Forced Online: An Exploratory Study of Language Teacher Identities During Emergency Remote Teaching from a Complex Dynamic Systems Theory Perspective

ออนไลน์ภาคบังคับ: การวิจัยเพื่อการสำรวจอัตลักษณ์ครูผู้สอนภาษาในช่วงการสอนทางไกลในสถานการณ์ฉุกเฉินจากมุมมองทฤษฎีระบบพลวัตแบบซับซ้อน

Robert Wood

Faculty of Humanities, Srinakharinwirot University

Abstract

Developing our understanding of teachers and supporting them to be the teachers they want to be is not just beneficial for the wellbeing of teachers but also a fundamental element to the learning process. Emergency Remote Teaching (ERT) can dramatically change how teachers are required to teach and influences their lives in many ways. This study aimed to explore how the teacher identities of three teachers changed since becoming online teachers and what the circumstances and context was for these changes. Following three recorded online discussions data was collected in the form of transcribed discourse which was interested from a Complex Dynamic Systems Theory perspective. Changes in the roles teachers have been found since becoming online teachers that differed compared to face-to-face teaching. A broad range of influences were found to be significantly impacting the teacher identities of the participants from both inside and outside the teaching context. The study found that changes in the teacher roles of the participants changed significantly, teacher roles may consequently result in more feasible teacher identities and that interaction with students and building rapport are key contextual aspects for these changing roles. The study suggests further use of complex dynamic systems theory for articulating and understanding teacher identities.

Keywords: Language teacher identity, Online teaching, Emergency remote teaching, Complex dynamic systems

บทคัดย่อ

การพัฒนาความเข้าใจของครูและการสนับสนุนให้คนคนหนึ่งเป็นครูในแบบที่เขาอยากเป็นนั้น ไม่ใช่เพียงแต่เป็นประโยชน์ต่อตัวครู แต่ยังเป็นองค์ประกอบพื้นฐานของการเรียนรู้อีก การสอนทางไกลในสถานการณ์ฉุกเฉิน (Emergency Remote Teaching - ERT) สามารถเปลี่ยนวิธีการสอนของครู และมีอิทธิพลต่อชีวิตของครู อย่างมากในหลาย ๆ ด้าน งานวิจัยชิ้นนี้มีวัตถุประสงค์เพื่อสำรวจอัตลักษณ์ของครู 3 คน โดยศึกษาการเปลี่ยนแปลงอัตลักษณ์ของครูนับตั้งแต่มีการเปลี่ยนวิธีการสอน เป็นรูปแบบออนไลน์ และศึกษาสถานการณ์ และบริบทของการเปลี่ยนแปลงเหล่านี้ ผู้วิจัยรวบรวมข้อมูลจากการสนทนาออนไลน์กับครูแต่ละท่าน แล้วถอดเสียง เพื่อทำการวิเคราะห์ด้วยทฤษฎีระบบพลวัตแบบซับซ้อน (Complex Dynamic Systems Theory) บทบาทของครูมีการเปลี่ยนแปลงตั้งแต่เริ่มมีการสอนในรูปแบบออนไลน์ ซึ่งแตกต่างจากการสอนแบบต่อหน้า ผู้วิจัยพบว่าอัตลักษณ์ครูได้รับผลกระทบอย่างมีนัยสำคัญจากอิทธิพลที่หลากหลายทั้งจากภายในและภายนอก บริบทการเรียนการสอน ผลการวิจัยชี้ว่า บทบาทของครูจากมุมมองของครูที่เข้าร่วมการวิจัยนั้น เปลี่ยนแปลงไปอย่างมีนัยสำคัญ โดยบทบาทของครู อาจส่งผลให้ครูผู้สอนมีอัตลักษณ์ที่เหมาะสมมากขึ้น ซึ่งการโต้ตอบและการสร้างสายสัมพันธ์กับผู้เรียนนั้น ถือเป็นลักษณะทางบริบทอันสำคัญที่ส่งผลต่อการเปลี่ยนแปลงดังกล่าว การศึกษานี้ชี้ให้เห็นถึงความเป็นไปได้ในการใช้ทฤษฎีระบบพลวัตแบบซับซ้อน เพื่ออธิบายและทำความเข้าใจอัตลักษณ์ของครู

คำสำคัญ: อัตลักษณ์ความเป็นครูผู้สอนภาษา, การสอนออนไลน์, การสอนทางไกลในสถานการณ์ฉุกเฉิน, ระบบพลวัตแบบซับซ้อน

Introduction

The wellbeing of teachers is rightly becoming a growing field of research (Mercer, 2018; Sulis et al., 2021) and developing our understanding of teacher identity is inextricably linked to this. Emergency Remote Teaching (ERT) can dramatically change the way many teachers instruct their lessons and conduct everyday aspects of their professional lives. The recent COVID-19 pandemic is an example of ERT on a vast scale, which influenced teachers all over the world. While there have been studies focussed on the outcomes on language teaching and learning (Civelek et al., 2021; Er & Karatas, 2021; Gao & Zhang, 2020; Gao & Zhou, 2021; Zhang et al., 2021; Zou et al., 2021) there appears to be a lack of research into how a sudden shift to online teaching may impact teacher identities. This study aims to fill that gap by exploring the changes in teacher roles and plethora of possible circumstances and contextual reasons for changes in the teacher identities of three participants, with varying degrees of education and experiences, who were formally living and teaching at the same university in Southern China before the COVID-19 pandemic began in early 2020. While working at this university together they also lived on the campus where they taught, an isolated campus in

a rural area. The participants were unable to return to China after beginning the winter holidays in January 2020, which led them to becoming online teachers, continuing to work for the same university they previously taught students face-to-face at. After teaching online for over two years the participants were able to provide insightful data, through Online Discussion Group Tasks (ODGTs) focussing on before, during and after (imagined) becoming online teachers. It is important to highlight that there are many forms of online teaching within the EFL field. This study focusses on online teaching in a form that has replaced previous face-to-face, full time teaching positions.

A previous study adopted the use of Discussion Group Tasks (DGTs), which focus on gathering data from discourse collected from recordings of participants completing methodically designed tasks, from a Communities of Practice model perspective, finding that *freedom* was a key factor related to the participants achieving an ideal teacher identity within their face-to-face teaching context (Wood, 2021). However, following the call for exploring teacher psychology from a Complex Dynamic Systems Theory (CDST) perspective by Mercer (2018), CDST has been viewed as an ideal lens for understanding the influences on language teacher identities since becoming online teachers. Afterall, the concept of a community of practice, where discourses are shared and construct the identities of teachers within context (Clarke, 2008) arguably does not apply to online teachers, in this case teaching and living in different parts of the world. Furthermore, CDST accommodates the growing recognition of language teacher identities as being complex and changeable (Henry, 2016; Henry, 2018; Hiver & Whitehead, 2018). This study aims to explore the changes in teacher roles and plethora of possible circumstances and contextual reasons for changes in the teacher identities of three participants.

The significance of this study is to continue developing a better understanding of what influences teachers during potentially difficult situations like abruptly switching to online teaching. Furthermore, the method of collecting data through ODGTs may be useful for other similar studies. There has been a previous study by Lu and Curwood (2015) on how pre-service teacher identities were constructed through online discussion groups (Facebook), yet research in this area appears few and far between. With the above in mind, the following research questions were chosen to guide the study:

1. How do the roles of language teachers change because of teaching online compared to in class face-to-face?
2. What are the circumstances and context of the changes from a CDST perspective?

Literature Review

The focus of this study is to explore Language Teacher Identities (LTI), specifically in relation to becoming online teachers. The study of language teacher identities has gained much popularity after moving on from the arguably outweighed attention paid to second language acquisition with little regard to the driving force behind the whole process of learning (Kostoulas & Mercer, 2018; Mercer, 2018). CDST is becoming widely recognized as an ideal lens for exploring LTI, and there are many previous studies to develop a clear rationale for applying this theoretical perspective. Essentially, language teachers should be able to achieve an ideal teacher identity, and there are many examples of the processes involved in doing so. With this in mind, it is logical to assume that there may be recurring influences involved in *becoming and being the teacher we want to be* and better understanding these influences may help guide the management of language teachers in varied contexts.

Language Teacher Identities: Online Teachers

There are multiple ways of conceptualising identities which involve a plethora of different factors. Beauchamp and Thomas (2009) highlighted the multifaceted nature of teacher identity and the significance of context for its construction. One way of breaking down teacher identity to articulate it is as various roles, such as disciplinarian, presenter, storyteller, motivator etc (Farrell, 2011). Therefore, it is likely that different contexts may form specific roles for teachers which involves some combination of agency and structure. Lu and Curwood's (2015) study focused on how pre-service teachers *exhibited* and *conceptualised* their identities through online discussion groups and interpreted six key emergent identities through the data gathered; sociable, supportive, open, helpful, reliant, and hidden. These emergent identities were selected for this study as a way of more definably, articulating, interpreting, and discussing the teacher identities the participants exhibited and conceptualised, because of the similarities between the ODGTs and online discussion groups as a context for gathering data.

ERT has been studied in the past, finding that perceived values of online teaching, self-confidence in online teaching, and stress felt during ERT to be important factors (Jin et al., 2021). Juárez-Díaz and Perales (2021) found that most of their participants reported negative feelings towards online teaching related to the lack of interaction and access to internet. While Huang et al. (2023) discovered that experienced teachers were able to find strategies to cope with becoming online teachers, resulting in fond memories of dealing with the challenges.

Therefore, there are multiple potential impacts related to suddenly becoming online teachers. Er and Karatas (2021) conducted a study on how the number of years of experience for EFL teachers impacted their motivation towards online teaching during the COVID-19 pandemic. The study concluded no clear difference between less or more experienced teachers, stating "...teachers are intrinsically motivated and are willing to teach EFL no matter how many years they have been teaching" (p. 110). While their study does not focus on identity, it is not difficult to imagine that a motivated teacher is likely to have a more ideal LTI. Furthermore, when identity is viewed as multi-faceted and complex it is necessary to have an open-minded exploratory mindset to better understand teacher identities, which leads to the theoretical perspective chosen for this study.

Theoretical Perspective: Complex Dynamic Systems Theory

Cultural models have significant advantages for exploring teacher identities, showing how factors like agency, discourse, and context link to the construction of an individual identity. Furthermore, they provide the opportunity to connect individual interpretations by researchers to a greater understanding of potentially shared experiences in teacher identity construction (Varghese, 2018, p. 77). However, CDST is helping to provide specific language for articulating the complex nature of teacher identity. Larsen-Freeman and Cameron (2008) brought CDST into the field of applied linguistics focussing mostly on how this theoretical perspective can be used for understanding language acquisition as a complex system. Systems may be recognised as complex when they possess "...the following core characteristics: (a) change over time, (b) interconnectedness and non-linearity, and (c) self-organisation properties" (MacIntyre et al., 2020, as cited in Sulis et al., 2021, p. 2). The link between teacher beliefs and actual practices was shown to be a complex system with these characteristics. In Goa and Zhou's (2021) study, beliefs would be a significant aspect of a teacher's identity. Focusing specifically on language teacher identities, Varghese (2018, p. 75) explains that there has been a "...movement away from an individualistic, static approach to role or professional identity to one where identities are viewed as being in constant negotiation intra- and inter-individually." Therefore, language teacher identities have become widely recognised as complex systems.

Henry (2018) stresses the necessity of researching teacher identity from a CDST perspective to establish theoretical attempts to articulate connecting concepts. Teacher identities can be articulated with the following language highlighted in italics. *Emergent properties* are new features of teacher identities that did not exist previously and occur

spontaneously from the interactions within the system. When more stable regions or states emerge in the system's *state space,* this is referred to as *self-organisation.* Essentially the *state space* forms the entirety of states that can exist. When regions or states become stable, they are called *attractor states.* A system of teacher identity may have multiple attractor states (disciplinarian, entertainer, sociable, motivator, presenter etc), transitioning from each other or new emerging states, which is a process called *phase shifts.* Phase shifts occur when *control parameters* (contextual influences) change or *perturbances* within the system causes changes in the context (Byrne & Callaghan, 2014; Henry, 2016). A specific perturbance in relation to this study was the dramatic shift from being classroom teachers to online teachers because of the COVID-19 pandemic and the multiple other influences this had on the teacher identity systems the participants developed since this began. This study aims to develop a better understanding of the possible phase shifts that occurred and the control parameters or perturbances which may have caused these changes in three participants' teacher identity systems. Henry (2016, p. 293) highlights that "Generally, dynamic systems are drawn toward particular attractor states." His study was able to create visual system spaces with attractor states which strengthens the articulation of using CDST to explore teacher identities. The strength of the attractor states, depicted by the depth on the topological state spaces, were useful while explaining how certain teacher identities became more stable (the deeper the attractor states the more stable they become). This study does not provide the same visual articulation as Henry's research, but the language highlighted above will be a significant part of the discussion that follows while applying CDST.

Ideal Teacher Identities

One of the main reasons for exploring LTI in this study is to develop a better understanding of how the participants exhibit an ideal or unideal teacher identity within their contexts and systems. This may enable institutions and other stakeholders to positively influence the construction and maintenance of ideal identities for teachers which would improve teacher retention. Furthermore, "...the use of complexity tools in developing an awareness of when shifts to undesired identities take place, and understanding how and why such shifts occur, can function in ways that can reduce energy-sapping effects" (Henry, 2016, p. 303). Focussing on motivation, Sahakyan et al. (2018, p. 63) emphasise the significance of broader sociocultural dynamics for ideal and feasible perceptions of selves as language teachers. From their study it was also found that the "...feasibility of the teachers' selves was

strengthened by their contextual dependency at a micro level." Feasibility in this context is seen as a combination of more realistic and achievable imaginations of possible selves. The participants reflected on their current self-images based on specific courses and classes at that time rather than more abstract portrayals of the future. From a CDST perspective this suggests the importance of parameters or perturbances from potentially closer spheres of influences to the core of teacher identities within the system. Although not directly related to teacher identity, this study offers potential for exploring how the participants were able to achieve and ideal or feasible LTI while teaching online for such a long time. It also raises the significance of influences on a teacher identity system.

Influences on Teacher Identities: Online Teaching

From a CDST perspective the amount and variation of influences on a complex system like teacher identity is potentially vast. Although even a system as complex as teacher identity is likely to self-organise into more stable periods (attractor states) because of the parameters and perturbances involved in the system, many teacher identity systems are likely to be multi-stable (multiple attractor states). This is because of how a system like teacher identity is open to external influences. There are possibly many roles or identities that a teacher may adopt, some ideal and others undesired. According to Henry (2018):

> In multi-stable systems external influences have a different effect than in systems governed by single attractors. Although in single attractor systems external influences inconsistent with the attractor can have an immediate impact that is subsequently dampened over time (i.e., as the system returns to its attractor), in a multi-stable system this is different. Here the movement of the system depends on the extent to which an external influence is incongruent with an attractor. (p. 301)

This is study is recognising the teacher identity systems of the participants as being multi-stable systems due to the likelihood of a plethora of influences within their systems because of dramatically becoming online teachers. Previous studies have shown different types of parameters or perturbances influencing online EFL teachers in China during the COVID-19 pandemic. Zhou et. al., (2021, p. 1) found that "...more pressure on online teachers comes from students' preference for the traditional way of imparting knowledge." Therefore, managing the preferences of students may result in undesired attractor states within a

teacher's identity system as an online teacher because of the challenges, or perturbances, this influence creates. Many other challenges have been highlighted for online EFL teachers during the COVID-19 pandemic, including a lack of knowledge in information technology, an inadequate teaching and learning environment, and inability to manage the classroom properly (Gao & Zhang, 2020, p. 8). In a study outside of China, Civelek et al. (2021, p. 95) highlighted the following main reasons for teachers' negative attitudes towards online teaching:

(1) teachers' inadequate knowledge and skills about educational technologies

(2) lack of students' motivation to participate in online sessions

(3) the shortcomings of virtual meeting applications

(4) lack of interaction in online sessions

(5) some students' inadequate access to necessary equipment for successful online learning to take place

These reasons or influences for negative attitudes towards online teaching are likely to have a detrimental impact of the identity systems of the teachers while teaching online.

A picture is emerging now which shows the truly dynamic nature of teacher identity as a complex system. However, it is important to highlight that not all parameters involved in a state system will necessarily influence the attractor states which form. For example, Er and Karatas (2021) conducted a study on how the number of years of experience for EFL teachers impacted their motivation towards online teaching during the COVID-19 pandemic. The study concluded no clear difference between less or more experienced teachers, stating "...teachers are intrinsically motivated and are willing to teach EFL no matter how many years they have been teaching" (p. 110). Therefore, it is essential to further study the possible influences that may determine an ideal or undesired LTI and develop a more articulated method of exploring and interpreting these complex systems.

Research Design

Participants

Three participants were selected because of their contextual similarities in terms of working for the same university in Southern China and sudden shift to becoming online teachers as a result of the COVID-19 pandemic. They were all teaching English language

courses face-to-face at the university for between one to two years before the pandemic began. They subsequently spent a minimum of two years teaching online, unable to return to China.

The participants have all been given pseudonyms to protect their privacy and all the data collected during the recoding and transcriptions is safely secured by the researcher. Alex is a male American language teacher in his late thirties and would be described as the least experienced teacher out of the participants. Katelyn is a female American language teacher in her early thirties with previous experience teaching ESL in the US; she is the most qualified and experienced of the participants. Liz is a female South African language teacher in her early thirties with minimal previous teaching experience but well-qualified.

Methodology

Data for this study was collected using Online Discussion Group Tasks (ODGTs). Discussion Group Tasks (DGTs) were used in a previous study focussing on teacher identity in the physical context in which the current participants were teaching face-to-face at before the COVID-19 pandemic began. DGTs can be defined as "…systematically designed tasks for participants, in this case teachers, to collaboratively complete to produce guided discourse which can be used as data for analysis" (Wood, 2021, p. 18). This previous study found DGTs to be a useful method for collecting data from a socio-cultural perspective on teacher identity and suggested future use of CDST as a potentially insightful lens for further exploring teacher identity with this method.

The main difference in the application of this method is that the DGTs had to be conducted online through the Tencent Meeting app, due to all three participants currently living in different parts of the world. The ODGTs were completed over a period of three weeks, in which over three hours of recordings were made. From these recordings thirty-five sections were selected amounting to over eight-thousand words of transcriptions due to their apparent usefulness for answering the research questions. After methodically analysing these sections nine excerpts were chosen for this paper, as shown in the *Results* section. The reasons for selecting these excerpts are explained in the *Most Salient Themes* section which follows. Appendices 1, 2, and 3 show the task handouts which were given for the participants to complete during the ODGT recordings. Appendix 1 focuses on a *past perspective as face-to-face teachers*, before the pandemic, when the participants were physically teaching in their shared teaching context. Appendix 2 was designed to focus discourse on a *present perspective*

as online teachers, when the participants were forced online because of the pandemic up until the current time of recordings. Finally, appendix 3 intended to draw the participants attention to an *imagined future perspective as face-to-face teachers* returning to the classroom. The rationale for this design was to try to develop a sense of the possible timescales involved with any changes in and influences on teacher identity.

Each task handout had a similar theme, focusing first on teacher roles, which were selected from Farrell's (2011) study, and adopted for Wood's (2021) previous research. The rationale behind this was to develop an insight into possible changes in teacher identity roles across the three phases of ODGTs. The next part of the task handout was designed to try to understand what influences the teacher identities of the participants from the different perspectives across the three phases of ODGTs. An integral aspect to the whole method of collecting was the theoretical perspective of CDST.

Theoretical Perspective: CDST for Gathering and Analysing Data

The ODGTs provided a rational method for collecting significant amounts of data through discourse and transcriptions. Henry (2018, p. 244) explains how he coded more specific parts of larger transcription data when using CDST for researching teacher identity based on how these excerpts "...focused on instances in the text where the articulation of an identity could be discerned." Essentially, a similar process was used for this study, only multiple excerpts were selected after extensively listening to the full ODGT recordings and noting segments of discussion which were then transcribed. The excerpts were then analysed for salient themes and organised into titled groups for in-depth analysis and interpretation based on the research questions for this study. Particularly insightful segments of the excerpts were highlighted using Microsoft Word due to how these examples of discourse related to changes in identity and factors influencing this system.

A significant factor for applying CDST requires an open-minded and holistic approach to analysis and interpretation of collected data. As with Wood's (2021) previous study salient themes emerged because of outcomes from the analysis, rather than assumptions made previously. This compliments the use of CDST as an analytical tool as the complex nature of teacher identity systems leads to the potential for multiple changes and a plethora of influences.

Research Process

The research process generally followed the same steps as Wood (2021), however there were challenges which emerged from completing the DGTs online that required more adaptations for both the preparations of the task handouts and the completion of the ODGT recordings. Many of these challenges were reflective of common issues for teaching online, such as creating interactive discussions, Wi-Fi connections, and audio problems. The most significant adaptation which was necessary to make was the initial design of the task handout to be completed collaboratively, with one participant taking control of the second task, *Spheres of Influences*. However, this proved to be too distracting for the participant that was completing the practical aspect of the task. Therefore, the research opted to take notes of the discussions for this section which were sent to the participants to verify after the ODGT recording. Despite these challenges the research process flow chart below (see *figure 1*) is deemed to be replicable for other similar studies using DGTs/ODGTs.
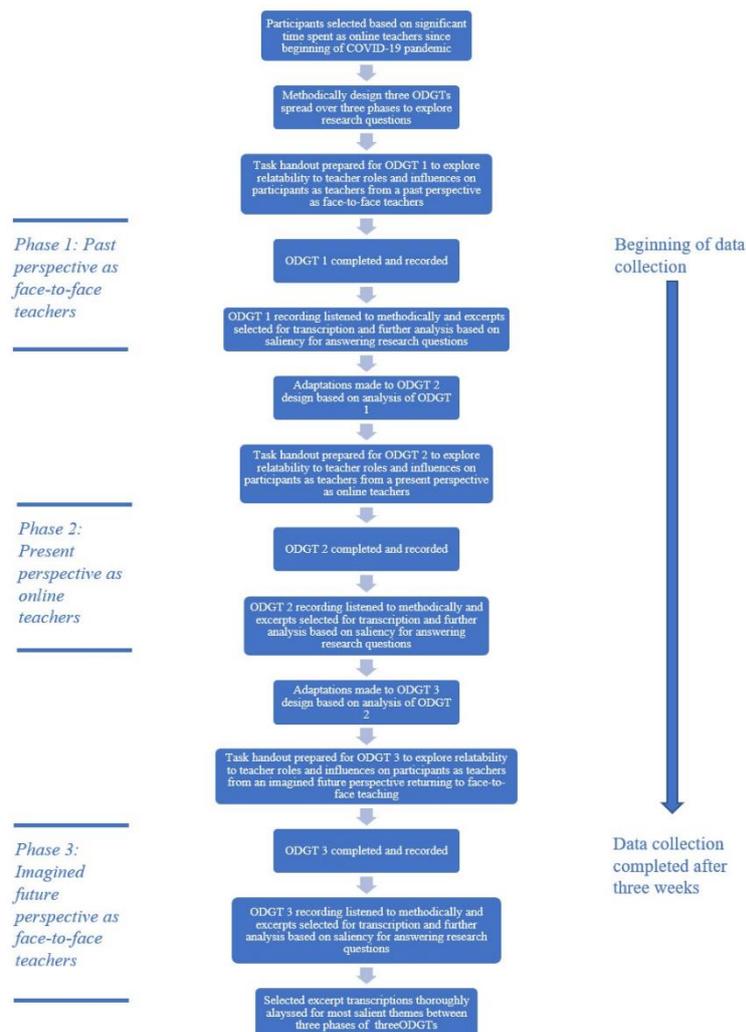

Figure 1: *Research Process Flow Chart*

Results and Analysis

The findings of this study have been selected based on the rationale explained in the *research design* and usefulness for answering the research questions that guided this exploratory research. The *most salient themes* emerged through how the participants exhibited a changing teacher role since teaching online and a significant circumstance and contextual factor of teacher-student interactions on the teacher identity systems of all the participants. These themes have been highlighted in the interpretation and analysis of the discourse collected following transcription.

The identities that emerge through data gathering and analysis do not necessarily reflect who the participants are as people, but they are, in a way, exhibiting and conceptualising what kind of teachers they are through the excerpts selected from the ODGTs. The participants may have exhibited multiple identities throughout the ODGTs. Essentially, this is an interpretation of the data gathered (Lu & Curwood, 2015, p. 442).

Most Salient Themes

1. A disciplinarian role phase shift emerging for Alex.
2. Teacher-student interaction and building rapport.

Interpretation and Analysis: An emerging disciplinarian teacher identity

Alex's teacher identity system appeared to go through a significant phase shift since becoming an online teacher. Alex states that:

I would say with disciplinarian I am strongly unrelated to that um I only pull up that card when necessary given that the nature of the students is very obedient so they kind of discipline themselves I guess.

Therefore, it seems that Alex's past teacher identity system did not contain an attractor state as a teacher who felt the need to discipline his students, perhaps because of his context as a university teacher where the students are generally more mature and do not require this teacher role. In the same segment of speech Alex goes on to say that:

I don't know if I can do that. That's why I don't want to teach in the states because I would have to become a disciplinarian and that's not the part of teaching I enjoy.

This is a strong example for the stability of Alex's teacher identity system from the past as a face-to-face teacher. Alex likely had other stronger attractor states within his system that reflected a more ideal teacher identity that did not require a disciplinarian part of teaching. The concept of having to "become a disciplinarian" would have resulted in an undesirable teacher identity. Following a small discussion on the topic of how the participants maintained discipline in their past face-to-face teaching contexts,/ it appears that all three participants preferred a more sociable teacher identity to share experiences with the students and how to behave as a student at university. A sociable teacher identity is regularly exhibited as an ideal teacher identity by Alex throughout the ODGTs and becomes in conflict with the disciplinarian role that emerges in this system.

The significant perturbance that occurred in Alex's teacher identity system because of dramatically becoming an online teacher during the COVID-19 pandemic led to a period of self-organisation and the emergence of a disciplinarian role as an attractor state. Although the timeline in which Alex's teacher identify system experienced the self-organisation was short, it does give an insight into how a phase shift emerged with a disciplinarian role becoming a strong attractor state, Alex states that:

I have become much more of a um let's see what [that is um maybe more a [disciplinarian yeah but I go hard at the in the beginning just like you know these are the rules and I enforce them in the first two or three class.

The use of the word "become" is perhaps an indication of how this phase shift did not occur immediately when Alex started teaching online. Instead, it is more likely that the parameters that emerged in Alex's changing identity system as an online teacher resulted in the necessity of more discipline to conduct classes online through a process of self-organisation. Some of the possible parameters involved in this process are mentioned by Alex such as students not having their cameras on or not showing their faces. This is another example of Alex's ideal sociable teacher identity with interaction with the students being in conflict as an online teacher. The importance of trying to maintain this more ideal attractor state in his system perhaps led to the emergence of an attractor state as a disciplinarian. Alex still appears to be uncomfortable with this aspect of his teacher identity while teaching online, stating "yeah I don't like that". Although Alex appears to have established an undesirable

teacher identity system because of teaching online, the attractor state which formed as a disciplinarian seems to have become a stable element of his system.

Alex's teacher identity system may have gone through a phase shift with a disciplinarian role emerging as a stable attractor state in his system for the future. While imagining himself teaching face-to-face in the classroom again in the future Alex states that:

I will definitely bring back some more of that entertainment that I have been missing out on online since online has made me more of a disciplinarian than anything else.

Alex again exhibits an ideal sociable teacher identity by becoming more of an entertainer which he missed while teaching online. The way he refers to the disciplinarian role which emerged since teaching online has a negative tone here. However, he goes on to highlight that:

I have learnt that it is ok to be strict in the beginning and then you know you show your true colours and the students kind of relax a little bit and realise you know he is not such a bad guy.

This is an example of how a state system can self-organise with multi-stable attractor states co-existing with each other. Alex's ideal social teacher identity can co-exist with a less desirable, but perhaps practical, disciplinarian role when returning to the classroom which benefits the system. Therefore, a perturbance like suddenly becoming an online teacher potentially offers an opportunity for self-organisation within teacher identity systems forming multi-stable attractor states that co-exist and reflect an overall ideal teacher identity.

Interpretation and Analysis: Teacher-Student Interaction and Building Rapport

The following interpretation focuses on the most common and recurring topic from the second phase (*present perspective as online teachers*) and third phase (*imagined future perspective as face-to-face teachers*) of the ODGTs. All three participants exhibited interaction with students and building rapport as a significant contextual factor for their ideal teacher identities. From a CDST perspective the discourse provided examples of just how broad the parameters can be within a teacher identity system. Many of the factors related to teacher-

student interaction and building rapport that the participants exhibited are not directly related to teaching or the classroom.

First, it is important to understand why teacher-student interaction and building rapport became such an influential parameter with the teacher identity system following the perturbance of teaching online. Liz explains how technological challenges caused by switching from Zoom Meeting app to Tencent Meeting app made it even more difficult to create opportunities for interaction with the students. It is understandable that teaching online added new parameters to the teacher identity system which effected the pre-existing attractor states of the participants. Perhaps most importantly, these changes in the dynamic system will have reduced the stability of the sociable attractor states which all three participants view as ideal and less interactive attractor states may have emerged. This ideal teacher identity is exhibited regularly through the ODGTs and will be highlighted in this interpretation.

The influences that the participants discussed in relation to teacher-student interaction and building rapport exemplify the how broad (not necessarily related to teaching or the classroom) the spheres on influences can be on the core teacher identity system. When referring to the difference between face-to-face and online teaching in relation to the influence of interaction and building rapport Alex states that:

> seeing them around the school or going out to eat with them or even on the break helps to build rapport and therefore the class or the relationship with students gets better and I think there are benefits for that obviously whereas here there is no hanging out during break you know not being formal for a little bit um seeing them around and I am getting comfortable with you or you know and understanding where they are coming from or *who they really are* yes you can kind of gauge their personalities online a little bit but it is not the same as being in the class or around the campus and I miss that.

The potentially significant parameters within a system like the one Alex is alluding to are vast. These multiple and varied interactions with students are likely to form a multi-stable attractor state system. Alex mentions that he misses this aspect of teaching face-to-face and physically being on campus with the students is a vital parameter for the identity systems of the participants. Katelyn expands the breadth of possible parameters for a teacher identity

system by highlighting simply being in China greatly influencing her ideal sociable teacher identity:

I think um just being back in China to be honest is an influence in and on itself being surround by Chinese and you know eating Chinese food being *in* China I think it is also something that just makes me feel closer to the Chinese culture to the experience of the students um (pause) like I am using the same living space I am hearing their language their culture sharing their food and I feel like that in and on itself brings me closer to the students just the sheer fact that I am living in China as well I feel like it is something that improves the rapport as well and makes students.

Teaching is a personal and social profession, so it should not come as a surprise that the influential parameters exhibited by the participants, such as sharing experiences of food and living in the country of which you teach your students are highlighted.

The teacher identity systems of the participants have been interpreted and articulated as dynamic with potentially vast extents of parameters influencing the state system and likely forming multi-stable attractor states. The impact of these parameters, in this case related to the formation of attractor states conducive for achieving a more ideal sociable teacher identity were exhibited on multiple occasions by the participants throughout ODGT 2 and 3. For example, Katelyn exclaims:

wow it really it really helps a lot and that type of interaction I mean to yeah to not *even* have before class between class that is so limited and clearly effects the relationship within the class as well.

Thus, highlighting the impact online teaching has had with reducing the potential for building positive relationships in the classroom. Buttressing this factor, Liz states that:

they don't have that relationship with you now so they don't feel they have any obligation or sort of (pause) you know (pause) *connection* [if they don't do their homework or if they don't do something they will disappoint you because they don't have that relationship you you are just like a stranger in a way so if they don't do anything they don't really care because who the hell are you.

Bearing in mind that the participants appear to prefer a sociable identity, placing great significance on interaction and building rapport, becoming a "stranger" to the students must have formed attractor states incongruent to the ideal identities that may have been more achievable in a face-to-face classroom.

The participants directly refer to how becoming online teachers negatively impacted the previously positive influence of being able to interact and build rapport with students. Katelyn poignantly highlights the significance of these parameters:

> yeah I think definitely in person like you were saying the whole rapport I think that is definitely something that is a big influence on me that I am sure will be *again* in person is seeing the students around campus going to dinners with them *playing pool with them* hanging out with them *even* the ones that you don't hang out with just seeing them around [campus and saying hi you know what I am talking about that kind of interaction it just makes such a difference *in the classroom* that when they feel close to you they don't want to disappoint you and they also feel more comfortable with you so it improves the dynamic *so much* that I think that would be a big influence on me *again* which it was before and I think maybe coming from online teaching I would appreciate that *even more* and just realise how much I missed it and how important it is.

Becoming an online teacher changed Katelyn's teacher identity system and likely produced attractor states that formed an undesirable teacher identity. However, it also provided the opportunity for Katelyn to recognise the significance of interaction and building rapport with students, which she intends to "appreciate" more in the future. Finally, Alex further acknowledges the positive influence of face-to-face teaching and the negative influence of online teaching:

> just kind of like get them talking like you guys said about something that really excites them and relates to their everyday life I think you get more out of them than just talking about things that *don't* relate to their lives so that is true that's one of the things that is missing from the online experience hmm good point.

Alex mentions that aspects were "missing from the online experience", which implies that the teacher identity system while teaching online is lacking certain parameters that are conducive to forming a state system with an ideal teacher identity at its core. While understanding the individual parameters and their impact on a state system as complicated as teacher identity is difficult, being able to articulate influences in this way is helping to build a better foundation for exploration.

Discussion

The discussion has been separated into two parts, one for each of the interpretations and analysis that were made in the *results* section. The aim is to provide possible explanations, examples, or opinions that help to support or further understand what has been interpreted from the data gathered and analysed from the ODGTs from a CDST perspective.

Changing Roles as Online Teachers: An emerging disciplinarian teacher identity

Although the timescale of the changes that occurred in Alex's teacher identity system are not clear from the short timeframe in which the ODGTs were completed. While teaching face-to-face in his previous teaching context, Alex likely had multiple attractor states that co-existed to form his teacher identity. Henry (2016, p. 301) states that "In multi-stable systems, *initial conditions* play an important role." Perhaps one of the strongest attractor states in this initial system was that of being a sociable teacher seeking to entertain his students with off-topic conversations. This appeared to be a more ideal teacher identity for Alex, and perhaps a stabler system.

The perturbance of becoming an online teacher added new parameters to the teacher identity system. The discourse provided through the ODGTs offer some insight into the challenges that online teaching has created for the emergent teacher identities that were interpreted from the data. Alex appeared to struggle with the perturbances and parameters that lead to a phase shift in his teacher identity system, causing a more disciplinarian role to emerge. It is common for teachers to have experiences of conflicts while forming a professional teacher identity (Varghese, 2018, p. 74). Despite Alex previously being strongly unrelated to a disciplinarian role he became more aware of the positives of adopting this style of teaching into his teacher identity system. The system of a teacher's identity may be built form multiple I-positions, such as perceived roles, and these positions may co-adapt with each other to create new elements of an identity (Henry, 2018, p. 240). Alex's system self-organised

in a way for two previously opposing teacher roles to co-exist in a mutually beneficial way for the overall system. Sahakyan et al.'s (2018, p. 65) main findings were that "…the participants developed a balanced self-concept – a *feasible teacher self* – as an entity comprising features of various possible selves (e.g. ideal, ought-to, feared selves) which are *realistic* and *achievable* in a particular context." While their study focussed on motivation, there were some similarities with the findings of this study and how Alex's teacher identity changed since becoming an online teacher. The nature of the system and the parameters that influenced him as a teacher resulted in a more feasible teacher identity, combining a sociable teacher identity with a more disciplinarian role to successfully teach online. Arguably, this is an example of how a significant perturbance – suddenly becoming an online teacher – has the potential for emergence and a more ideal teacher identity to form for the future.

Circumstances and Context for Changes in Teacher Identities: Teacher-Student Interaction and Building Rapport

All three participants exhibited a sociable teacher identity as being ideal and the discourse from the ODGTs exemplified the significant challenges that becoming online teachers caused and the influences this perturbance had on their teacher identity systems. While a complex system may have many influencing parameters some have greater influences on the system. As Larsen-Freeman and Cameron (2008, p. 53) explain: "Not all of the parameters of a complex system will affect its trajectory, but there will be some that have a particular influence around phase transitions; these are called 'control parameters'." The lack of certain teacher-student interactions and the ability to build rapport with the students while teaching online can be described as a control parameter. One that significantly influenced the emergence of undesired teacher identities for the participants.

One reason for this control parameter becoming a part of the teacher identity systems of the participants is the technological difficulties that often occur while teaching online and the impact this has on both teacher-student and student-student interaction. In Gao & Zhang's study (2020, p. 7) the reliance on information and communication technology for online EFL teachers created a sense of anxiety and doubt in the learning outcomes, such as uneven access to network devices and inability to create a student-centred form of interaction. Civelek et al. (2021) also highlighted interaction as a common challenge that online EFL teachers face since the pandemic began. After all, "…teaching with technology can be a complicated and difficult task for some teachers under the influence of social and contextual factors" (Koehler

et al., 2011, as cited in Gao & Zhang, 2020, p. 4). Some of these social and contextual factors were exhibited in the discourse from the ODGTs.

The participants gave many examples of how physically being in the teaching context created opportunities for interactions with students, such as sharing dinners, seeing each other on the campus, playing pool together, and joining campus events, while teaching online interactions were dramatically limited. The participants mentioned that they could not even interact with students before class, during breaks, or after class. Although some interactions mentioned are not directly related to teaching and learning, they help build a rapport with the students which is significant for sociable teachers. Sulis et al. (2021, p. 8) found "…social connections, physical health, motivation, workload, and the immediate physical environment" to be common factors causing phase shifts and attractor states within the systems of wellbeing. While it may be difficult to systematically control all the parameters involved in a teacher identity system there are many benefits to developing an understanding of potential control parameters like maintaining interaction between teachers and students. Arguably, the application of CDST to further develop an understanding of when, how, and why phase shifts occur and potentially forming undesired identities may be beneficial for teachers (Henry, 2016, p. 303). It may or may not be a coincidence for example that all three participants highlighted this parameter as one of the most influencing factors while teaching online. Therefore, stakeholders in educational settings should be critically aware of providing opportunities for teacher-student interactions.

Conclusion

Overall, this study has been successful in developing a further understanding of language teacher identity when teachers have been forced to teach online. The ODGTs were similarly effective to the DGTs adopted in Wood's (2021) study as a method for gathering discursive data for analysis and interpretation. The research questions were a useful guide for exploring teacher identity from a CDST perspective which appropriately considers its complex nature. Whereas the Community of Practice (CoP) model from the previous study mentioned was limited by a concept of context, CDST benefits from its perspective as an analytical tool for exploring teacher identity as it recognises the potential plethora of parameters of influences within a broader context. Changing roles for the participants were found since becoming online teachers compared to previously teaching face-to-face and living in their teaching contexts. Phases shifts occurred due to a variety of parameters within the teacher

identity systems that formed following the beginning of the pandemic to the current time of collecting data. These parameters had different influences on each participants teacher identity system, but similarities were also present. Most evident of these similarities is how teacher-student interactions can form significant attractor states that shape the teacher identity systems of all the participants.

In one way or another, the significant perturbance caused by the COVID-19 pandemic and becoming online teachers, appears to have led to negative attractor states forming in relation to the teacher identities of all three participants. Among these attractor states that the participants shared, the lack of interaction and the inability to establish rapport with their students are perhaps the most evident. This reflects the findings of Sulis et al. (2021, p. 8) in relation to how the pandemic negatively impacted the wellbeing systems of six pre-service teachers. Furthermore, the living context for the participants is highlighted as a fundamental influencing factor on their teacher identity systems. Henry (2018, p. 240) highlights that "...from a complex systems perspective the social environment is not simply the context within which an identity system independently operates. Rather, the environment is integral to the emergent behaviours of the system." In the case of this study, the emergent behaviours and teacher identities that were exhibited appear to be undesirable because of the perturbance cause by becoming online teachers.

Looking forward these findings are significant in how they add to the growing field of teacher psychology research which is helping to understand how to support teachers to be the best teachers they can be (Kostoulas & Mercer, 2018; Mercer, 2018). In the response to the difficulties caused by becoming online teachers, "Language teachers, as colleagues in other disciplines, need to be flexible, resilient, and ready to learn new skills for tiding over unexpected challenges such as COVID-19" (Gao & Zhang, 2020, p. 12). As with Alex's case in this study, perturbances offer the chance for change and self-organisation in teacher identity systems where previously opposed aspects of identity can co-adapt to form a more holistic identity for the future.

Limitations

Applying CDST has many benefits for exploring a complex system such as teacher identity. However, there are difficulties in applying this theoretical perspective. Chief among these challenges is attempting to define clear timescales and mapping changes of time. This would require a longitudinal study and would benefit from a larger pool of participants to

possibly find correlations in role changes and influencing factors within multiple teacher identity systems. Furthermore, it remains a difficult process to clearly articulate the analysis and interpretations of the data. In the future, it would be ideal to provide graphic examples of state systems with attractor states, such as those used in Henry's (2016) study. Another limitation was in the design of the ODGTs because the rationale for attempting to give some timescales focus of past, present and future for the participants' discourse was not as successful as intended. The participants often discussed their present situation as online teachers rather than focussing on the past for ODGT 1 and the imagined future for ODGT 3. However, this is not surprising given the nature of the situation. The participants were thoroughly engaged in discussing the present context and personal experiences since becoming online teachers which provided ample data of use. Nevertheless, perhaps some design changes could have focussed the discussions on the intended timeframes, such as added guidance by the researcher.

About the Author:

Robert Wood: English lecturer, Faculty of Humanities, Srinakharinwirot University

References

Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, *39*(2), 175–189. http://dx.doi.org/10.1080/03057640902902252

Byrne, D., & Callaghan, G. (2014). *Complexity theory and the social sciences: The state of the art*. Abingdon, UK: Routledge.

Civelek, M., Toplu, I., & Uzun, L. (2021). Turkish EFL teachers' attitudes towards online instruction throughout the Covid-19 outbreak. *English Language Teaching Educational Journal*, *4*(2), 87–98. https://doi.org/10.12928/eltej.v4i2.3964

Clarke, M. (2008). Language teacher identities: Coconstructing discourse and community. *Channel View Publications*. Clevedon. http://dx.doi.org/10.21832/9781847690838

Er, B., & Karatas, N. (2021). The Impact of Experience on the Intrinsic Motivation of EFL Teachers Who Teach Online. *Technium Social Sciences Journal, 22,* 99-112.

Farrell, T.S. (2011) Exploring the professional role identities of experienced ESL teachers through reflective practice. *System, 39*(1), 54–62.

Gao, & Zhang, L. J. (2020). Teacher Learning in Difficult Times: Examining Foreign Language Teachers' Cognitions About Online Teaching to Tide Over COVID-19. *Frontiers in Psychology, 11*, 549653–549653. https://doi.org/10.3389/fpsyg.2020.549653

Gao, Y., & Zhou, Y. (2021). Exploring Language Teachers' Beliefs About the Medium of Instruction and Actual Practices Using Complex Dynamic System Theory. *Frontiers in Education*. https://doi.org/10.3389/feduc.2021.708031

Henry, A. (2016) Conceptualizing teacher identity as a complex dynamic system: Tensions during the practicum. *Journal of Teacher Education*, *67*(4), 291–305.

Henry, A. (2018). A Collection of Contradictory Selves: The Dialogical Self and the Dynamics of Teacher Identity Transformation. In Kostoulas, A. & Mercer, S. (Eds.), *Language teacher psychology* (pp. 234-251), Multilingual Matters.

Hiver, P., & Whitehead, G E.K. (2018). Sites of struggle: Classroom practice and the complex dynamic entanglement of language teacher agency and identity. *System*, *79*, 70–80. http://dx.doi.org/10.1016/j.system.2018.04.015

Huang, F., Zhao, M., Qi, J., & Zhang, R. (2023). English teachers' perceptions of emergency remote teaching: Emotional attitudes, professional identity, and coping strategies. *Frontiers in Psychology, 13*, 1064963–1064963. https://doi.org/10.3389/fpsyg.2022.1064963

Jin, L., Xu, Y., Deifell, E., & Angus, K. (2021). Emergency Remote Language Teaching and U.S.‐Based College‐Level World Language Educators' Intention to Adopt Online Teaching in Postpandemic Times. *The Modern Language Journal* (Boulder, Colo.), *105*(2), 412–434. https://doi.org/10.1111/modl.12712

Juárez-Díaz, C., & Perales, M. (2021). Language Teachers' Emergency Remote Teaching Experiences During the COVID-19 Confinement. *PROFILE Issues in Teachers' Professional Development*, *23*(2), 121–135. https://doi.org/10.15446/profile.v23n2.90195

Kostoulas, A. & Mercer, S. (2018). Language teacher psychology. In Kostoulas, A. & Mercer, S. (Eds.) *Language teacher psychology* (pp. 1-17). Multilingual Matters.

Larsen-Freeman, D., & Cameron, L. (2008). Complex systems and applied linguistics. Oxford.

Lu, Y., & Curwood, J. S. (2015) Update your status: exploring pre-service teacher identities in an online discussion group. *Asia-Pacific Journal of Teacher Education*, 43:5, 438-449, https://doi.org/10.1080/1359866X.2014.960802

Mercer, S. (2018). Psychology for language learning: Spare a thought for the teacher. *Language Teaching, 51*(4), 504-525. https://doi.org/10.1017/S0261444817000258

Sahakyan, T., Lamb, m. & Chambers, G. (2018). Language Teacher Motivation: From the Ideal to the Feasible Self. In Mercer, S. & Kostoulas, A. (Eds.), *Language teacher psychology* (pp. 53-70). Multilingual Matters.

Sulis, G., Mercer, S., Mairitsch, A., Babic, S. & Sun, S. (2021). Pre-service language teacher wellbeing as a complex dynamic system. *System*. *103* (2021). https://doi.org/10.1016/j.system.2021.102642

Varghese, M. (2018). Drawing on cultural models and figured worlds to study language teacher education and teacher identity. In Mercer, S. & Kostoulas, A. (Eds.), *Language teacher psychology* (pp. 71-85). Multilingual Matters.

Zhang, C., Yan, X. & Wang, J. (2021). EFL Teachers' Online Assessment Practices During the COVID-19 Pandemic: Changes and Mediating Factors. *Asia-Pacific Edu Res, 30*, 499–507. https://doi.org/10.1007/s40299-021-00589-3

Zou, Huang, L., Ma, W., & Qiu, Y. (2021). Evaluation of the effectiveness of EFL online teaching during the COVID-19 pandemic. *SAGE Open*, *11*(4). https://doi.org/10.1177/21582440211054491

Wood, R. (2021). Exploring language teacher identity and agency through discussion group tasks: An exploratory qualitative study of English language teachers at a university in southern China. *ELTED Journal*, *24*, 16-33.

Appendices

Appendix 1: past perspective as face-to-face teachers (ODGT 1 Handout)

<u>**Looking Back: Before Online Teaching**</u>

Think back to your experiences as teachers before you were forced to teach online. Focus on teaching in the classroom, being in the educational context, and living in this environment.

(1) Past Teacher Roles

Discuss the teacher roles below and add them to the spectrum based on how much they relate to you as teachers. You may add other roles not on this list. Explain your choices. Focus on your context BEFORE you started teaching online:
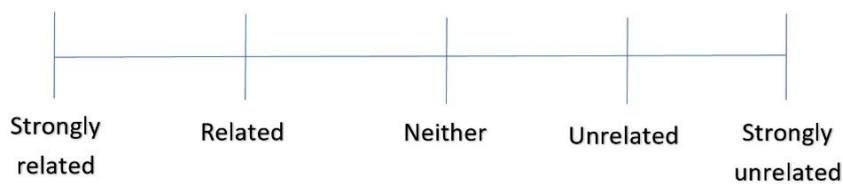
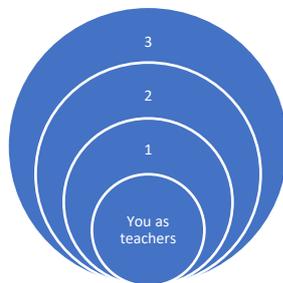Strongly related   Related   Neither   Unrelated   Strongly unrelated

teacher as entertainer, cross-cultural expert, oral interviewer, language expert, language model, disciplinarian, counsellor, curriculum planner, curriculum evaluator, reflective practitioner, storyteller, team builder, material developer, friend, interaction manager, needs assessor, socializer, motivator, collaborator, juggler, care provider, vendor (selling a product), learner, and presenter.

(2) Influential Factors

Work together to add factors that influenced you as teachers before you started teaching online. Look at the graph below to visually understand the activity. In the centre is 'you as teachers' and the rings closest are the most influential factors. You are encouraged to add more rings to show how influential the factors you raised are. The factors will be added to the boxes on the next page (add more boxes for additional spheres of influence). Feel free to ask the researcher for clarification before you begin.

Appendix 2: present perspective as online teachers (ODGT 2 Handout)

<u>**Here and Now: Teaching Online**</u>

After looking back at teaching in the classroom in the previous discussion, the focus is now on your experiences since you began teaching online and to the present day.
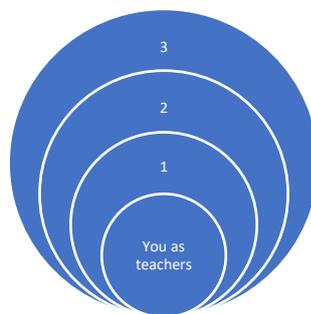
(1) Current Teacher Roles

Discuss the teacher roles below and add them to the spectrum of relatability. You may add other roles not on this list. Explain your choices and any changes you made from the same activity in the previous discussion. Focus on your context as online teachers:
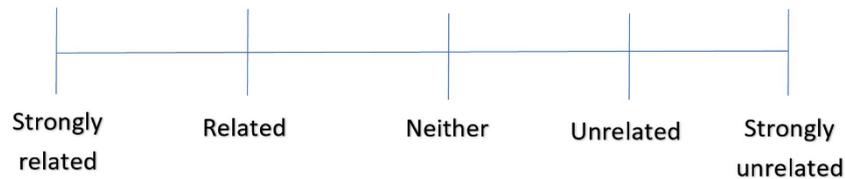
| Strongly related | Related | Neither | Unrelated | Strongly unrelated |

teacher as entertainer, cross-cultural expert, oral interviewer, language expert, language model, disciplinarian, counsellor, curriculum planner, curriculum evaluator, reflective practitioner, storyteller, team builder, material developer, friend, interaction manager, needs assessor, socializer, motivator, collaborator, juggler, care provider, vendor (selling a product), learner, and presenter.

(2) Influential Factors

Work together to add factors that influence you as teachers since you started teaching online. Explain any differences compared to the graph you made in the previous discussion.

Appendix 3: imagined future perspective as face-to-face teachers (ODGT 3 Handout)

<u>**Looking Forward: Preferable Teaching Context**</u>

'Context' here refers to anything that you consider influencing you as teachers. Try to focus on imagining a preferable future.

(1) Preferred Teacher Roles

Discuss the teacher roles below and add them to the spectrum of preferability. You may add other roles not on this list. Explain your choices and any changes you made from the same activity in the previous discussions. Focus on a preferred context for the future:
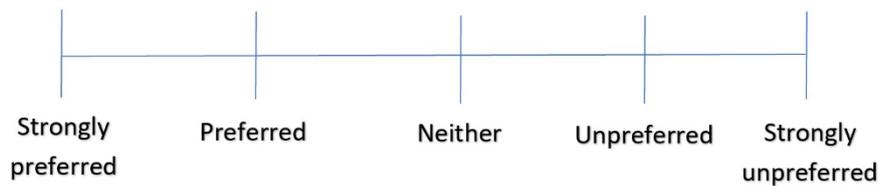
Strongly preferred   Preferred   Neither   Unpreferred   Strongly unpreferred

teacher as entertainer, cross-cultural expert, oral interviewer, language expert, language model, disciplinarian, counsellor, curriculum planner, curriculum evaluator, reflective practitioner, storyteller, team builder, material developer, friend, interaction manager, needs assessor, socializer, motivator, collaborator, juggler, care provider, vendor (selling a product), learner, and presenter.

(2) Influential Factors

Work together to add factors that you expect to influence you as teachers in your preferred contexts.