use of that time shifted from lectures to discussion and activities. As the subject of the course was teaching and learning, the students were strongly encouraged to discuss and reflect upon their own experiences as learners, focusing on the new learning approaches they were using.

1.2 Literature review

Online collaborative learning (OCL) is an established approach to distance education, in which participants work together to exchange ideas and opinions, to define and promote a shared understanding of specific topics, and to construct collaborative products [4]. It has been claimed [5], [6] that OCL not only promotes discussion and knowledge sharing, but is an effective way for learners to co-construct new knowledge and develop various skills. OCL is generally considered valuable [7], [4] because it promotes interaction between students and teacher and creates a sense of social presence which can be missing in distance learning experiences [8]. Studies have begun to explore the nature of interactions between students during OCL and how these help them to develop a sense of agency [9]. This is important, as the students in this study are not only learners, but future teachers. Studies of teacher training programmes in a number of countries [10] have found that teacher trainees in China tend to prefer passive modes of learning for themselves, perhaps because such modes demand less effort. But this form of instruction can create a theory-practice gap in their understanding of their roles as teachers. They may believe that engaging their own students in cooperative activities would challenge them more and improve their learning, but lack the experience of such activities in their own learning.

Experience of OCL may also help develop insights into teaching. It has been noted [11] that OCL can help learners understand the complexity of teaching in addition to enhancing their motivation and satisfaction. OCL can build a more practice-based learning environment for student teachers in which they learn from peers as well as their instructor, and this has been widely suggested as an effective way to train future teachers [12], [6]. Participation in an online collaborative course can change student teachers' views of learning, increase their knowledge of technology, and strengthen positive attitudes toward the use of technology generally [13], [4].

1.2.1 Online teaching during the Covid-19 school closure

As online instruction has replaced face-to-face lessons during the Covid-19 pandemic, there has been a great deal of advice, backed up by some emergent studies, to support this shift [3], [14]. In particular, there has been a focus on the role of the instructor in responding to students and creating a community amongst learners, to ameliorate the loneliness of distance learning [15]. Responding to students' concerns is particularly important during stressful times [12], [17] because emotional stress and loneliness can have a profound effect on learning [15]. OCL allows students to share and recognize the learning, struggles and successes of their collaborators and play a part in reducing stress.

In the current study, student teachers were asked to undertake levels of discussion and negotiation with each other far beyond their experience in face to face classes. This small study aimed to explore

the way this increased, but distant, collaboration affected their views about learning and teaching and how they believed it affected their future roles as teachers.

2 METHODOLOGY

Telephone interviews were conducted with 18 student teachers (in Mandarin) in August 2020, after each had completed both a semester of face to face learning and a semester of online collaborative learning. All the participants were volunteers and the study was approved under the Code of Ethics (Education Research) followed by the researchers' universities.

The interview questions explored the students' experiences of OCL, asked them whether these experiences had affected their views about working online, and whether they would use such techniques in their future practices as teachers. The questions were piloted and revised with the help of three student teachers and based on their comments. All the interviews were audio-recorded, transcribed and then analyzed using thematic coding.

Interviews lasted between 32 and 60 minutes and later clarification of responses (where required) was done through telephone or email over the following two months. Given the limited evidence available, and that this was these student teachers' first experience of OCL, we could not predict the responses of the student teachers and so an inductive thematic analysis using constant-comparison to generate codes was used, rather than a series of pre-determined codes [18]. The juxtaposition of codes within and across cases led to a final set of themes. To maintain trustworthiness, the thematic analysis was conducted by two researchers independently, and the main themes were identified from the aggregated codes.

3 RESULTS

3.1 How did the shift to OCL affect student teachers as learners and future teachers?

Four main themes were identified in the responses of these student teachers related to professional learning. Each theme is discussed and illustrated by typical examples from the student interviews.

3.1.1 Theme 1: The development of collaborative learning skills

Members of the group saw their OCL experience as contributing to their personal learning. They had learned to value collaborative work and stated that their skills to collaborate, to distribute the work among group members, to make decisions, and to express different opinions had greatly improved:

We shared knowledge that we didn't know before, and decided the choice of topics, teaching methods, and how to distribute the roles and responsibilities for execution among us. (Student Teacher (ST)11)

ST15 viewed the OCL group as a safe space for communication, development of collaborative learning skills, and alleviating anxiety during the pandemic:

Previously, we have no time for discussion or collaboration. Since the OCL, we have more opportunities to share our ideas. By so doing, we are gradually forming a culture of cooperative learning, in which supports the development of our collaborative learning skills and alleviate our stress caused by the pandemic. (ST15)

A similar view was shared by ST7 who stressed the importance of a "collaborative learning skills set" for both personal learning and future teaching:

I hope this kind of "groups" could be retained after the pandemic, in which we have a space to engage in rich conversations about best practices and we can seek ideas and support from each other. I also see the possibilities to communicate with teachers in other countries. (ST7)

ST8 perceived OCL as activities beneficial in improving her teaching skills, and she discussed how she developed her learning to teach as a result of this process:

By experiencing OCL, I have a better understanding of how to plan the collaborative work; how to support learners; and the potential challenges. I should take these into consideration while planning my teaching. (ST8)

Experiencing OCL as learners seemed to have helped these student teachers understand the challenges learners may face, thus helping them to “organize the collaborative tasks more effectively in future teaching” (ST16).

ST3 also mentioned how he benefited from collaborations in which he was required to use English to communicate and create products. His group members offered useful suggestions on how to improve English language proficiency for future teaching.

However, some statements revealed the difficulties these students experienced at the beginning of collaborative learning. These included getting to know unknown group members and some fears that collaborative learning may be having a negative impact on their own learning. Some expressed initial concerns about leaving the comfort zone of familiar, individual tasks for learning and some felt they needed training in collaborative learning skills. Their responses indicated that in most cases these students overcame the difficulties they described, and learned to value collaboration, as can be seen from ST10:

“I learned to communicate with others more effectively. We shared good ideas and that made the assignments more efficient.”

It appears that the student teachers were able to assess their communicative skills and learn from others in a positive manner.

It is worthy of note that ST18 described the main reason for developing her collaborative learning skills as “required by the teacher”, as she further elaborated:

I wanted to rely on my teacher because I naturally see her as the authority and centre, but she seldom gave me the direct answers. I followed her suggestions and learned to be more autonomous. (ST18)

ST18's elaboration here suggested that her teacher educator had been strategic in guiding her to improve her collaborative skills and in stimulating a sense of autonomy.

3.1.2 Theme 2: Insights into how teachers cope with complex teaching situations, helping them formulate their personal educational visions

Fourteen student teachers reported that the combination of collaborative course assignments and products had facilitated their learning about working in complex teaching settings:

When we watched the films about how other teachers teach, we discussed which behaviour promotes student learning. I learned how to respond in similar settings. (ST4)

ST5 further explained that completing course assignments provided opportunities for and also increased pressure on her to develop knowledge about how to teach during a pandemic and similar instances:

I remember we worked on a topic about teaching methods for e-learning, which I was not familiar with before. Completing this allowed and also pressed me to learn more about the coping strategies to work in an online setting. I have gained confidence in working in complex situations. (ST5)

ST2 and ST3 valued collecting resources concerning schools and teachers in various regions of the world. These resources helped them to stay “connected” and updated on effective practices that other schools/teachers were using during the Covid-19 pandemic, even though they were new to online learning:

Last time we were asked to create a lesson plan about teaching pupils online during a pandemic. Then our group searched the internet and luckily found the valuable Google folder created by one head teacher sharing the virtual learning plans of schools worldwide during the Covid-19. (ST2)

The Covid-19 reminds us that it is more important now than ever to be a connected teacher. Searching resources online helps us actively stay informed about what is new in the world. I will keep this habit. (ST3)

The above comments indicate that the instructor was not seen as “resource provider” in OCL but the students themselves were. Relying on student teachers themselves to “get to grips with the changes” (ST3) helped to develop their strategies for experimenting or searching for changes, thus prompting their autonomy and an understanding of the subject.

Five student teachers attached great importance to their own teacher's sharing of OCL through the course. The sharing helped these student teachers experience OCL in a supportive and reflective environment:

Although films by other teachers may be beneficial, I enjoy the experience sharing from my own teacher the most. In the course, our teacher shared with us her own teaching ideas and coping strategies of OCL and guided us to experience. I learned how to make the theories "realistic" in classroom. (ST11)

ST8 and ST17 also mentioned how the teacher educator set a good example by demonstrating the way to employ OCL and sharing with them the experiences, which not only gave student teachers opportunities to learn from their own teacher and to develop their pedagogical knowledge, but also helped them internalize and implement theories in their future classroom practice.

Similarly, ST12 shared how she benefited from the teacher educator who offered emotional support and counselling through the learning process to help her cope with complex situations and seek her personal wellbeing:

I am living in Wuhan – the epicenter of the pandemic, and I suffered strong feelings of worry. However, I received suggestions and encouragement from my teacher. The caring helps me to alleviate my anxiety and felt I am not isolated. (ST12)

ST12 further stated that she realised that the teacher showing understanding and care for students may be more important than the content needing to be covered particularly during stressful times.

Five student teachers stated that their teacher educator's feedback and sharing peers' views and products motivated them to consider "what makes a good teacher in times of crisis". The student teachers said this contributed to their personal educational visions:

Reading everyone's comment and watching peers' teaching motivated me to think about what makes a good teacher in times of crisis. (ST1)

Teacher's feedback and peers' replies gave me direction. A good teacher should know what is going on in the educational context and make adaptations accordingly... I began to formulate my own teaching vision. (ST18)

3.1.3 Theme 3: Skills in matching teaching methods to teaching situations

The student teachers reported that they had a deeper understanding of the teaching theories that underpinned multiple teaching methods through OCL. They said their experience had helped them develop flexibility in selecting teaching methods:

We were thinking and planning activities in a way that we would never have thought before. We learned to compare different teaching methods and decided the more suitable for a particular teaching situation. (ST10)

They seemed to have learned the importance of having a toolbox of various teaching methods to design a learning activity. They also reported that they "understood the importance of varying one's teaching in a manner that connects teaching theories to the activities" (ST7). As ST11 stated, the OCL not only helped her develop new pedagogical practice and knowledge step by step, but also expanded her self-understanding as a teacher:

As teachers, we need to stay updated and continually acquire new pedagogical knowledge and skills. (ST11)

The student teachers described how their learning on this course was achieved through discovering and practicing without the teacher educator having to teach them explicitly:

We were encouraged to explore and try out our own understanding about teaching. I started to reflect on how I can use the appropriate teaching method to demonstrate my ideas through real practice. (ST8)

This "learning by doing" not only facilitated the student teachers in transforming their mindsets and promoting innovative ideas in future teaching, but also helped them move towards becoming autonomous professionals.

3.1.4 Theme 4: Enhancement of technological skills and awareness of responsibility in a digital world

The student teachers claimed they were weak in technology before the classes. They reported that OCL had forced them to develop their technological skills and increased their awareness of the responsibilities of participating in a digital world:

The Covid-19 moved us to OCL, this posed challenges and also opportunities for us to transform our learning styles. We should take up the role as an active learner to participate in the digital world to prevent us from falling behind. (ST1)

The student teachers realised that modern teachers must “constantly develop technological skills to function effortlessly” in a world which they could not yet know, but in which technological skills will remain essential elements of ongoing professional development:

Teachers today should commit to upgrading our technological skills continuously with the ultimate goal of benefiting our students and our teaching because of the complex, shifting nature of educational setting. (ST2)

ST5 further shared her difficulty in using technologies online, and valued the importance of checking on students’ feelings regularly as this could have a profound effect on success particularly during the time of crisis:

I am not skilful with technology and this worsens my fear of dealing with the pandemic. Our teacher always checked on my feelings and helped me through. Then I realised that teacher’s caring can have a great impact on students’ learning. (ST5)

However, ST5’s comment may raise a question about whether the school had provided sufficient and timely technology support to all students, or failed to clarify how students could be helped with technology problems. Because of the large class size and the fact that this was their first experience of exclusively online education, the pressure could be tremendous for teacher educators, who may experience an unexpected growth in their workloads.

3.2 To what extent did student teachers consider OCL a desirable aspect of their future teaching?

The majority of the student teachers interviewed (14) were satisfied with their OCL experience and considered OCL as a desirable aspect of their future teaching. Their comments expressed satisfaction with particular aspects of collaborative activities (e.g. counteracting learners’ loneliness; developing a sense of autonomy; increasing self-efficacy; stronger motivation for learning; and deeper understanding of teaching methods); the support materials online (facilitated revision for examinations); and instructor’s accessibility (timely feedback, how she handled students’ requests) which some respondents said offered student teachers “greater control of learning”:

The teacher educator was approachable which offered me greater control of learning and helped me maintain self-regulation. (ST4)

What I need most is not teaching principles provided by the teacher educator but more practical experience, more constructive suggestions, and emotional support to prepare me to teach in the future. (ST12)

Their satisfaction with these aspects of their own experience motivated them to see OCL as desirable in their future teaching:

I learned a lot from OCL, and I will definitely use it in my future teaching to advance my students. (ST2)

However, not all the group were as positive, and four participants claimed they were unconvinced of the advantages of employing OCL in their future teaching and reported some frustrations and concerns. These were related to maintaining group participation and being able to constructively offer different opinions because “giving face to others is a cultural norm” (ST13). These students noted that becoming familiar with OCL principles was difficult initially, and self-regulation could be a challenge when the learning medium was not one they were habituated to:

Sometimes I was frustrated at my inability to maintain self-regulation in OCL. I appreciate the teacher's guidance and support but I want more teacher control when I'm not familiar with the learning medium. (ST6)

The student teachers were also worried about ensuring equity for all students in OCL, and ST14 shared her difficulty in accessing the internet:

I am living in a rural area and I don't have internet access at home. There will definitely be students facing the same problem. (ST14)

Students from low-income families are more likely to have no access to the internet or digital technology at home. Thus several of the student teachers believed that guaranteeing equity in online access would be a challenge if they adopted OCL in their future teaching.

4 CONCLUSIONS

4.1 Discussion

Transfer to online teaching had forced these student teachers to move into a complex educational setting which demanded new cooperation skills and was not necessarily comfortable for them. However, they showed positive attitudes towards online collaborative learning, recognising many of the aims, advantages and features of OCL and also identifying some aspects as difficult but advantageous. More importantly, they saw OCL, and particularly the collaborative part of it, as a route towards improving themselves as learners and future teachers. Their views suggest that successful performance in OCL tasks may demand much higher levels of autonomy, collaboration, choice and decision-making, when both teachers and learners were used to the experience of teacher-led, individual learning. The participants' views of learning changed in a number of ways [13], [4].

Their statements about the impact of OCL on themselves showed that they realised the added personal and professional value to them. They were keen to engage in "skills development", including improving their collaborative learning skills, pedagogical practice and knowledge, teaching techniques, technological skills and language proficiency in order to co-construct their new knowledge and develop their own professional expertise. These are key elements in definitions of OCL [5], [6]. Personal skill development is the most common evaluation outcome of OCL in wider surveys [13], [6]. However, the teachers in this study also identified the professional impact of OCL. They most frequently discussed OCL as a route to better prepare them to teach in complex teaching settings and had begun to formulate their own distinctive educational visions. They viewed OCL as an essential aspect of their professional development which was helping them to become autonomous professionals, to expand their self-understanding as teachers, and to gain confidence in working in complex situations. This reflects a socio-cultural turn in current teacher education and suggests that student teachers urgently need to develop the various skills to prepare them to meet complex and changing educational settings. An explanation for why this finding differs from those of existing studies may be found in the current Covid-19 pandemic, which has placed student teachers in a particularly uncertain situation, and it is inevitable for them to worry, as future teachers, about how they might cope with similar crises. The student teachers in this study repeatedly discussed how OCL had broadened their mindsets, developed their strategies for searching and experimenting with changes, and ultimately benefited their future teaching. This suggests a wider view of OCL and hints at a more positive approach to professional change. The student-centred, practice-based nature of the OCL experience appeared to have prompted these teachers to feel they were "owning" and "constructing" the change rather than passively "following". The challenge for teacher educators and head teachers seems to be to provide prospective teachers with more practice-based and explorative opportunities and to recognize collaborative learning and students' learning communities as steps towards professionalism and empowerment.

Recent research [12], [15] has pointed out that one of the ways that student teachers cope with the complexity of teaching is by learning from their teacher educators, their peers, and from practice. The student teachers in this study reported that they had developed flexibility in selecting teaching methods and had internalized useful theories about teaching not only by engaging in collaborative assignments, reflections, but also through observation of their own instructor. Although the experiences and course videos made by other teachers may have been beneficial, students in the present study preferred "those made by my own teacher the most". When teacher educators create their own videos and resources, they are likely to customize the content to ensure appropriate rigour

[15]. By intentionally displaying and sharing strategies for employing OCL in practice, teacher educators can not only acquaint student teachers with desirable teaching approaches and techniques to act as a possible future teaching model, but they can also influence individual student teachers' views about and behaviours in teaching. Perhaps more importantly, student teachers in this study referred to these ways as helping them to establish a sense of autonomy, transforming their views and behaviours, and facilitating innovations in their future teaching. This suggests that the experience of OCL gave these student teachers the necessary support to encourage them take more ownership of their professional learning and development. This confirms another finding [16] that teachers' autonomous professional development can increase their motivation and tendency to transfer innovations to the classroom.

The importance of teacher feedback in facilitating collaborative learning has been emphasised [19], [15]. The present study also found that these student teachers valued the teacher educator's accessibility in offering them "greater control of learning" which helped them to maintain group participation and self-regulation, something not found in previous studies. In addition, the student teachers in this study recognized the added value of instructor feedback in motivating them to think about "what a good teacher should do during the crisis", which, again, helped them to expand their self-understanding as future teachers, a factor not explored in previous literature.

The emotional support and counselling provided by the teacher educator through the OCL was considered as a crucial, and in some cases even the most important factor, in terms of its effect on the student teachers' learning and mental well-being during a time of crisis. Being isolated at home can worsen students' fear of coping with a global pandemic [12]. The teacher educator in this study checked on student teachers' academic progress and feelings regularly, particularly those who were not skilful with technology and those who were suffering feelings of anxiety, which was strongly valued by the student teachers as helping them cope with the complexity and alleviating their stress - useful strategies during a pandemic [20]. This suggests that teacher educators, as well as teachers, need to not only put emphasis on learners' learning progress, but also to check on their feelings of worry or anxiety and respond to these, particularly during stressful times. Assigning complex projects requiring materials not easily obtainable should be avoided, and perfection should not be expected.

Though OCL increased the awareness of these student teachers about their responsibility in a digital world, their comments about the use of technology indicated that many were facing challenges in mastering the technological environment. This finding, which differs from other studies [6], suggests that we should not expect that all students nowadays will have mastered the technological skills necessary to work effectively in an on-line environment. Instead, we should take students' readiness for online study into consideration and provide support that differentiates according to that readiness. There are opportunities for teacher educators to provide extensive and practical technology integration experiences for student teachers, e.g. ranging from lesson planning to actual implementation of activities [16]. Furthermore, there are more opportunities when working in schools for them to be creative in paying extra attention to the use of technology in their teaching and practicums.

4.2 Implications for post-Covid teacher training

Though the study focused on PRC student teachers, it has wider implications for many researchers, teacher educators, teachers, and professional development providers worldwide. Specifically, this example from China shows the ways in which student teachers' views and professionalism were developed through their experiences of OCL. The findings can help teacher educators to prepare student teachers to face complex settings and take ownership of their professional development. Future teacher training could provide more learning by doing, e.g. by introducing students to OCL as a teaching experience at an early stage in their training to help transform their self-understanding as a student to that of a teacher.

The study also offers important pointers for success in using OCL. It would be useful if online courses, from the outset, shared with their students the values and principles underpinning them, in terms of encouraging innovative approaches to teaching and learning. The teacher educator in this project was challenged to develop a new and extended skills set for on-line teaching. Opening up and sharing the success, challenges, and coping strategies of OCL with student teachers modelled "how to cope with a complex teaching setting" in a way that was important and realistic for their students. Teacher educators' sharing may help student teachers formulate their future teaching vision and positively encourage them to face the challenges of working in times of crisis.

The researchers here hope that the next generation of educators will readily embrace the concerns mentioned and will be better placed to address them, as some new forms of teaching are likely to be in place in post-Covid teaching. This small-scale study has provided examples suggesting that the loss of time on face-to-face lessons could be beneficial for student teachers as it gives them more opportunities to be collaborative, to discuss, and to reflect upon their professional development as teachers. This suggests that professional development providers and teacher educators might reconsider how new forms of practice and teaching theories can be woven together more effectively.

As all data was collected only from 18 student teachers from one primary English language education undergraduate programme in China, the generalizability of the findings of this study are limited. It is recommended that future studies extend the study with more participants from other subject areas and/or national contexts to better understand the similarities and differences.

REFERENCES

- [1] M.P.A. Murphy, "Covid-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy." *Contemporary Security Policy*, vol. 41, no. 3, pp. 492-505, 2020.
- [2] M.A. Flores, "Preparing teachers to teach in complex settings: opportunities for professional learning and development." *European Journal of Teacher Education*, vol. 43, no. 3, pp. 297-300, 2020.
- [3] L. la Velle, S. Newman, C. Montgomery, and D. Hyatt, "Initial teacher education in England and the Covid-19 pandemic: challenges and opportunities." *Journal of Education for Teaching*, vol. 46, no. 4, pp. 596-608, 2020.
- [4] N. Magen-Nagar, and M. Shonfeld, "The impact of an online collaborative learning program on students' attitude towards technology." *Interactive Learning Environments*, vol. 26, no. 5, pp. 621-637, 2018.
- [5] I. Inayat, R. U. Amin, Z. Inayat, and S. S. Salim, "Effects on collaborative web based vocational education and training on learning outcomes." *Computers and Education*, vol. 68, pp. 153-166, 2013.
- [6] A. Margaliot, D. Gorev, and T. Vaisman, "How student teachers describe the online collaborative learning experience and evaluate its contribution to their learning and their future work as teachers." *Journal of Digital Learning in Teacher Education*, vol. 34, no. 2, pp. 88-102, 2018.
- [7] H. Y. Ku, H. W. Tseng, and C. Akarasriworn, "Collaboration factors, teamwork satisfaction, and student attitudes toward online collaborative learning." *Computers in Human Behavior*, vol. 29, no. 3, pp. 922-929, 2013.
- [8] P. Resta, and M. Shonfeld, "A study of trans-national learning teams in a virtual world" in *Proceedings of the society for information technology and teacher education international conference 2013* (R. McBride, and M. Searson eds.) pp. 2932-2940, Chesapeake, VA: AACE, 2013.
- [9] S. Zhang, Y. Wen, and Q. Liu, "Exploring student teachers' social knowledge construction behaviors and collective agency in an online collaborative learning environment." *Interactive Learning Environments*. doi: 10.1080/10494820.2019.1674880, 2019.
- [10] X. Du, Y. Chaaban, S. Sabah, A.M. Al-Thani, and L. Wang, "Active learning engagement in teacher preparation programmes - A comparative study from Qatar, Lebanon and China." *Asia Pacific Journal of Education*, vol. 40, no. 3, pp. 283-298, 2020.
- [11] L. Harasim, *Learning theory and online technology: How new technologies are transforming learning opportunities*. New York: Routledge, 2012.
- [12] L. Anderson, "Smiles are infectious: What a school principal in China learned from going remote." *EdSurge*. <https://www.edsurge.com/news/2020-03-20-smiles-are-infectious-what-a-school-principal-in-china-learned-from-going-remote>, 2020.
- [13] J. Hur, Y. W. Shen, and M. H. Cho, "Impact of intercultural online collaboration project for pre-service teachers." *Technology, Pedagogy and Education*, vol. 29, no. 1, pp. 1-17, 2020.

- [14] M. Robinson and L. Rusznyak, "Learning to teach without school based experience: conundrums and possibilities in a South African context." *Journal of Education for Teaching*, vol. 46. no. 4, pp. 517-527, 2020.
- [15] H. Morgan, "Best practices for implementing remote learning during a pandemic." *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, vol. 93, no. 3, pp. 135-141, 2020.
- [16] M. Park and J. Son, "Pre-service EFL teachers' readiness in computer-assisted language learning and teaching." *Asia Pacific Journal of Education*. doi: 10.1080/02188791.2020.1815649, 2020.
- [17] E. Tate, "With weeks of e-learning ahead, be flexible and forget perfection." *EdSurge*. <https://www.edsurge.com/news/2020-03-19-with-weeks-of-e-learning-ahead-be-flexible-and-forget-perfection>, 2020.
- [18] V. Braun and V. Clarke, "Using thematic analysis in psychology." *Qualitative Research in Psychology*, vol. 3, no. 2, pp. 77–101, 2006.
- [19] International Society for Technology in Education (ISTE), *Essential conditions*. Arlington, VA: International Society for Technology in Education, 2020. Retrieved from <https://www.iste.org/standards/essential-conditions>
- [20] J. Snelling and D. Fingal, "10 strategies for online learning during a coronavirus outbreak." Arlington, VA: International Society for Technology in Education, 2020. Retrieved from <https://www.iste.org/explore/10-strategies-online-learning-during-coronavirus-outbreak>