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Abstract: This paper draws on the work of Helen Timperley (2015) who suggests there are six clear enablers that support educators to have professional conversations: processes, resources, culture, knowledge, relationships, as well as context. This purpose of this paper is two-fold: first, it describes how weekly web conferences that were offered for online initial teacher education students (ITES) were designed with due consideration for Timperley's enablers for professional conversations; and second, it reports on student experiences of the ways in which the web conferences served to support professional conversations. In order to understand the complex and multifaceted ways that web conferences served to facilitate ITES engagement in professional conversations, data is drawn from thirty-two online ITES enrolled in a capstone unit in their final semester of study in a teacher education course. Using a descriptive mixed-methods case study approach, the ITES completed questionnaires, participated in follow-up interviews and completed their assessment tasks to shed insight into the impact of the web conferences. The findings reveal the powerful ways that the web conferences allowed the students to participate in meaningful professional conversations and helped develop the professional attributes expected of graduates. Importantly, the study revealed that ITES perceived that the web conferences prompted a deeper level of engagement, satisfaction and sense of achievement than alternative activities, including face-to-face tutorials.

Background and Context

This paper explores the ways in which teacher educators can support initial teacher education students (ITES), with a particular focus on those studying online, to understand the theory and practice of professional conversations. For the purposes of this paper, we draw on the work of Helen Timperley (2015), who was commissioned by Australian Institute of Teaching and School Leadership (AITSL) to undertake a literature review to draw together national and international research in relation to conversations that support professional growth. Timperley defines 'professional conversations' as "the formal and informal dialogue that occurs between education professionals including teachers, mentors, coaches, and school leaders and is focused on educational matters" (p. 6).

There are clear links between Timperley's review and the AISTL teacher professional standards. By way of background, in Australia, aspiring teachers must successfully complete a teacher-education program that has been accredited by their state-based Teacher Registration Body. In order for a teacher-education program to become accredited, it must be assessed as meeting the national program standards specified by AITSL. These program standards require providers to clearly articulate how students will, by graduation, be able to evidence their achievement of the graduate level of the Australian Professional Standards for Teachers (APST). The graduate level of APST describes what graduates from teacher-education courses should know and be able to demonstrate when they complete their course of study. One of the seven domains within these standards is *Professional Engagement* (Standard 6), which describes the personal and professional attributes of an effective Initial Teacher Education (ITE) graduate. According to this Standard, graduates should feel confident in their ability to identify and plan professional learning needs (6.1), engage in professional learning and improve practice (6.2), and engage with colleagues and improve practice (6.3) (Australian Institute for Teaching and School Leadership (AITSL), 2014).

It is within the *Professional Engagement* standard, particularly Standard 6.3, where the links to professional conversations are most obvious, as teachers must have skills to engage in collegial interactions with a wide range of stakeholders in the educational community, including students, colleagues, parents, principals and professional bodies. Traditionally, responsibility for developing this attribute has largely fallen to the practicum component (Darling-Hammond, 2006; Loughran, 2014) but it is difficult to be sure what opportunities will actually present for the student while on practicum and the extent to which their skills to have professional conversations will be nurtured. Consequently, there is potential, or arguably an imperative, for the university itself to take a greater responsibility for developing these attributes, in a manner that responds to the requirements of professional accreditation bodies.

Claims that teacher education graduates in Australia are not 'class-room ready' (Department of Education and Training, 2014a), have increased consideration on how best to best to facilitate an understanding of both the theory and practice of professional conversations, in response to Standard 6. Mayer's (2014) review of teacher-education in Australia over the last 40 years supports the Department of Education and Training's (2014) findings, concluding that programs need to better prepare students for a career where their work is "always part of a larger system and workforce… the challenge is to capture the collaborative and collegial dimensions of teachers' work" (Mayer, 2014, p. 470). Mayer's review highlights the mounting pressure on universities to extend beyond their traditional role of "repositories and organisers of knowledge" (Altbach, 2008, p. 6) and respond more actively to the priorities of government and practical needs of society (Probert, 2015). Employers are calling for graduates who are more 'work-ready' (Oliver, Jones, Tucker & Ferns, 2007); employees who are ready and able to use the knowledge they have gained and apply it to the demands of their chosen vocation (Darling Hammond, 2013; Laurillard, 2002). Of course, in order to do this they must have had the opportunity to develop those skills in the course of their study (Biggs, 2003; Korthagen, 2010). The challenge, therefore, is for course designers and academics to create a meaningful learning environment that responds to the scholarly remit of universities and the pragmatic demands of future employers and society in general.

So, how might the theory and practice of professional conversations be examined and taught within a teacher education context within the university setting? What role might teacher educators play in teaching how to have effective professional conversations and in doing so have

less reliance on professional experience? And, of particular importance to this paper, how might this understanding be facilitated for the increasing number of online teacher education students? This last question is particularly timely given the last decade has seen a significant growth in the number of initial teacher education students (ITES). In 2005, there were 63,194 students in undergraduate and graduate-entry ITE programs in Australia, and by 2015, this figure had risen by nearly 30%, to 81,397. Within this cohort, the number of students commencing their study in an on-campus mode of enrolment has fallen from 78% (n=19191) in 2005 to 68% (n=20,643) in 2014, with a corresponding increase in online and multi-modal study from 22% (n= 5412) in 2005 to 32% (n=9714) in 2014. This reflects almost a doubling of the number of ITES who chose to study away from campus for all or some of their units (Australian Institute for Teaching and School Leadership (AITSL), 2016). So not only is the number of students engaging in teacher education increasing at a rapid rate, but the proportion of students who want to study either fully or partly online is also increasing.

It is within this complex educational context of accreditation, agendas, reports, and the changing demographics of ITES that this paper is positioned: first, an accreditation requirement that stipulates that graduating teachers must understand professional engagement of which professional conversations stand to play a big part; second, concerns that teachers are not 'classroom-ready' and a call for initial teacher education providers to integrate theory and practice in 'inseparable' and 'reinforcing' ways (Department of Education and Training, 2014b); third, an invitation to not over-rely on professional experience placements to develop theoretical and practical understandings of professional engagement; and fourth, a growing number of online initial teacher education students.

In response to this context, this paper explores a pedagogical innovation that was trialled at a regional university in Australia with a view to supporting online ITES as they learn about, practice and rehearse having professional conversations. Specifically, this paper:

1) Describes the ways in which the weekly web conferences (WC) were designed using the 'enabling' design principles suggested in Timperley's (2015) "Enablers for Effective Professional Conversations;" and,

2) Reports on the experiences of the ITES in the web conferences, as they reflect on the ways in which they were supported in learning about and having professional conversations.

Timperley's enablers are: resources, relationships, processes, knowledge, and culture and we use these to structure our paper (Figure 1). The sixth enabler that Timperley identifies is 'context', which she describes as "all the other conditions and processes and serves to shape the professional conversations but at the same time it is shaped by them." For the purposes of this paper, we believe the Background and Introduction articulate the context into which the professional conversations were occurring and therefore, we do not focus on this enabler specifically in this paper.

Before presenting the impacts of how the WC supported ITES to engage in professional conversations, we begin with an overview of the issues related to the challenges and opportunities that emerge with the move to online higher education generally and teacher education specifically.
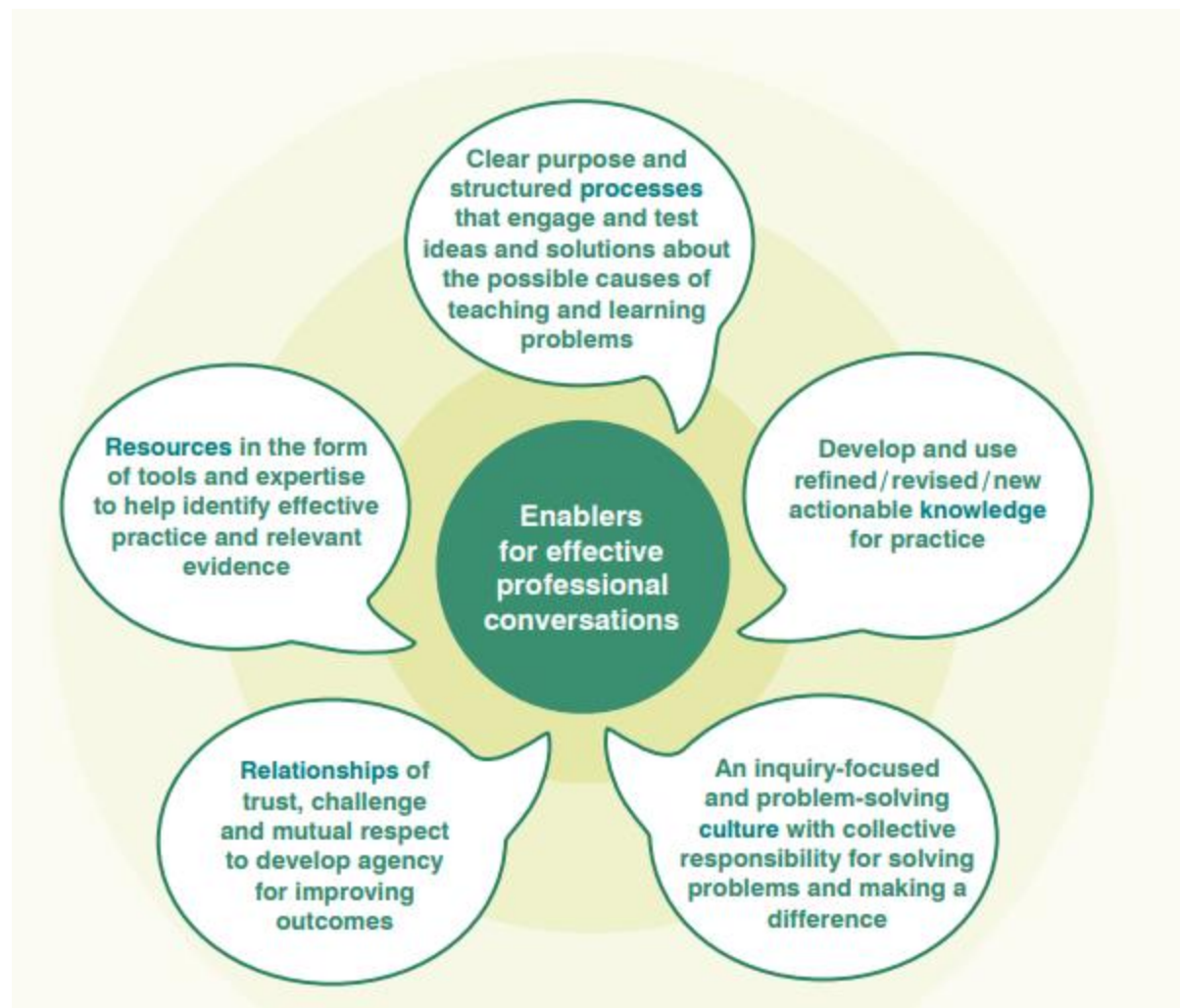
***Figure 1*. Timperley's Model of Enablers for Professional Conversations**
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Literature Review
Definitions

This paper adopts the definitions of online and blended learning used by Allen, Seaman, Pouline and Straut (2016) over the thirteen years of their annual review of online education in the United States. They offer the following definition:

>*An online course is defined as one in which at least 80% of the course content is delivered online. Face-to-face instruction includes courses in which zero to 29% of the content is delivered online; this category includes both traditional and web-facilitated courses. The remaining alternative, blended (or hybrid) instruction, has between 30% and 80% of course content delivered online (Allen, Seaman, Pouline & Straut, 2016, p. 7).*

Challenges and Benefits of Online Learning and Teaching in Higher Education

The increase in the overall number and the proportion of students studying in either fully online or blended forms of study has not been without challenges, for both the students and their institutions. Whilst equivalence in student learning outcomes appears to be increasingly accepted (Allen, Seaman, Poulin, & Straut, 2016; Fayer, 2014; Reeves, 2011), numerous studies have pointed to challenges for the students including feelings of isolation (Murdock & Williams, 2011), lack of support (Heirdsfield, Davis, Lennox, Walker, & Zhang, 2007), lack of confidence or competence in the required technological knowledge (Rovai & Downey, 2010), as well as a struggle to take on a greater level of responsibility for own learning (Broadbent & Poon, 2015). Importantly too, the online environment can make it more challenging for students to feel like they are a part of a learning community. Delahunty's (2012) research identified how students may feel "uncertainties about interpreting others' attitudes and values, [through a] lack of 'real-time' communication, [and] concerns about where an individual perceives they 'fit' in the group" (p. 407).

For teaching staff, the transition to an online or blended learning environment can also be challenging. Studies identify a number of concerns, from feeling that the personal connection with students is threatened (Downing & Dyment, 2013), as well as technical challenges that can be "overwhelming and downright frustrating" (Stott & Mozer, 2016, p. 152), and concerns about the overall efficacy of this mode of teaching (Gregory & Salmon, 2013; Zimmerman & Kulikowich, 2016). Such concerns appear to be justified with a lower retention rate than the on-campus cohort, and a longer completion time for those who remain (Australian Government Department of Education and Training, 2017).

Conversely, however, studies continue to show that online or blended learning environments can facilitate meaningful and effective environments for both students and staff. Huber and Watson (2014) found that both young and older students are capable of developing the technical skills required to engage successfully, which, as Bonk (2009) points out, will result in a greater degree of work-readiness in graduates as they enter a technology driven workplace. With Web 2.0 tools increasing the ease of online communication collaboration between students (Broadbent & Poon, 2015; Sadaf, Newby, & Ertmer, 2016) and as academics become more confident and competent teaching within the online environment (Salmon, 2013; Venkatesh, Croteau, & Rabah, 2014), positive outcomes for students appear to be evidenced by improved retention rates and positive graduate outcomes (Allen et al., 2016). As with the traditional, on-campus mode of study, the characteristics that appear to be critically important for positive student outcomes and high levels of satisfaction include the provision of meaningful learning activities, constructive and timely feedback, a strong community of learners and enthusiastic, knowledgeable teaching staff (Biggs & Tang, 2011; Darling-Hammond, 2006; Hattie, 2009; Ramsden, 2003).

Online Teacher Education

Within teacher-education, there are additional challenges for higher education providers, regardless of the mode of study chosen by students. Concerns over the lack of classroom readiness (Department of Education and Training, 2014b) have increased pressure on universities to improve their pedagogical approach and strive for a closer connection between theory and practice in order to produce graduates who can confidently and competently take their place in

the profession (Darling-Hammond, 2013). In order to do this, teacher-educators have a responsibility to model, and make explicit, the type of teaching and learning environment that is being espoused within schools - where students feel empowered to take more responsibility for constructive and meaningful learning, to build their analytical and evaluative skills and develop the personal attributes that are required for a lifetime of learning and the development of their professional identity (Korthagen, 2010; Russell & Loughran, 2007).

Responding to the challenges faced by teacher-educators is perhaps even harder in the online environment (Downing & Dyment, 2013; Dyment, Downing & Budd, 2013). How can online teacher-educators model the type of teaching that is sought in classroom-ready graduates, though the lens of technology? How can a teacher-educator model the communication skills that are required for tomorrow's teachers, though computer-enabled means? There is a surprisingly scant body of literature on these challenges, perhaps because of an assumption (or desperate hope?) that students will develop such skills whilst on their practicum placements. It can be argued that online teacher-education magnifies the concerns scholars such as Darling-Hammond have voiced for decades; that students are encouraged to understand, accept and assimilate particular pedagogical approaches and educational theory whilst experiencing a different approach from their lecturers (cf., Darling-Hammond, 2006; Loughran & Berry, 2005; Russell & Loughran, 2007).

Pedagogies and Tools to Promote Professional Conversations: Web Conferences

In the era of Web 2.0, there is a vast array of tools and strategies designed to engage students in their learning, in higher education generally and teacher education specifically. For online environments, most of these tools are used by students in either an asynchronous (over a period of time) or a synchronous (real-time) manner. For example, an online discussion forum, which is usually contained with the provider's Learning Management System, is an example of an asynchronous tool. Most often, teaching staff pose a question or discussion topic for students to contribute to and engage with over a period of time. The forum displays all contributions, usually chronologically, enabling students to participate (and reflect) on the discussion as it progresses.

On the other hand, WC (also referred to as webinars or videoconferences), which are the focus of this paper, are conducted in a synchronous manner, with teaching staff and students all engaging at the same time. In order to avoid disadvantaging students who may not be able to attend, most WC tools allow teaching staff to record the session and upload a link to the recording for students to access when they are able.

The literature reveals some of the affordances and limitations of WC in higher education. On the positive side, the 'real-time' nature of WC helps to overcome feelings of isolation and separation (Bonk, 2009) through the opportunity to engage dynamically with academics and peers and embrace Vygotsky's (1980) notion that learning is a social activity. Additionally, most WC applications enable geographically diverse experts to join a conference merely by clicking on a hyperlinked invitation, enabling them to engage virtually, but directly, with students. In this way, WC enable exposure and connection to industry or research specialists that perhaps would not be possible on campus. Several studies have found that academics find WC foster critical thinking and problem-solving skills, as students link ideas together during the synchronous discussion and develop deeper awareness and cognitive skills (Chang, Lin, & Tsai, 2013). Thus, WC help build the communication skills and professional attributes expected of graduates

(Oliver, 2013). In relation to the limitations of WC, the literature mirrors the broader challenges of online education, with technology and bandwidth causing frustration and loss of effectiveness (Zoumenou et al., 2015) and a lack of confidence from academics to engage in technological tools that can be challenging to master (Westberry, McNaughton, Billot, & Gaeta, 2015).

The Context
The Unit: Background and Outcomes

This paper presents data from a unit that Janet, the first author on this paper, designed and taught in a Master of Teaching course at a regional university in Australia. The compulsory unit, called "Teacher Inquiry and Scholarship", is a capstone unit in a two year teaching degree. The unit is designed to support initial teacher education students to adopt an inquiry stance in their teaching and to acquire skills necessary to conduct a scholarly teacher inquiry research project. In achieving these learning outcomes, the unit explicitly attends to both AITSL Standard 6: Graduate Professional Engagement and TEMAG Recommendation 15 stipulating "Higher education providers equip pre-service teachers with data collection and analysis skills to assess the learning needs of all students".

The unit draws on the work of key theorists, practitioners and scholarly teacher inquiry advocates, including Linda Darling-Hammond, Helen Timperley, and Jean McNiff (to name a few). The unit empowers ITES to learn scholarly teacher inquiry, professional engagement, collaboration and research skills as a foundation for conducting teacher inquiry in their future professional roles.

ITES Sample

The entire sample consisted of 173 initial teacher education students who were studying in 2015 (n=88) and 2016 (n=85) in a Master of Teaching course at a regional university in Australia. The ITES were studying to be secondary teachers, in the areas of math, science, English, languages other than English, art, social studies, and religious studies. Almost all of the students were enrolled in their fourth and final semester of their two-year course. They had completed three professional experiences (PE) prior to enrolling in this capstone unit: PE1=1 week, PE2=2 weeks, and PE3=4 weeks. The final PE4 (5 weeks) is undertaken upon completion of this semester. A small number of part-time students (approximately 10%) were enrolled in this unit and had variations to their PE model.

All ITES, irrespective of their mode of study, accessed the pre-recorded lectures via the University's online Learning Management System (Desire2Learn/Brightspace), known as MyLO to the students. The ITES were asked to select one of the three modes of weekly tutorials on offer: *on campus*, which involved a two-hour session held on the university campus; *online*, which involved a series of learning activities on MyLO (posts, responses, uploading materials, engaging with peers and lecturer etc.) or the *web conference (*WC*)*. In 2015 and 2016, there were 78 on campus students (45%), 63 online students (36%), and 32 WC students (19%). This paper profiles primarily the experiences of the WC students, but comparative data is also drawn from the other online and on campus learners.

Prior to selecting their preferred mode of tutorial, the students were provided with detailed information about how each tutorial would run. Janet taught into all tutorials. The on

campus tutorial was supported with an additional tutor. The students were advised to elect a 'primary' mode of tutorial and to remain with it for the duration of the semester. This commitment was deemed important given the efforts placed on developing professional learning communities and the need for a stable and predictable cohort. However, if students were unable to attend, for example, an on-campus tutorial for one week, they were encouraged to simply participate in one of the online tutorials; conversely, if an online student wanted to attend an on-campus tutorial for one week for a particular reason, then this was encouraged.

Self-Selection of Tutorials

Before turning to an exploration of the experiences and perceptions of the WC students, it is important to acknowledge that the students *self-selected* their tutorial groups. It is recognized that online students often have high levels of learner autonomy, self-regulation, problem solving and goal setting skills (Clayton, Blumberg & Auld, 2010; Greene, Oswald, & Pomerantz, 2015; Yukesleturk, Ozekes & Turel, 2014). Given this, it is possible then, that a certain kind of student, with particular attributes and skills, opted into a particular tutorial group. For example, it might be possible that the higher performing students, or more motivated students, or older students (and so on) chose a particular tutorial option, such as the WC, and therefore, any measure of impact, such as engagement, by mode of tutorial, may be a factor of the students rather than the mode of study.

With a view to addressing the issue of self-selection, we were curious, at the outset, if there were differences in academic performance, as measured by GPA, among the tutorial cohorts. For example, if the highest achieving students were opting into the WC tutorial group, then they would, presumably, arrive with a higher level of academic engagement than their MyLO or on-campus counterparts. To examine this, we ran a one-way ANOVA comparing GPA of the WC, MyLO and on-campus students. There was no significant difference among the GPA of the three tutorial groups at $p<.05$ [$F_{(2,171)}= 0.74743$, $p=.477034$]. Although this is only one contextual factor for the students, this result provides us some confidence to know that all the more academically engaged students were not all 'stacked' within the WC tutorial group and the results reported in this study are about the impact of the WC as opposed to a cluster of a certain kind of students who selected the same tutorial option.

The Web Conference Tutorials

The weekly WC were hosted on the *Blackboard Collaborate* platform and offered at times Janet assumed were convenient for the typical online learner (e.g., mature aged, often juggling work and family commitments): either early evening (7:30-9.30 pm) or very early in the morning (6.00-8.00 am). Typically, participants clicked on a hyperlink to join the WC and used a headset with a microphone to interact with each other. While it was possible to use cameras to enable a visual connection, and often Janet began the WC with an audio-visual connection, most commonly participants just used audio tools in order to reduce lag or interruptions that could result from the high data load.

Research Design

With a goal of accessing authentic student voice pertaining to their experience of the WC as a tool for facilitating professional conversations, we employed a descriptive mixed-methods case study approach. As suggested by Cohen, Manion and Morrison (2011), case studies "provide a unique example of real people in real situations" (p. 289). The use of case study in this instance provided a useful framework which bound student experience within the specific context related to the research question, namely ITES perceptions and experiences of the enablers for professional conversations that were incorporated into the design of their weekly WC. This type of case study approach has been used extensively in research about online student learning experience (e.g., Allen et al., 2016; Fayer, 2014; Seaton & Schwier, 2014).

Adopting a mixed-methods approach (Denzin & Lincoln, 2011), qualitative and quantitative data were collected from four sources in 2015 and 2016. Data was collected from students in all tutorials: on-campus, MyLO and WC. Ethical clearance for all methods was approved by the university ethics committee and all participants gave informed consent for all aspects of this study. Table 1 summarizes response rates and provides a brief overview of the nature and types of questions for each instrument.

1. Standardized university evaluations
2. A self-designed questionnaire delivered via Survey Monkey®
3. Follow-up interviews
4. Comments about professional engagement from a final assessment task

The content validity of the self-designed questionnaire (#2, above) was assessed by four colleagues in the Faculty of Education who were familiar with the subject material and educational processes used in the unit. They reviewed all of the questionnaire items for readability, clarity and comprehensiveness and came to a level of agreement as to which items were included in the final questionnaire.

Analysis

Qualitative data analysis employed primarily deductive coding to explore if and how the data aligned with Timperley's (2015) model of Enablers for Professional Engagement (Creswell, 2014). Analysis was structured around identifying themes using the Timperley framework allowing for interpretations of what the students stated (i.e., students were not specifically asked to comment on the 'enablers' Janet used to design and deliver the WC). After the data had been aligned with the model, the research team engaged in the interpretative stages to make sense of data and construct coherent, trustworthy and authentic accounts of the experiences of students (Cohen et al., 2011).

Quantitative data analysis from the questionnaires involved a series of one-way ANOVA's with the independent variable being 'mode of study.' This allowed insight into if and how student perceptions and experiences differed significantly as a function of being on-campus, online MyLO/D2L, and online WC. SPSS was used to support analysis.

We are aware that case study research may not be conducive to generating generalizable findings, rather it provides an in depth constructive account of ITES learning experiences in WC

Summary of Data Source and Recruitment Strategy		Response Rate N (%)
Standardized University Evaluations	University-wide 'generic' teaching evaluation available to all students enrolled in a unit of study	95 (55%)
	Asks students their perceptions of what helps and hinders their achievement of learning outcomes, their motivation and engagement and their overall satisfaction with the unit.	
	Consists of 10 quantitative questions answered on a 4 point likert scale, where 1=strongly agree and 4=strongly disagree. For example "Feedback on my work in this unit helps me to achieve the learning outcomes."	
	Consists of two qualitative questions in short essay textbox. For example, "What are the most helpful aspects of this unit?"	
Self Designed Evaluations	Questionnaire designed by the unit coordinator and all students enrolled in the unit are invited to complete it.	102 (59%)
	Consists of 43 quantitative questions that sought information related to demographics, time/effort on study in the unit, perceptions of teaching and learning activities (e.g., readings, tutorials, lectures, and assessment). Perception questions (which are reported in this paper) were answered on a 6 point likert scale, where 1=strongly disagree and 6=strongly agree. For example, "The tutorials provided an opportunity for interaction with other students."	
	Most questions provided students opportunity to write qualitative comments. For example, "Do you have any other comments about the ways in which professional learning communities were developed in this unit?"	
Follow-Up Interviews	Students volunteered to participate in the interview at the end of the self-designed evaluations (above).	5%
	Semi-structured interviews occurred after the unit was completed. Consisted of 21 open-ended questions that sought to gain insight into experiences of learning about research and inquiry; perceptions of the pedagogical, curricular and assessment features that contributed to achieving the intended learning outcomes; suggestions for future offerings.	
Assessment Task Commentary	Final assessment task, worth 10% of overall grade, asked all students to reflect on and self-assess their participation and engagement in the unit. Determination of final grade to consider factors such as attendance in learning experiences, preparation for an engagement in learning experiences, and collaboration and collegiality of engagement with peers.	173 (100%)

Table 1: Data Sources and Response Rates

in the online environment in one Australian University. In this research project, we adopted strategies to enhance the trustworthiness and authenticity of research findings. This included using terms and definitions from existing literature, ensuring transparent interpretations from the data, and by looking for consistency of findings with previous research in the area, such as the student experience of online teaching and learning in higher education. We also ensured that the research context was clear (Cohen et al., 2011).

Enablers for Professional Conversations

We now turn to a presentation of the five enablers that Timperley (2015) identifies as being important for effective professional conversations (Figure 1). For each, we (1) describe the ways in which Janet designed the WC with the enabler in mind, and (2) draw on the four sources of data to understand how the ITES perceived the ways in which the WC and the enablers supported them in learning about and having professional conversations.

Processes

Timperley's (2015) review reveals that a key enabler for professional conversations is the articulation of "clear purpose" and the use of "structured processes" that engage and test ideas and solutions about the possible causes of teaching and learning problems. In support of this enabler, Janet ensured that each WC had clearly articulated purposes and structured processes that sought to help students understand teacher inquiry as a 'tool' for enhancing student learning. The first 15 minutes of each WC were spent with all students hosted in the 'mainroom.' Janet used this time to provide an overview of (a) the learning objectives for the week, (b) a reminder of how the weekly material fitted into the unit and course level learning outcomes, and (c) an opportunity to ask questions about the lecture and readings.

Janet used the remainder of the WC time to facilitate students in a range of activities that used clear protocols and structures. Students were placed into 'breakout' rooms of 2-5 students, with a specific task and an allocated amount of time. The make-up of the breakout rooms varied: sometimes they were intentionally randomly allocated, to allow for a diversity of disciplinary backgrounds, while other times (particularly as the semester unfolded), the groups were purposefully chosen to ensure continuity across weeks and depth of specialist knowledge (e.g., all the science students were placed together). This latter approach modelled typical secondary school structural organisation and their future practice as teachers in high school/college settings. Janet visited the breakout rooms regularly to listen, reflect, support, challenge, question, clarify, provoke, push, and at times, to simply, just 'be' with the group.

The breakout rooms would then return to the mainroom along with their 'slides' which included notes taken by the group, filled in charts, or drawn images. Each breakout room would present some aspect of their activity that had been purposefully selected to ensure all students achieved the intended learning outcomes.

The WC would 'end' with (a) a summary of the week, (b) an opportunity for students to ask questions, and (c) a reminder of subsequent learning themes. At the official end of the WC, students either logged off or continued informal discussions of any points of relevance or to simply have opportunity for social exchanges which supported the creation of community.

The feedback from the WC students suggests they noticed and valued the structure and processes that scaffolded the weekly meetings. One student noted,

"*Overall, it was a dynamic unit that I feel brought the best out in me, so reflecting on this, I feel the structure of the web conferences gave me impetus to engage perhaps more than I usually would in other offerings*" (Assessment Task Commentary).

Students reported that the structure of this unit's WC was in stark contrast to some other WC that lacked clarity of purpose and structure. A student explained,

"*My previous experience with another web conference was a rambling unfocussed discourse full of emoticons and self-serving obsessions about assessment task fulfilment. It was horrid*" (Interview). This student continued on in saying "*the reason [this WC] worked was because you [Janet] structured the classes so well.*"

In addition to being structured at a weekly level, effort was placed on making the WC build from week to week so that the 13-week unit was a series of building blocks that served to culminate in the submission of the final AT. Janet made explicit the links between and among the weeks and made visible her decisions about the timing and sequencing of the content.   The WC students reported an appreciation for this unit level of process design, with one student noting,

This unit and web conferences had that wonderful structure where the arc was visible from a long way off. A bit of work gave the big picture and the big ideas, and then there was a great depth available for those that had the desire. The resources that were chosen in the WC to provide the depth seemed to be very apt and well aligned to the story (Assessment Task Commentary).

These processes and structures (within weeks and among weeks) supported students to engage with the difficult content of teacher inquiry. One WC student explained,

"*At the beginning of the semester, the end point of the inquiry design was very daunting, and seemed like an impossible task. The week to week working through of each section, however, really made this seem less so*" (Self-Designed Questionnaire).

Interestingly, the explicit use of processes within and across weeks in the WC, coupled with the intent to make these visible to the students, impacted students in ways that extended beyond the unit. Some students reported how they hoped to use similar processes and structures in their own teaching practices:

I have gained valuable experience from the modelling of teaching from my tutor and organisation of the unit from my lecturer. Their organisation of the unit is outstanding and it has greatly helped me to navigate through the unit and assignments. I will try to do the same for my students in my future career (Assessment Task Commentary).

Resources

Another enabler that Timperley (2015) identifies for effective professional conversations is the resources that were brought to the conversations. She points to the important role that tools and material artefacts can assume in helping to shape and guide conversations. She also

considers expertise to be a resource that can brought into conversations, through leaders, teachers or other outsiders.

Janet endeavoured to incorporate this enabler into her design of the weekly WC. During the WC, when breakout rooms were used for small group-work, the rooms were provided a number of material artefacts that served to support student learning about the weekly content. For example, when students were learning about ethical considerations, the breakout rooms were provided with 'real life' scenarios of teacher inquiry projects and the groups had to identify the ethical issues arising for each scenario. By way of another example, to support their understanding of method, the breakout rooms were provided with several classes of grade 6 student test scores and were provided with a number of questions that emerge from the data set. The breakout rooms had to then identify and justify the method/data collection source that would be serve to answer the inquiry question. For a final example, to support student understanding of data analysis, the breakout groups were provided with 'real data' from the first author's research projects – these consisted of a set of student drawings and interview transcripts. The breakout rooms were given time to analyse the data, using a range of newly acquired analysis skills that they had learned about in the lecture.

The students in the WCs commented on the ways in which these resources enabled a deepening of their understandings about teacher inquiry. They also recognized the pre-planning that Janet had done to prepare the various resources. One student noted how:

> *Janet was so organized and prepared. Either she'd post the resources we'd need in the breakout rooms online [before the tutorial] or she'd have it in a format she could send out to each breakout room. Whether they were lesson plans, NAPLAN scores or raw data – they were all helpful in supporting our learning* (Interview).

Janet also used outside experts as a resource to enable student learning in the WC. By way of example, she recorded conversations with teachers in schools around Tasmania who were actively involved in conducting or leading teacher inquiry projects. Students watched the vignettes before arriving at the WC and were provided structured debriefing activities to make sense of these external resources. Feedback from the WC students suggested that these resources were extremely helpful in helping them make sense of teacher inquiry. One student indicated that

> "*I believe my understanding of what being a teacher inquirer means has greatly increased due to these vignettes*" (Self-Designed Questionnaire).

Another student pointed out how seeing the vignettes allowed her to see the practical side of teacher inquiry, as opposed to just the theoretical underpinnings:

> "*So the more we saw interviews like that, the more we realised that it wasn't going to just be something that was purely academic, and just a course to be got through. It was going to be a useful tool in our teaching*" (Interview). Another student echoed these comments, noting how the WC group "*lapped up the vignettes. We wanted to hear how this idea of inquiry could be applied in the real world. We probably would want more of that, rather than some of the theoretical. I mean we obviously need theory to underpin things but I think we probably wanted to hear more about, 'OK, how is what we're learning about inquiry being applied in schools around Tassie? Or in Victoria?'*" (Interview).

Culture

Timperley (2015) notes another enabler to successful professional conversations involves the development of a culture where people are willing to look deeply and critically at their own practice. She also notes the importance of developing agency whereby people feel they can, and have a responsibility to, make a difference. Timperley's work is, of course, positioned in the context of 'teachers in schools' and therefore their practice relates to working with students, colleagues, parents and the broader educational community. For the purpose of the students profiled in this study, their 'practice' refers to aspects of their development as pre-service teachers – as they build the skills and competencies in their studies and through their reflections on professional experience and in their university-based coursework.

Janet explicitly designed the WC to provide opportunity for ITES to develop this problem-solving culture and to encourage students to take responsibility for making change – be it around their personal and professional perspectives, around revisions to their assignments, their capacity to give difficult feedback to peers, or to look critically at their own practice. The examples noted previously in this paper, such as the use of breakout rooms to allow students to work together to solve real problems, the carefully designed assessment tasks and opportunities for formative feedback, and the general culture of 'curiosity' that was a part of all the sessions, all were intended to allow students to feel like they had the skills to work together to find solutions to educational problems. Janet made the teaching of these skills very visible: as she taught and modelled them, she was explicit in relation to what skills, such as communication, collaboration and teamwork, were embedded in both the processes and intended outcomes.

This enabler was noticed by the WC students, who reported that the WC encouraged them to take far more personal responsibility for their preparedness and their engagement in the unit than the usual discussion board space. Interviewees described how the WC "*did keep you on your toes*" and "*kept you on track*" and "*you weren't allowed to get lazy.*" When prompted to describe why this was the case, many interviewees alluded to their peers and the high standards that were established as the 'cultural norm' among the WC group, suggesting that "*I didn't want to waste anyone's time*" and "*Everyone else was so prepared…I felt I had to be too.*" Others referred to the pedagogical strategies that were used in the WC by Janet, suggesting they encouraged a culture of responsibility. Specifically, some students commented on the organization and preparation of the lecturer and her careful use of the breakout rooms:

> And the way that she was so organised and was so focussed, there was absolutely nowhere to hide. The nature of the questions and the exercises, breaking us off into splitting off into rooms and then she would come in and listen and occasionally join in (Interview).

Others noted that they felt pressure to be prepared because they knew it was going to be recorded, and possibly listened to by other students:

> "*It was also being recorded as well so you just – so you really, there was such a demand on you to have done the reading and be ready*" (Interview).

Some students suggested the personal responsibilities were greater than either of the MyLO space or the on-campus space. In relation to the on-campus tutorial, one student noted,

> "*If you hadn't done the reading –in a [on-campus] tutorial room I would be able to hide or be quiet or sit at the back of the room and no one would know*" (Interview). Another student commented on how with MyLO, "*you can just put anything down on MyLO to just to look like you are doing something…but that was impossible in the web conference*" (Assessment Task Commentary).

In this cultural enabler, Timperley (2015) suggested that effective professional conversations should encourage students to feel a sense of agency. It appeared this happened through the WC space, with several WC students reporting they now felt a sense of excitement and for some, a responsibility and agency, to follow up on their inquiry projects once they were in the teaching field. One WC student noted how he was graduating

> "*with a burning desire that one day my Teacher Inquiry may be put into action and become that reality. I believe that if this was to come to fruition that this would be one of the highlights of my University career*" (Self-Designed Questionnaire).

Another interviewee explained how she had found agency through the weekly WC:

> *Week after week [in the WC], we really delved into my own core beliefs about what teaching is and how to teach. Up until that point I had sort of been fed through other units that teaching was a prescriptive course and that there was a right way and a wrong way, which I never really believed. And even when I was going on my pracs it was still "You're doing that wrong, you're doing this right, you're doing that wrong, and you're doing this right." So it sort of became that there was the right way and wrong way but with this unit it was suddenly like "You know what, my ideas are valid and just because I'm a student and just because I'm new coming to teaching doesn't mean I don't have an opinion and that opinion is not worth something." And if teaching is going to evolve then we need to embrace new blood and new ideas and new theories. And we need to be welcoming that into the profession. And not having the prescribed right way and wrong way. That was the biggest thing that I got out of the course I think. I can make a difference. I can do this.*

> Another WC interviewee noted how the unit allowed them to know they could "*take control*" and "*become an inquirer rather than just a teacher*."

They went on to explain how:

> *For me that was the real turning point of actually, it made me feel as though you've got a lot more kind of control over the kind of teacher you want to be, and the kind of content you want to deliver, and all that kind of thing. It had sort of been spread a bit throughout the two years, which it had to be, and that was all great information, but for me that was the turning point where I sort of felt it was a bit of a light bulb of "Wow, I've actually got a lot more control and a lot more ability to really make things and shape things the way I want them to be." And to really question, quite intensely, how things are actually working.*

Knowledge

Timperley (2015) contends that another enabler for effective professional conversations is the generation of 'new knowledge' that will influence practice. Seen from the context of the WCs, this new knowledge emerged in two main ways: (1) new knowledge and skills to engage confidently and professionally with other colleagues; and (2) new knowledge about teacher inquiry.

In the context of this unit, Janet designed the WC to help students develop new knowledge in relation to the development of skills that are necessary to be an active member of a professional learning community. This meant that she used the WC time carefully to provide

opportunities to learn to work together, to ask questions, to defend positions and to engage in challenging, robust and, at times, very difficult professional conversations. With a view to encouraging the students to see and understand the intended skills that were being developed (instead of assuming students were able to make sense of these decisions while learning new material), Janet made her teaching decisions/choices visible to her students.

The WC students were very aware of this focus and were able to describe this as important learning they had taken from the unit. Some spoke about the specific ways that the WC provided them opportunities to develop, practice and rehearse specific collaborative skills that would be necessary for them in their role as a teacher. One WC student summarized how they were

"very aware that you were working in a professional environment. And I sort of saw it as a bit of practice for when we left uni and were teaching, as to working with other teachers which are now our PLCs" (Interview).

Another student noted how the WC allowed them to "*to establish relationships of discourse*" (Standardized University Evaluation).   Other students expanded on this idea of 'practicing' skills that mimic real life collaborative conversations in schools.

And they were such good conferences also because you're very aware when you go to something like that that you might get put on the spot, and asked a question, and that you are taking up other people's time so you prepare really well. I thought that I would feel a lot of pressure to take my turn as group spokesperson but as it turned out there was a relaxed sharing of the role. I learned to just do it and believe I had something to say (Interview).

Within the web conferences that is sort of where we were taught to have the skills to actually collaborate. Listening and also having to back up what you say, not just going "Oh yeah, I go with that person." You have to defend your ideas or you spark off somebody else's thoughts or you all have a like idea. And that is wonderful (Interview).

We'd done some web cons in other subjects, and that was just mainly group discussions with all of us as a group discussing things. But this one was "Right, I'm choosing three people and they're going into this discussion room and you are going to talk about this and then come back to the group and report." And that was, like it was odd talking to people that I'd never met and having to come up with ideas and discussions and then summarise them and report back. But it was so useful in the end, because you became far more articulate and specific. These are the skills I needed to learn (Interview).

A second way the unit sought to develop new knowledge for students was in relation to their understanding of teacher inquiry. Some WC students described the ways their learning had improved over the unit, noting,

"As *a capstone unit, I feel like I achieved significant growth over the semester"* (Standardized University Evaluation).

Others described the ways the new knowledge had been instrumental from a philosophical perspective, noting how the unit

"*rocked my core beliefs leaving me with the resounding understanding that education is essentially a human domain"* (Self-Designed Questionnaire).

For others, the unit helped them acquire skills to move beyond reflecting to adopting an inquiry stance:

"*While I have always considered myself a reflective educator, constantly questioning my practice, I believe I have now gained extra understanding on how to extend my reflections into wonderings and inquiries to better support and inform my practice*" (Assessment Task Commentary). Still others noted they now had the skills and agency to conduct their teacher inquiry project "*I really want to do this [my inquiry] when I get out. I am ready. I have the skills*" (Assessment Task Commentary).

To gain further insight into the ways in which the WC promoted knowledge development, quantitative data from the self-designed questionnaire was compared among tutorial groups (WC to on-campus and MyLO) (Table 2). Analysis revealed that more WC students perceived that their tutorials supported learning about teacher inquiry (Item 1) as compared to the students in the other tutorial groups. More WC students also indicated they believed they had higher levels of skills (Item 2) and desire (Item 3) to actually complete their inquiry project. More WC students reported having a greater understanding of and belief in the importance of teachers knowing about inquiry (Item 4 and 5) and having scholarly research skills to conduct an inquiry (Item 6 and 7).

The qualitative data provides a more detailed insight about the ways in which the WC students believed their learning was enhanced through participation in the weekly synchronous meetings. In general, they reported that their learning about teacher inquiry via WCs was deeper than if they had been studying in the MyLO space. They spoke about a degree of intellectual rigour and engagement that just did not present in the MyLO space. The WC students were well positioned to comment and compare between mode of study, since this was their final semester of study of a two year degree, and by the time they were completing the Teacher Inquiry unit, they had completed at least twelve units. Since no other unit in the course offers weekly WCs, these online students would have completed all their other units via the MyLO space, so they arrive in a strong position to reflect on and make comparisons by mode of study. A student explains,

> *I found [the WCs] incredibly demanding and rigorous. And I would have to get up at 6 am in the morning and log on and there would be these sort of sleepy people, but it was so focussed. And I found it incredibly productive, talking about productive pedagogies, critical thinking, collaborative thinking, all these sorts of modes of being. I found it very, very rigorous compared to the usual discussion forums on MyLO* (Interview).

Another student noted,

> *I feel as though opting into the WC was the best decision I could have made in regards to my learning in this unit, simply having the chance to talk to others was excellent, I was opened to new ways of thinking about learning and understandings that I would not have had otherwise* (Assessment Task Commentary).

Item	Enabler	On Campus (n=47)		Online (D2L/MyLO) (n=24)		Online (Web Conference) (n=27)		F	Significance
		M	*SD*	*M*	*SD*	*M*	*SD*		
Knowledge									
1	The tutorials supported my learning.	4.43	1.118	5.13	.992	5.70	.542	15.700	WC > OC (***)
2	I have the skills to conduct my teacher inquiry project.	4.88	.928	4.47	1.389	5.25	.577	2.412	WC > OC WC > OL
3	I hope to one day conduct my inquiry project.	3.96	1.488	4.21	1.744	5.19	1.001	6.372	WC > OC (**) WC > OL
4	After taking this unit, I see the importance and relevance of teacher inquiry.	4.40	.970	4.71	1.268	5.33	.784	7.314	WC > OC (*) WC > OL
5	After taking this unit, I think all teachers should know about teacher inquiry.	4.51	.882	5.08	.232	5.37	.742	8.261	WC > OC (**) WC > OL
6	This unit helps me demonstrate research skills at AQF Level 9.	4.74	1.188	5.30	.876	5.50	.648	5.555	WC > OC (*) WC > OL
7	The assessment tasks helped me show I was working at AQF Level 9.	4.83	1.049	5.26	.752	5.38	.804	3.584	WC > OC (*) WC > OL
Relationships									
8	The tutorials provided opportunity for interaction and collaboration.	5.23	.890	4.88	1.035	5.81	.396	8.528	WC > OC (*) WC > OL (***)
9	The tutorials provided opportunity for student exchange.	4.72	.772	4.46	1.503	5.63	.688	10.631	WC > OC (**) WC > OL (***)
10	Professional learning communities have been developed in tutorials.	3.91	1.195	4.38	1.135	5.19	.834	11.595	WC > OC (**) WC > OL (*)

Note. Questions were from the self-designed questionnaire and asked students to respond on a 6 point Likert scale where 1=strongly disagree and 6= strongly agree.

Note. Degrees of freedom for all questions: between groups = 2; Within groups = 95; Total =97

Note. * the mean difference is significant at the 0.05 level; **the mean difference is significant at the 0.01 level; ***the mean difference is significant at the 0.001 level.

Note. WC = web conference; OC = on campus; OL = online.

Table 2: Analysis of Variance (ANOVA) Between Perceptions and Mode of Study

Relationships

Timperley (2015) notes the vital role that relationships assume in enabling effective professional conversations. She points specifically to the well-known crucial elements of trust and support as being bedrocks of solid relationships. She takes this one step further however, in noting that these relationships must move beyond the 'feel good' elements into something that allows and encourages challenge and difference to present, be held and worked through. She argues that these conditions ultimately allow people to work together and feel they are capable of making a difference.

Janet deliberately designed the WC with this enabler in mind. She sought to foster authentic professional relationships in the WC through the variety of strategies that have been reported in this paper. It seems these efforts had a positive effect on the ITES and a common theme emerging from the data is that students reported the development of meaningful relationships, centred on trust and respect, with their colleagues in the WC. Students spoke about how the WC allowed development of learning communities as a result of meeting week after week with the same students:

> *I feel that through the web conference I have made a little PLC [professional learning community] of my own, similar to what I would have if I was studying on campus and good practice for when I am going to be a teacher* (Assessment Task Commentary).

> *For the breakout rooms that always involved the Maths/Science group, we managed to bond very well and developed a great deal of trust and respect for each other. Our last session went well over time and everyone engaged with the group off line, via email. I believe we'll still stay in touch after this unit is over* (Self-Designed Questionnaire).

When data from the self-designed questionnaires was analysed to compare perceptions among students in different tutorial groups (WC to on-campus and MyLO), analysis revealed that more students in the WC tutorials felt they experienced more opportunities for interaction and collaboration (Item 8), student exchange (Item 9), and the development of professional learning communities (Item 10) than their on-campus and MyLO counterparts. Please refer to Table 2 for levels of significance.

Timperley advocates that relationships need to be safe enough that 'challenges' are welcomed and encouraged. Through her design of the WC, Janet purposefully created opportunities for challenges to present. One pedagogical tool that was purposefully designed to invite students to challenge and be challenged was the Tuning Protocol. By way of background, in the weeks preceding the submission of both assessment tasks, Janet invited all students (irrespective of tutorial mode) to participate in a "Tuning Protocol", which, as the name suggests, provides an opportunity for have their work "tuned" by a group of students. Much like an orchestra 'tunes' their instruments before a performance, or a car is 'tuned' to ensure the safest and best operation, the assumption underlying this activity is that attention to improvement allows work to be enhanced, refined and improved. Janet placed students in groups of 4 or 5 and engaged in the structured process that involved receiving feedback and reflections from their peers on a draft of their assignment.

The students in the WC were purposefully placed in their tuning groups according to their subject specialty. The feedback from these students was overwhelmingly positive, suggesting that the process was relevant and valuable in the development and refinement of both assessment tasks. One student noted how "*It was very beneficial to examine other inquiries and provide feedback to the members of my group in such a collaborative manner.*" The WC students described the specific skills they learned about giving and receiving challenging feedback by participating in this process:

> *It was really helpful to say to someone in the group situation, like they would pick apart things and ask you questions and help spark more engagement with your initial question as well. Because then you sort of went "Oh, actually I hadn't considered that at all. I hadn't thought about that." So it was good to have that perspective. I sometimes think we don't do that particularly well in the school setting either. We don't necessarily say to students "OK, let's give some skills to actually practice giving feedback to each other." Like, we don't often do that* (Interview).

As a result of participation in this exercise on the WC, students were adamant that their work had indeed improved and expressed gratitude to their specialist peers:

> *The WC tuning protocols…I found these to be so incredibly beneficial, I do not think I would have been as happy as I was/am with my assignments without them. I think I both offered and received good, relevant, useful and interesting feedback. I enjoyed reading other peoples' work and seeing how my peers think and understand concepts. I believe that the Arts group in the tuning protocols was a really supportive and beneficial community, I felt safe and supported when sharing my ideas and I relished hearing what others in the group had to contribute* (Assessment Task Commentary).

The tuning protocol served to showcase the merit of peer to peer feedback and students reported that this continued outside the weekly WC meetings.

> *I loved engaging with my Arts group using the tuning protocol and contributed significant time to this outside web conference time, supporting colleagues via email with the refinement of their assignments. I also found this extra involvement very interesting and also beneficial for my learning as I engaged with the inquiry projects of other students – this was really exciting and inspiring alongside the development of my own* (Assessment Task Commentary).

Conclusion

This paper describes the ways in which weekly WC were designed with due consideration for the five enablers for professional conversations identified by Helen Timperley (2015). It also reports on ITES perceptions and experiences of the WC. Self-reflection data from students collected across four data sources reveal the powerful ways in which the WC allowed the ITES to practice and rehearse having professional conservations.

These findings stand in stark contrast to some literature that describes online learning as potentially lonely and disengaging (Garrison, Cleveland-Innes, & Fung, 2010; Herrington, Reeves, & Oliver, 2010; Salmon, 2013). We find solace in the evidence suggesting that the well-designed synchronous WC influenced ITES' self-reported perceptions of their understandings of, passion for, and skills to engage in professional conversations. Given the mounting calls for graduating ITEs to be 'classroom ready' and to have skills to embed a culture of inquiry into their teaching practice (Department of Education and Training, 2014b), alongside the need for the capacity to engage in professional conversations (Australian Institute for Teaching and School Leadership (AITSL), 2014), our findings offer insight into the ways that learning these critical skills can be planned for the growing number of online ITES. The ripple on effect of teachers having these skills is significant and has certainly been heralded in a number of important recent documents that link high performing school systems with a culture of inquiry (Jensen, Sonnemann, Roberts-Hull, & Hunter, 2016).

As the demand for and provision of online teacher education continues to grow, the findings of this paper point to the ways in which online pedagogical innovations, such as synchronous WC, offer effective strategies to engage students and facilitate meaningful learning. For teacher-educators, this paper provides reassurance that the online environment can be as effective, even when the desired learning outcomes relate to attributes that would normally be associated with face-to-face activities.

In this project, Timperley's Model (2015) served as a useful framework for thematic analysis to examine and assess the extent to which the WC facilitated professional conversations. Timperley's Model could also be used as a planning tool, to ensure that WC are integrated into an online teacher education course in a purposeful and efficient way. Facilitating a WC that expects students to be active contributors is not an easy task; it takes significant preparation and technical confidence to do this well. By planning carefully to ensure the enablers Timperley suggests are present, WC have the potential to provide a rich and rewarding learning environment that responds to national priorities for graduates who are ready to take their place in their profession. The findings of this study offer teacher-educators, whether teaching online, on-campus or in a blended mode of study, another teaching strategy to consider when considering how best to engage students in meaningful, effective professional conversation

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