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Chinese Undergraduates' Perceptions of L2 Learning and Strategies in Emergency Online Teaching: A Case Study in a Central China University in Times of Covid-19

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Declaration of authenticity and author's rights

This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.

Signed: Shuangchu Li

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List of abbreviations

Abbreviation	Full term
learning apps	learning applications
BERA	British Educational Research Association
CALL	computer assisted language learning
CECR	College English Curriculum Requirements
CET-4/6	College English Test, Band 4/Band 6
CETG	College English Teaching Guide
CETI	College English Teaching Innovation
CFA	confirmatory factor analysis
CPIIHB	Code of Practice on Investigations Involving Human Beings
EADs	educational administration departments
EAP	English for academic purposes
EFA	exploratory factor analysis
EdD	Doctor of Education
EOEL	emergency online English learning
EOET	emergency online English teaching
EOL	emergency online learning
EOT	emergency online teaching
ESP	English for specific purposes
HEIs	higher educational institutions
LAN	local area network
LLSs	language learning strategies
LMS	learning management system
L2	second language
L2MSS	L2 Motivational Self System
M/m	mean
MALL	mobile assisted language learning
mobile apps	mobile applications
MOE	Ministry of Education
MOOC	massive online open course
NCEE	National College Entrance Examination
SCT	sociocultural theory
SD	standard deviation
SILL	Strategy Inventory for Language Learning
SLA	second language acquisition
SPSS	Statistical Package for the Social Sciences
PIS	participant information sheet
UNESCO	United Nations Educational, Scientific and Cultural Organization
ZPD	zone of proximal development

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Abstract

Guided by Vygotsky's sociocultural theory, this dissertation presents a case study exploring the perceptions of Chinese undergraduates' second language learning and strategies used in emergency online teaching at H University in Central China during the first lockdown period of the Covid-19 pandemic. By using the sequential mixed research method in this study, I first carried out an online questionnaire with 612 undergraduates for quantitative study, and then interviewed 12 questionnaire respondents for qualitative study and three English teachers for triangulation.

This research concerned the undergraduates' perceptions towards emergency online teaching and their strategies in online learning; conducted variance analysis between different learner groups, including groups with distinct genders, majors, and English levels; made correlation studies among learners' perceptions, strategies, and their English scores in the lockdown semester, and explored challenges for the respondents' emergency online English learning as well.

The sociocultural theory advocates a learner-centred teaching approach and regards language learning as constructed socially through interactions with others. Concerning the respondents' perceptions relating to emergency online teaching, this research used the notions of online learning readiness proposed by Warner et al. (1998) and expanded five-dimension online learning readiness advanced by Hung et al. (2010), which include self-directed learning, motivation, computer/internet self-efficacy, learner control and online communication self-efficacy into seven, by adding the respondents' trust and appreciation for emergency online learning. As for online learning strategies, this research used Oxford's six-dimension taxonomy of language learning strategies proposed in 1990 as the key reference, including direct strategies of memory, cognitive and compensation strategies, and indirect metacognitive, emotional and social strategies.

The research results indicated a number of interrelated findings. Firstly, among the seven dimensions of the undergraduates' perceptions, the mean value of motivation for emergency online teaching was the lowest. Secondly, for the respondents' online learning strategies, they used cognitive strategies and compensation strategies more

frequently, but social strategies the least. Thirdly, females, arts students and high-scoring respondents in general had higher English scores and smaller variance in scores than their counterparts of males, science students and low-scoring ones. Fourthly, the respondents' perceptions towards emergency online teaching as a whole showed significant positive correlation with their online learning strategies at 0.01 level. Fifthly, dilemmas in emergency online teaching, such as the migration of teaching approach from student-centred to teacher-centred and less online communications between teacher and students were widespread. In addition, neither teachers nor their students were prepared for emergency online teaching and learning when the pandemic emerged, and the technology they used was not up to the standards required for the emergency online teaching to take place in a coordinated and effective manner. Finally, myth of educational technology was disillusioned, as technology alone was unable to transform education, but enlarged the gap of education equity.

The study is significant mainly on a number of levels. It supports sociocultural theory, makes contribution not only to the research contents of the undergraduates' L2 learning perceptions and strategies in emergency online teaching circumstance, but to the research results of the respondents' low online learning motivation, dilemmas in emergency online teaching and disillusions of the myth of educational technology. This study yields pedagogical implications useful for future L2 online teaching and makes methodological contributions by using a mixed research method and teacher interviewees as triangulation in a case study.

Based on the results of these findings and enlightened by sociocultural theory, the research outlines the following pedagogical implications for future second language online teaching. It should be student-centred to encourage learners' learning motivation and interests. Teachers should emphasise social interaction between teacher and learners or among peers, design more online courses and activities to familiarise learners with online education and provide learners with training for online learning strategies. In addition, teachers should prepare for future potential emergency teaching approaches so as to develop online second language teaching better.

Introduction

College English is the only course running through four university years for all Chinese non-English major undergraduates, with the first two years as a compulsory course and the last two as an elective one. It is also the course having the largest number of second language (hereafter L2) learners in tertiary education worldwide as Chinese universities having an enrollment of 18.93 million undergraduates in 2022 (Chinese Ministry of Education, 2023, July 5). Since China began its opening up policy in early 1980s, Chinese educational administration departments (hereafter EADs) at all levels began to attach importance to students' English learning by adding teaching hours through increasing the credits of College English. However, although the undergraduates spent more time learning English, College English became a focus of criticism due to their more time wasted, but with less effective results (Cai, 2016; Tian & Jiang, 2000; Fang & Warschauer, 2004; Ruan & James Jacob, 2009). In addition, the approximately 8% annual enrollment expansion of Chinese higher educational institutions (hereafter HEIs) started from 1997 made the situation even worse (Tang, 1999). Just around the turn of the new century, computer technology developed greatly and has been used to assist L2 teaching due to its advantages of easy access, massive learning resources and repeated practice functions. These reasons as a whole caused Chinese Ministry of Education (hereafter MOE) to choose College English to start a national teaching reform in tertiary education.

In 2004, China began its national "College English Teaching Innovation" (hereafter CETI), and chose 180 trial universities throughout the country. The innovation advocated student-centred teaching approach, encouraged more social interaction in language practice and promoted technology assisted language learning. Since then, though this course has experienced several rounds of teaching innovations in Chinese tertiary education in the past two decades, Chinese undergraduates' English learning tends to be passive, and their English communicative competence still remains poor (Ruan & James Jacob, 2009; Cai, 2016).

Before enrolling in the Doctor of Education (hereafter EdD) programme at the University of Strathclyde four years ago, I was a part-time English teacher teaching

College English at a university in central China. In my teaching experience, I witnessed not only the effects of teaching innovations, but also resistance to it due to the tradition of Chinese learners' passive learning and unwillingness to engage in communicative or social activities relevant to language practices. I also observed that although the undergraduates installed various English learning applications (hereafter learning apps) on their mobile phones and were given links of Massive Open Online Courses (hereafter MOOCs) to assist their English learning, they seldom visited them, as well as the university English learning platform.

In early 2020 when the Covid-19 pandemic broke out and lockdowns were implemented throughout the world, educational institutions at every level moved all their courses online in an emergency. Gradually, complaints and challenges relevant to emergent online teaching (hereafter EOT) were heard from teachers and students, and even reported by the media (China Education Daily, 2020, May 26), College English was no exception (Luo et al., 2020; Cui & Wang, 2021). As an English teacher who previously taught College English, I was very concerned about the emergency online English teaching (hereafter EOET) at Chinese universities, as College English not only had the largest L2 learner group in tertiary education worldwide, but had led technology assisted teaching innovation in Chinese tertiary education over two decades. Thus, it became imperative to explore the day-to-day reality of online teaching and learning of College English, to probe into the undergraduates' perceptions of online learning and strategies towards EOT and to discover challenges encountered by the undergraduates, so as to find out effective methods to help Chinese undergraduates deal with EOET at present and potential emergencies in the future.

Since the breakout of the pandemic in early 2020, there has been relatively little research on undergraduates' perceptions of L2 learning as well as strategies towards EOT, research on EOT in L2 field has tended to focus on the improvement of learners' L2 online learning abilities, students' online learning process, online teaching models and online learning obstacles for both students and teachers (Bao, 2020; Berlin & Weavera, 2022; Bhagat & Kim, 2020; Chen et al., 2021; Lee & Kim, 2020; Stewart & Lowenthal, 2021). In addition, the research methodology of the existing L2 EOT studies was whether qualitative (Bao, 2020; Lee, 2021) or quantitative (Hartshorn & McMurry, 2020; Hussein et al. 2020) with various limitations, and only few of them

used mixed research. The research scales of the above mentioned quantitative studies were rather small, each with only several tens of participants (Hussein et al., 2020; Hartshorn & McMurry, 2020), which may influence the reliability as well as the validity of the studies. In order to fill in the above mentioned research gaps, this study chose Chinese undergraduates, the largest L2 learner group in tertiary education around the world, to make a medium-scale study on their perceptions and strategies towards EOT by using a mixed research method to get practical and precise research results so as to improve EOT in a better way, and to prepare it for any possible challenges in the future..

Concerning learners' perceptions towards online learning, they are derived from learners' attitudes towards computers and the Internet, which may influence not only learners' use of technology, but their online learning performance (Wei & Chou, 2020). Learning strategies are important variables showing individual's differences in second language acquisition (hereafter SLA), which have significant impacts on the effectiveness of learners' L2 learning. Research on learning strategies began in the 1970s by Rubin (1975) and Stern (1975) with a focus on "good learners" in SLA, having a history of almost half a century. Due to the importance of learners' learning strategies in their L2 learning, research on it has been a trend in the field of SLA in the second half of last century and it is still widespread.

Against this background, guided by Vygotsky's sociocultural theory (hereafter SCT) that knowledge is constructed through social interaction with others (Richards & Rodgers, 2014), and Dörnyei's L2 motivation theories that motivation is affected by various factors, I designed to conduct my EdD study to explore Chinese undergraduates' perceptions of L2 learning and their strategies in EOT, the relationship between them, the differences between various student groups' online learning perceptions and strategies in their emergency online English learning (hereafter EOEL), as well as the challenges the respondents encountered. To explore the developments and possible long-term side-effects of emergency online learning (hereafter EOL) during the pandemic, I sought to operationalize and study the following five research questions:

RQ1: What were Chinese undergraduate students' perceptions towards EOEL amid

Covid-19?

RQ2: What were their online English learning strategies amid Covid-19?

RQ3: Are there differences between various student groups' online learning perceptions and strategies?

RQ4: Were there any correlation among the undergraduates' online learning perceptions, strategies and their English scores?

RQ5: What were the challenges for the respondents' EOEL?

To find tentative answers to these questions, I designed a case study based at a university in Central China by using a sequential mixed research method. I made an online questionnaire with 612 respondents for quantitative study, and conducted semi-structured interviews with 12 questionnaire respondents and three English teachers teaching the respondents College English as qualitative study and triangulation respectively. By analysing both quantitative and qualitative data, this study tried to answer the above research questions, aimed to know the undergraduates' perceptions of L2 learning and strategies towards EOT, and how they affected the undergraduates' L2 online learning. In addition, the study allowed me to explore the status and challenges in L2 EOT in Chinese higher institutions, which may help both L2 teachers and EADs improve online teaching, adjust educational policies, make preparations and be ready for online education in the post pandemic era, or for potential emergencies. For me, this research also deepened my understanding of online education both within the L2 teaching area and more broadly across my future practice as a L2 teacher.

The study is significant mainly in pedagogical and theoretical aspects. As the most systematic and profound research concerning L2 learners' perceptions and strategies towards EOT in tertiary education during the pandemic, the research results not only present a panorama of Chinese undergraduates' L2 EOL, including their low motivation, low usage of social strategies and dilemmas in EOT, but yield pedagogical implications that online teaching should be student-centred, teachers should design more online courses and train L2 learners online learning strategies. In addition, this study supports SCT as well as Dörnyei's motivation theories. In turn, the research results also contribute to readers' understanding of the theoretical frameworks used in this study.

I.1 Case study

The case in this study and also where I once worked as an English teacher is a public university located in Henan, which I refer to as H University in this research. Henan is a province in central China with a moderate level of development but having the largest population in China with over 100 million. Due to the largest population and having relatively fewer local universities in this region, Henan high school graduates have the lowest percentage nationwide to be admitted to a university. As a provincial public university specializing in finance and economics, H University has attracted high-scoring local high school graduates since its establishment in 1983 due to China's rapid economic growth in the past four decades. Once a trial university in national CETI in 2004, H University has been at the forefront of several rounds of teaching innovations for about two decades by using network technology to assist its undergraduates' English learning, and is thus well suited to be the case to study Chinese undergraduates' perceptions of L2 learning and strategies in EOT.

I.2 Literature overview

To study this case, I use SCT, particularly Vygotsky's zone of proximal development (hereafter ZPD) and Dörnyei's motivation theories as theories guiding this research. Founded by former Soviet Union psychologist Lev S. Vygotsky around 1920s, SCT mainly studied children's psychological development and was later introduced into the field of SLA in the 1980s (Lantolf & Thorne, 2007). Based on the social constructivist paradigm, and developed from cultural and historical psychology, SCT considers that language learning is a communicative activity with social context as the centre, and that knowledge is constructed through social interaction with others and shared by individuals (Lantolf, 2001; Richards & Rodgers, 2014). In teaching practice, SCT advocates a learner-centred teaching approach, and regards that learners should be actively involved in learning activities, and should learn through interactions with peers and teachers in practical activities (Jaramillo, 1996). Thus, teaching practice provides social circumstances for learners to scaffold knowledge, which plays a positive role in assisting individual's cognitive development in language learning.

Dörnyei's motivation theories emphasise the diversity and complexity of motivation

and believes that motivation is affected by many factors, including personal factors, environmental factors and the characteristics of learning tasks. In addition, Dörnyei's motivation theories also focus on the dynamic nature of motivation, that is, motivation may change during learners' learning process. He constructed a motivational process model for SLA to better understand the dynamics of L2 learners' motivation. This model helps teachers to better identify the changes in L2 learners' motivation, so as to adjust teaching strategies to stimulate their learning enthusiasm and continuous efforts.

Based on the notion of online learning readiness proposed by Warner et al. in 1998 (Wei & Chou, 2020), this study analyses Chinese undergraduates' perceptions by expanding five-dimension online learning readiness advanced by Hung et al.(2010), including self-directed learning, motivation, computer/internet self-efficacy, learner control, and online communication self-efficacy into seven via adding two more relevant dimensions: respondents' trust of EOL and appreciation for EOL.

I use Oxford's six-dimension taxonomy of language learning strategies (hereafter LLSs) proposed in 1990 as the key reference to explain Chinese undergraduates' online learning strategies in this study. Oxford's taxonomy divides LLSs into two categories: direct and indirect strategies. The former includes memory, cognitive and compensation strategies, which are directly involved with the language being learnt, and which require mental processing. The latter includes metacognitive, emotional and social strategies that are used to provide support and manage the learning process without directly involving the language being learnt.

I.3 Structure of the dissertation

This dissertation consists of four chapters, with an introduction in the beginning and a conclusion in the end. The structure of the dissertation is as follows:

The introduction of the dissertation provides the background information of the study and raises five research questions.

Chapter 1 reviews the literature relevant to the key concepts of this dissertation, including SCT theory, motivation theories, online learning perceptions, online learning strategies and online L2 learning in Chinese tertiary education, by discussing their definitions, making classifications, stating their features, benefits and challenges, and

reviewing previous studies. It also identifies the research problems and gaps.

Chapter 2 reports the methodological approaches for carrying out this research. The research is a case study using a sequential mixed research method, with a questionnaire for quantitative study, and semi-structured interviews with students chosen from the questionnaire respondents as qualitative study. This chapter first explains the reasons for choosing H University as the case. Then it reports the process for using quota sampling to choose 612 questionnaire participants and 12 student interviewees by considering the ratios for students' gender and for their major at H University. After that, it outlines the process of qualitative and quantitative data analysis, with the latter including correlation studies among learners' perceptions, strategies, and their scores of L2 learning, and variance analysis between various learner groups, such as groups with different genders, majors and English scores. Finally, this chapter discusses limitations of the methodology and the relevant ethical issues.

Chapter 3 presents the findings of the data analysis. This section first provides a summary analysis of the undergraduates' general information in EOEL. Then, it details the results of the five research questions, and indicates that the respondents had a low motivation and used fewer social strategies in online learning. Female respondents in general had higher English scores and smaller variance in scores than their male counterparts. The respondents' perceptions towards EOT as a whole showed significant positive correlation with their online learning strategies at 0.01 level. Finally, concerning the challenges encountered by the respondents, both the respondents and teachers were underprepared for EOT, and the technology involved was not up to the standards required for the EOT to take place in a coordinated and effective manner.

Chapter 4 discusses results of the findings in Chapter 3 in accordance with the five research questions of this study and indicates pedagogical implications. First, it summarises the findings of the study. Then, it discusses the respondents' online learning perceptions, including their computer self-efficacy and their motivation for online learning. After that, it argues the respondents' online learning strategies, with their cognitive strategies and social strategies in particular. Next, it debates dilemmas in L2 EOT, including teacher-centred and learner-centred teaching approaches, online

communication and challenges in the undergraduates' L2 online learning. Furthermore, it argues disillusions of the myth of educational technology. Finally, it explores the expectations for future L2 education.

The conclusion part first summarizes the study. Then, it outlines the significance of the study from the aspects of research contents, research results, theoretical contributions, pedagogical implications and methodological contributions. After that, it analyses limitations of the study, gives recommendations and provides suggestions for future online education and online study. Finally, it gives reflections on the influence of the Covid-19 pandemic on the researcher.

Chapter 1 Literature Review

This chapter reviews extant literature on SCT, motivation theories, online learning perceptions and strategies, online L2 learning in Chinese tertiary education and gaps in the literature, all related to the key issues in this study. First, I introduce SCT and motivation theories, the theoretical framework of this study, with their definitions, main concepts, pedagogical implications and review of previous studies. Then, I address online learning perceptions, in which online learning, EOL and student perceptions of online learning are reviewed respectively. Next, I introduce online learning strategies by clarifying and reviewing LLSs and online learning strategies. The insights advanced by these theories will serve as the basis for comprising the framework of this research. Furthermore, I discuss online L2 learning in Chinese tertiary education, in which a review of College English, its teaching reforms, as well as an overview of its development by using modern technology will prepare the ground for an examination of current understanding of Chinese undergraduates' perceptions of L2 learning and strategies amid Covid-19. Finally, I describe the gaps in the literature so as to show the importance and necessity of my study.

1.1 SCT

1.1.1 Background and definition

SCT was first systematised and applied by Lev. S. Vygotsky, a former Soviet psychologist and educator, as well as his associates around 1930s, which emphasises that sociocultural factors are of critical importance to human cognitive development (Lantolf, 2000; John-Steiner & Mahn, 1996).

SCT is considered as the theory studying the interrelationships of psychological phenomena which are socially constructed, shared, and rooted in social artifacts (Ratner, 1997). It mainly deals with human cognitive development by stressing the core role of social and cultural factors in the development of human cognitive function. Human cognitive development cannot be isolated from the social, cultural, and historical contexts from which such development emerges (Johnson, 2009). Moreover, SCT emphasises that an individual's knowledge is only constructed through social circumstance in practical activities; and learning involves

"enculturation" (Packer & Goicoechea, 2000, p.220), the adaption to a kind of culture, by taking a stand in a new social group and becoming a member of the culture (Jaramillo,1996; Packer & Goicoechea, 2000). This social and cultural engagement is primarily mediated by culturally constructed tools such as language, signs and symbols to create uniquely human beings' higher-level thinking (Wang et al., 2011). The use, organization and construction of language are the primary means of mediation, and the most important forms of human cognitive activity are developed through interactions within the social and physical environment. Thus, SCT prompts us to examine the social environment of SLA from a new perspective. In this theoretical framework, the social environment is not only considered to be the source of learners' language input, but also the source of learners' cognitive development (Jia, 2006).

1.1.2 Main constructs of SCT

SCT consists of an array of theories and concepts. In this section I outline the primary ones, namely mediation, regulation, internalization and ZPD, and consider how they inform the study of SLA.

Mediation. Williams and Burden (2000) state that mediation was a term used by psychologists of the social interactionist school to refer to the part played by other significant people (usually with more knowledge, e.g. a teacher) in learners' lives. Like a teacher enhances learners' learning by selecting and shaping the learning experiences presented to them, this significant person is known as a mediator.

Vygotsky (1978) considers that human mind is comprised of lower mental processes, but the distinctive dimension of human consciousness is its capacity for voluntary control over biology through the use of higher-level symbolic artifacts (i.e. language, literacy, numeracy, categorization, rationality and logic, etc.). These artifacts come from the historical accumulation of human cultural activity and development (Tomasello, 1999, 2003), serving as a buffer between the person and the environment and act to mediate the relationship between the individual and the social-material world (Lantolf et al., 2015). From a sociocultural perspective, learning is a socially mediated process influenced first by different modes of semiotic tools, with language the most important one. The transformation from lower psychological functions to

higher ones is realized through the mediation of cultural products.

Regulation. Lantolf and Thorne (2007) state that regulation is a form of mediation. For children's learning language, the function of words is to isolate specific objects and actions, and reshape biological perception into cultural perception and concepts (Lantolf et al., 2015). For Luria and Yudovich (1972), children's thinking and actions of ontogenetic development are subordinated to adult speech, which lifts their mental and physical activity to a new and qualitatively higher stage of development. Thus, by subordinating their behavior to adult speech, children acquire the particular language used by other members of a community (usually adults and older children) and finally use this language to regulate their own behavior (Lantolf et al., 2015). This process of developing self-regulation moves through three general stages. The first stage is object-regulation, in which children are often controlled by or use objects in their environment in order to think. The second stage is other-regulation, which includes implicit and explicit mediation (involving varying levels of assistance, direction, and what is sometimes described as scaffolding) by parents, siblings, peers, coaches, teachers, and so on. The third stage is self-regulation, referring to the ability to accomplish activities with minimal or no external support.

Internalization. Lantolf and Thorne (2007) consider internalization as one of the core concepts of SCT. It is the process through which cultural artifacts (for instance language) take on a psychological function. Kozulin (1990) considers internalization to be the essential element in the formation of higher mental functions. Winegar (1997) believes it was a negotiated process reorganizing the relationship of the individual to her or his social environment and carrying it into future performance. Vygotsky uses internalization to explain the interaction between the individual and the surroundings, stresses that social interaction is established by internalization in his well-known genetic law of development, in which human mental abilities emerge twice: (1) first, on the social level (interactions with others), and then on the individual level (within the learner); (2) first, between people (interpsychological), and then inside the learner (intrapsychological) (Vygotsky, 1981). It describes a process of human cognitive development which is situated in, but not limited to, social interaction (John-Steiner & Mahn, 1996).

ZPD is defined by Vygotsky (1978) as the distance between the actual developmental level determined by independent problem solving and the level of potential development determined through problem solving under adult guidance or in collaboration with more capable peers. Aljaafreh and Lantolf (1994) describe ZPD as an excellent framework, bringing all pieces of the learning setting together, namely the teacher, the learner, their social and cultural history, their goals and motives, as well as the resources available to them, including those that are dialogically constructed together. Newman and Holzman (1993) define ZPD as the site where learning and development come together, a dialectic unity of learning-and-development, or more exactly, learning-leading-development. In this unity, all unique human forms of higher mental activity, including thinking, planning, voluntary memory, voluntary attention, creativity and control of semiotic systems (especially language), arise in the interaction between learners and other members of a culture.

Vygotsky (1978) argues that when understanding the relationship between learning and development, it is necessary to distinguish between two developmental levels, namely the actual level and the potential level of development. The former refers to a child's ability to independently finish tasks, while the latter refers to the child's ability to achieve tasks with the help of an adult or a peer. Vygotsky (1978) believes that effective instruction marches ahead of development and leads to it.

Being formed through interaction with the outside world, a person's ability level is constantly developing. ZPD is therefore in dynamic change, as it establishes a dynamic development path between the current and the next development state, according to the growth of the individual. The essence of ZPD is that the completion of a task shows the advanced development of the individual's cognitive ability under interaction conditions. ZPD has extensive pedagogical implications, and it is also the central theory I use in this study to explore Chinese undergraduates' perceptions of L2 learning and strategies during the Covid-19 pandemic.

1.1.3 Pedagogical implications of SCT in L2 education

SCT was introduced into SLA by Lantolf in the 1980s (Lantolf & Thorne, 2007). The study of SLA in the framework of SCT applies this theory to the fields of cognition

and child learning to solve problems related to language learning. Dunn and Lantolf (1998) argue that the most important features of SCT relating to language learning are as follows: First, it denies the separation of social and cognitive development. Second, it contradicts Saussure's view that language is only an abstract symbol system that is separate from language application. SCT has profound significance in L2 education, with its pedagogical implications as follows:

First, SCT holds that language learning is a communicative activity with social context at the centre, and knowledge is constructed through social interaction with others (Richards & Rodgers, 2014), so L2 learners are encouraged to participate in meaningful dialogues and interaction with peers and teachers in the target language, promoting L2 skills and fluency. Teachers can create a collaborative L2 learning environment by pairing learners with others of higher language skills or learning as a group rather than learning on their own levels where L2 learners can practice and refine their L2 skills. When learners are engaged in collaboration or social activities, meaningful L2 learning occurs.

Second, SCT claims that cognitive development is dependent on individual's participation in cultural activities, and learning takes place primarily in social and cultural settings, rather than solely within the individual (Schreiber & Valle, 2013), so it emphasises the importance of not only social, but cultural factor in human cognitive development, and the interdependence of individuals and culture in the process of knowledge construction. In L2 teaching, teachers should be conscious of learners' cultural backgrounds and incorporate cultural elements into their teaching practice, which may help learners to understand the cultural norms and values embedded in L2, enabling them to communicate more effectively in real situations.

Third, SCT views learning as an active social process, which does not simply take place within an individual (McMahon, 1997), and suggests that learners should be active participants in the creation of their own knowledge (Schreiber & Valle, 2013). Thus, L2 teaching should be a learner-centred teaching approach with learners as active agents in their own learning processes. Teachers can encourage learners to be responsible for their learning, set goals, and learn autonomously. In addition, teachers can help students develop the skills and strategies they need to become active,

independent, and self-directed learners.

Fourth, SCT recognizes the importance of scaffolding and ZDP in learning. In L2 teaching practice, teachers can provide L2 learners with feedback, appropriate support and guidance to help them to identify their strength and weakness; facilitate opportunities for them to practice, refine and improve their L2 skills. Teachers can also take advantage of ZDP by providing guidance and support to help learners reach their L2 learning goals.

In summary, the pedagogical implications of SCT in L2 education emphasise that social interaction, cultural context, autonomous learning, scaffolding and ZDP play importance roles in promoting learners' effective L2 learning. By integrating these principles into their teaching practices, teachers can create a dynamic and inclusive learning environment to foster active engagement, cultural awareness, and independent learning for L2 learners.

1.1.4 SCT in L2 EOET

Vygotsky's SCT emphasises the interaction between individuals and their social and cultural contexts, together with the role of language and communication in this process. Online teaching taking the place of classroom teaching during the epidemic undoubtedly provides a practical and validation opportunity for SCT. As SCT could provide a useful framework for understanding and improving the effectiveness in L2 learners' online learning, it is particularly suitable for L2 online learning during the pandemic due to its emphasis on social interaction, active learning, feedback and reflection.

SCT underlines the importance of social interaction in L2 online learning, which is particularly relevant in online settings. During synchronous or asynchronous online courses in the pandemic, learners may have online interaction with teachers or peer by using online platforms to engage in real-time, interactive L2 practice, simulating authentic L2 use in social contexts. In addition, SCT promotes active learning, which involves learners in constructing knowledge through their personal experiences and problem-solving activities. In L2 online teaching, teachers can design various activities, including role play or group discussion to encourage learners to actively participate in L2 practice, which can help to improve learners' understanding and

retention of L2. Moreover, SCT considers the importance of feedback and reflection on L2 learners' online learning. Online teaching circumstance can facilitate this by providing chances for L2 learners to receive feedback from teachers and peers in their L2 practice. This feedback, as well as their self-reflection, helps them identify areas for improvement and monitor their progress.

However, it should be noted that although SCT is significant in guiding L2 online learning, there are still some constraints need to be taken into account in L2 learning practice. For instance, the online environment may not be able to fully replicate the real sociocultural environment in traditional classrooms, which may affect L2 learners' language learning and practice. In addition, L2 learners' autonomous learning ability and learning motivation are also important factors affecting the effectiveness of their L2 online learning experience and cognitive development. Therefore, when implementing L2 online courses, teachers need to consider these factors and formulate suitable teaching strategies and evaluation standards so as to improve the effectiveness and quality of online teaching and provide learners a better L2 learning environment.

1.1.5 Review of previous studies

By taking human cognitive development as its research object, SCT connects social activities and language acquisition with the language interaction environment producing them, and explores the process. The main concepts of SCT have wide pedagogical implications, along with various implications in the field of SLA.

Taking a group of L2 learners as experimental participants, Aljaafreh and Lantolf (1994) guided them to take part in classroom activities in writing class, and provided them with writing scaffolding by assigning a writing task for each participant each week. The results indicated that the teachers' timely construction of scaffolding helped improve students' writing skills.

Gao (2008) focused on the positioning of the role of teachers, concluding that in the student-centered classroom, teachers should not only impart knowledge to students, but also lead students to actively construct knowledge and highlight the mediating role of teachers.

Hawkins (2018) suggested that it was of great value to create an interactive learning environment during the teaching of L2 in which learners can associate with each other and construct their L2 performance collaboratively through peer assistance.

A case study done by Yu (2020) investigated L2 writing through tutor-student interaction and revision, and showed that changes of students through mediation from tutors revealed the significance of the interaction under the perspective of SCT.

Shalizar and Rezaei (2023) conducted a case study of four participants to compare the effect of ZPD feedback with an explicit focus on accuracy in L2 writing, and examined the effect of focused vs. unfocused ZPD feedback on L2 writing in teacher-student tutorial sessions. The results revealed that learners who receiving ZPD feedback performed better in accuracy than those receiving explicit feedback. In addition, the use of focused and unfocused ZPD feedback yields different results both in accuracy across sessions and shifts in the quality of feedback learners need within and across sessions.

The above studies all provide references for the practice of SCT, which reflect that interaction between learners and teachers, or learning among peers can play a positive role in promoting learners' cognitive development. In addition, a learner-centred teaching approach is necessary to stimulate learners' interest in learning and the acquisition of knowledge. While those studies were concerned with various applications of SCT in L2 teaching practice, none of them explored the implications of SCT in EOT. This study attempts to fill this research gap.

1.2 L2 Motivation theories

1.2.1 Definition

Dörnyei (2001) states that "motivation explains why people decide to do something, how hard they are going to pursue it and how long they are willing to sustain the activity (p.7). Motivation positively influences students' attitudes and intention to participate and engage in learning (Nikou, 2021, 2023). Learners' high level of motivation can promote their achievement of goals by stimulating the enthusiasm and creativity within individuals (Murphy & Alexander, 2000), or simply, learners motivation is highly related to success and achievement (Meşe & Sevilen, 2021). In

L2 learning, motivation means the learners' willingness to take part in the language learning process (Lumsden,1994), or the extent to which the individual strives to learn the language due to a desire and the satisfaction experienced in this process (Gardner & MacIntyre, 1993). Moreover, it is an important predictor of a certain learner behavior and outcomes in L2 learning (Yousefi & Mahmoodi, 2022), and a factor highly related with learners' L2 achievements (Gardner, 2000). In conclusion, motivation plays a vital role in learners' successful L2 learning.

1.2.2 Dörnyei's L2 motivaiton theories

Dörnyei (1994) advances L2 three-level motivation theory, that L2 motivation is separated into three levels, including language level, learner level and learning situation level. Language level focuses on the target culture, the L2 proficiency and other aspects of the L2 learning. Learner level concerns effects and cognitions underlying the motivational processes. And learning situation level is related to motivational conditions concerning components of the course, learner, teacher, and learning group. In emergency online circumstance, Dörnyei's motivation theory involves the three basic aspects of L2 learning, namely L2 learning, L2 learner and L2 online learning environment, in which these three levels of motivation influence each other and as a whole, determine a learner's motivation. Later, Dörnyei (2005, 2009) developed this theory into L2 Motivational Self System theory (hereafter L2MSS), which better explains the relationship between L2 learning and learners' motivation.

Dörnyei's L2MSS is a broad construct consisting of three core components: the ideal L2 self, the ought-to L2 self, and the L2 learning experience (2005, 2009). The ideal L2 self means a desirable proficient L2 user that the language learner would ideally like to become in the future. The ought-to L2 self reflects the external pressures that the L2 learner is aware of throughout the learning process. The L2 learning experience involves situated motives that relate to the immediate learning environment and experience, such as the impact of the teacher, the curriculum, the peer group, and the experience of success (Dörnyei, 2009).

L2MSS model includes two self-related constructs, as well as a component related to the learning context or experience, which insures the fact that the two self-guides do not impact the learning process in isolation (Csizér, 2019). A basic hypothesis in the

L2MSS is that if proficiency in the target language "is part and parcel of one's ideal or ought-to self, this will serve as a powerful motivator to learn the language because of our psychological desire to reduce the discrepancy between our current and possible future selves" (Dörnyei, 2009, p. 4).

Seeing from the surface of the two L2 motivation models advanced by Dörnyei, the L2 ideal self and L2 ought-to self in L2MSS model correspond to the language level and the learner level in the three-level motivation theory, and the learning situation level is included in the L2 learning experience of the new theory, with the learning situation level is similar to L2 learning experience. Concerning the theoretical framework, Dörnyei's three-level motivation theory mainly focuses on the analysis of three basic motivation levels of learners' learning by emphasising the diversity of learning motivation and the characteristics affected by different levels of factors. While L2MSS theory divides motivation into ideal L2 self and ought-to L2 self, both of which are based on learners' internal needs and expectations, focuses more on the dynamic formation of self-concept and motivation in the learning process, and emphasises on the self-identification and expectation of learners in L2 learning. These two motivation theories complement each other and provide a broader perspective for readers to fully understand L2 learning motivation. The L2MSS model creatively shifts the research perspective into learners' internal beliefs, emphasizing the initiative of individuals and surpassing the three-level motivation theory.

In this study, I chose L2MSS proposed by Dörnyei's (2005, 2009) as the guiding theoretical perspectives for my analysis of motivation because it involves all major aspects in L2 learning, which may better explain the relationship between L2 learning and learners' motivation. In addition, systematic reviews done by Boo et al. (2015), and Mahmoodi and Yousefi (2021) on L2 motivation research concerning 2005-2014 period, and 2010-2019 period respectively all report that the L2MSS is the most powerful analytical framework serving as the foundation in the field of L2 motivation research.

1.2.3 Review of previous studies

Taguchi et al. (2009) conducted a research with about 5,000 participants to compare the L2MSS among Japanese, Chinese, and Iranian learners of English, revealed the

differences and commonalities of L2 learners' motivational self-system under different cultural backgrounds, and examined the relationships among the ideal L2 self, attitudes toward learning English and the criterion measures.

Papi (2022) provided a comprehensive overview of the application of L2MSS in language classrooms, including theoretical background, research results, and suggestions for teaching practice by elaborating on the three constructs of the LMSS model. Compared with previous studies, this research made a more in-depth interpretation and expansion of these concepts, especially in terms of the dynamic interaction between the ideal L2 self and the ought-to L2 self., and pointed out that these two selves may compete with or complement each other in different situations, and jointly affect learners' motivation and behavior in L2 language learning.

Aldosari and Dörnyei (2022) explored the L2MSS of English as a foreign Language learner in Saudi Arabia by using a mixed approach to reveal the influence of different motivational components on learner motivation. This research obtained rich data on learners' motivation level, motivation types and factors affecting motivation by conducting a large-scale questionnaire survey among EFL learners. Through in-depth interviews and classroom observations, this research explored learner's motivation change in the actual learning process and the relationship between learning effect so as to provide theoretical support and empirical basis for improving the quality and effect of EFL teaching in Saudi Arabia.

Li and Taguchi (2022) used a mixed research approach to explore L2MSS in Chinese undergraduates' English learning, revealing the relationship between different motivational components and their influence on learners' use of learning strategies.

Although, the above studies all practiced the L2MSS and indicated that it has an important influence on L2 motivation research, it is not perfect. In the applications of L2MSS, it is necessary to consider more internal and external factors so as to make a comprehensive analysis.

1.3 Online learning perceptions

1.3.1 Online learning

1.3.1.1 A brief history

Accompanied with the tremendous development speed of information technology, the Word Wide Web was formally launched in 1991. Several years later, around 1995, learning management system (hereafter LMS) and local area network (hereafter LAN) were applied in instruction (Dong, 2021). Online learning was first used as a term to refer to web-based learning systems, like WebCT, which later became Blackboard (Deng & Tavares, 2013; Moore, 2013). For Dong (2021), online learning is influenced not only by the development of information technology, but by the transformation of the concepts of online learning and teaching. I divide the short history of online learning into the following six stages:

The initial stage mainly provided online learning resources. In the mid-1980s, computers began to be used to assist teaching, with a large amount of teaching courseware and software becoming available as electronic learning resources. This was effectively a one-way online learning model, as it only allowed learners to watch or download free online learning resources, but without expressing their ideas. At around the turn of the 21st century, online teaching philosophy shifted from resource-centred to learner-centred. Then the second stage came when LMS and LAN were used to provide an online teaching environment (Bates, 2014), and the focus of online teaching changed from providing learners with online learning resources to managing online learning. A decade into the 21st century came the third stage—mobile learning, it appeared along with the increasing speed of mobile communication technology. As 2G progressed to 5G, smart phones and mobile applications (hereafter mobile apps) came into people's daily life, which caused online learning become free from the restrictions of time and space (Li, 2015; Heil et al., 2016; Sweeney & Moore, 2012). The fourth is the stage of MOOCs, it first appeared in 2008 and became popular in 2012 due to its features of being free, massive, and open to everyone, offered by universities via online platforms. The fifth stage is blended learning. As a combination of both face-to-face and online learning (Garrison & Kanuka, 2004; Reasons et al., 2005), blended learning could achieve an optimal teaching effect. Blended learning was popular in the L2 field in Chinese tertiary education as it has been advocated in several rounds of national College English teaching innovation since 2004. The sixth is the stage amid and after the pandemic period, starting from early 2020. The breakout of Covid-19 in

early 2020 shifted classroom teaching into an emergency online circumstance due to lockdown and quarantine policies, which is also a focus of this research. The research results of my study may provide solutions to L2 online teaching in the pandemic and the post-pandemic period.

1.3.1.2 Definitions

Since the appearance of LMS and LAN around the new century, distinct and overlapping terms have been used to refer to online learning, which include e-learning, internet learning, networked learning, web-based learning, distance learning, mobile learning, blended learning, MOOC, and flipped classroom etc. Many definitions of online learning in the literature reflect the diversity of practice and associated technologies (Anderson, 2008). Despite having various names, all the terms mentioned above indicate that learners use some forms of technology—usually a computer—to access online learning materials (Ally, 2008). As such, I will use "online learning" as the general term throughout this research.

Definitions of online learning are also large in number, emphasizing its diverse aspects. For instance, Carliner (1999) defined online learning as educational material that is presented on a computer, while Benson (2002) defined it an improved version of distance learning. However, online learning indicates more than whether a computer is used to present educational material, or as a means of learning from a remote area. With increasingly easy access to online platforms, online learning was considered to draw "direct attention not to technology, but rather to pedagogical issues and implementation in the teaching and learning context" (Torrisi-Steele, 2006, p.9). More emphasis was put on the "learning" aspect of the definition. By making learners and the learning process the focus, Ally (2008) defines online learning as "the use of the internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (p.17), which describes every element of the learning process and various purposes of the learner's online learning.

A quarter of a century has already passed since the term "online learning" first appeared around the new century. Within this time period, information and network technology developed at unprecedented speed. Based on the new features and

applications of online learning, an updated definition may be necessary. Singh and Thurman (2019) conducted a systematic review concerning the definitions of online learning over the last 30 years (1988-2018) by choosing 151 peer-reviewed articles in the ERIC database and collecting 46 definitions from 37 resources. Their results indicate that technology is the most abundant and clearly defined element of online learning. In addition, time, physical distance and education context are other important elements in the process of the evolution of the definition. Among the three definitions of online learning they gave, I consider "learning experienced through internet in an asynchronous environment where students engage with instructors and fellow students at a time of their convenience and do not need to be co-present online or in a physical space" (Singh & Thurman, 2019, p.302) the most appropriate, as it contains all the necessary elements and features of online learning mentioned above.

The asynchronous environment in this definition refers to the prepared and recorded video form often used in an asynchronous online class, in which students are able to overcome the restrictions of the time and space for learning. A synchronous online learning mode refers to a live conferencing form via software or an online learning platform, such as Tencent Meeting, QQ, XueXiTong, Zoom or other similar video chat software. Synchronous online learning simulates traditional off-line classroom learning with more instant interactions, flexibility, and supervision, and was required by educational administration in many educational institutions in EOT.

1.3.1.3 Features

Conole and Dyke (2004) state that features of online learning include accessibility, diversity, communication and collaboration, and reflection. Accessibility refers to the asynchronous nature of the online environment, which provides learners chances to utilise educational resources without the restrictions of time and space. Diversity refers to the vast amount of online learning materials that can meet any learner's requirements. Communication and collaboration mean that online learning provides learners with opportunities to engage in dialogue with different groups. Reflection indicates that the online discussion format gives learners chances to think and formulate their opinions, and the possibility of rereading their own ideas in the context of the responses of others.

In addition to the above mentioned features of online learning, I consider practicability, including equality, low infrastructure requirements and low costs to be significant features. Online learning provides all learners equal chances to learn and share online resources. Low infrastructure requirements mean that apart from the basic requirement of owning a computer or mobile device, the barriers to online learning are minimal. Online teaching is also less expensive than traditional teaching. The expenses for online learners inevitably decrease, making online learning more widespread and economical.

Before the pandemic, online education was already advanced. However, Covid-19 pushed most forms of education online almost overnight, regardless of the readiness of teachers, students, hardware infrastructure and software. As studies related to EOT have been limited, this study seeks to fill this research gap.

1.3.2 Emergency online learning

1.3.2.1 Definition and features

For Hodges et al. (2020), typical online education is designed to be delivered fully online and involves planning and designing coursework ahead of time. The outbreak of Covid-19 in January 2020 necessitated a swift transition to online education. According to Giannini (2020), Assistant Director General of United Nations Educational, Scientific and Cultural Organization (hereafter UNESCO) for Education, 1.57 billion students in 191 countries suspended face-to-face classes and shifted to online teaching in response to the Covid-19 pandemic, with no exception for any level of education. Tertiary education was disrupted by the closure of universities, without much preparation, more than 200 million tertiary students worldwide (UNESCO, 2021), including about 20 million Chinese undergraduates were shifted to online teaching overnight (Xu, 2021), who were required to register on online teaching platforms and download mobile apps in order to start their emergency online learning. Unlike typical online teaching, Hodges et al. (2020) define EOT as a temporary shift of instructional delivery to an alternate delivery mode because of crisis circumstances, which involves the use of fully remote teaching solutions for instruction that would otherwise be delivered face-to-face, or as blended courses and that would return to its format once the crisis or emergency has abated (para. 13).

In April 2020, after face-to-face teaching had been shifted to EOT worldwide, the higher education section of UNESCO conducted a survey by addressing its 193 Member States and 11 Associate Members to provide an evidence-based overview of the impact of Covid-19 on HEIs at the national and global levels (UNESCO, 2021). The findings of the report are as follows:

> (1) Mode of teaching and learning: almost all countries reported notable changes in the mode of teaching and learning, with an increase in online, distance or blended learning as the main trend during the pandemic.
>
> (2) International mobility: international students suffered mobility setbacks greatly; however virtual mobility could compensate or even replace physical mobility.
>
> (3) Disruption of research and extension activities: Covid-19 has caused the suspension and cancellation of teaching and research activities globally.
>
> (4) Widening inequality: the mixed impact of the pandemic on university finance has shown the exacerbation of inequality in higher education. Financial support from government and external sources are crucial to the survival of HEIs.
>
> (5) National challenges: health and adaptation to new modes of teaching are the primary concerns for students and institutions (UNESCO, 2021, p. 2-5).

This survey report provided a general view of various aspects of the EOT in HEIs throughout the world. Detailed studies on EOT are in the next section.

1.3.2.2 Review of studies

The sudden outbreak of Covid-19 worldwide in early 2020 interrupted the normal teaching and learning process worldwide. Face-to-face classes were suspended, and EOT was pushed to the front stage at most levels of education.

The research done by Bao (2020) on the case study of online teaching during Covid-19 in Peking University, one of the two most prestigious universities in China, was among the earlier publications relating to the studies of online teaching amid Covid-19, as this article was accepted on 20 March 2020. This paper presented six specific strategies for university instructors who might conduct online teaching in similar situations. It suggested five high-impact principles for online teaching to improve the breadth and depth of student's learning, and a contingency plan to deal with unexpected incidents of online education platforms.

Shin and Hickey (2021) did a study involving 64 participants at a public university in USA in 2020 to examine college students' emergency remote teaching and learning

experiences during Covid-19. Analysis of the online survey data showed various detrimental effects caused by the outbreak of Covid-19 and emergency remote teaching on the participants' learning and personal experiences. For example, the results showed that the participants experienced not only a loss of learning and lack of motivation, but also that preexisting educational and social inequalities were exacerbated and amplified during the Covid-19 crisis. This research concluded that it was necessary to create and maintain a sense of community, and provide socio-emotional support. They used the term "Tender Loving Care" to describe extra emotional attention to make college students and instructors feel better and emphasised compassion during uncertain times.

Davies et al. (2020) conducted a comparative research of five English for Academic Purposes (hereafter EAP) courses at four Sino-foreign universities based in China during Covid-19 to respond to this crisis. This study provided a variety of contingency models, and discussed various EAP courses when transforming from face-to-face to online delivery. In this study, the five EAP courses were compared in relation to interaction, learner autonomy, feedback, leadership and institutional support. The study presented practical implications drawn from the shared experiences of EAP practitioners from the universities involved in the study, and also gave suggestions for course delivery both within and beyond EAP teaching contexts.

Zhuang et al., (2020) investigated the relationship between anxiety and English learning for undergraduates' in Wuhan during the outbreak of Covid-19. The research results indicated that the undergraduates' English learning efficiency during Covid-19 had no correlation with their genders, but was related to their majors and their level of anxiety.

Four years have already passed since the start of emergency online education in early 2020. Apart from the Covid-19 pandemic, there exist other possibilities of emergent situations which may require people to retreat to online again. It is therefore worthwhile to conduct research into emergency online education in order to face challenges and emergencies in the future.

1.3.3 Online learning perceptions

1.3.3.1 Definitions

Research on perceptions towards learning has largely been done in applied linguistics, as well as in the field of educational psychology in recent years. Concerning the definition of perceptions, Postman (1962) indicates that there is a lack of agreement on its definition and the operations appropriate to its investigation. He continues that disagreements on definition attach importance to the analysis of the effects of past experience and motivation on perception. In other words, for him, aperson interprets a situation or stimuli as meaningful based on his or her prior experiences. Pickens (2005) defines perception as being closely related to attitudes. Early psychologists consider that attitude is central to understanding human behavior (Ajzen & Fishbein, 2005, p.174). That is, in certain situations, one's behaviors can partly be explained by one's attitudes, and one's attitudes can be inferred from one's behaviors (Niedenthal et al., 2005; Pickens, 2005). As attitude refers to a complex combination of a person's "personality, beliefs, values, behaviors, and motivations" (Pickens, 2005, p. 44), perceptions are one's interpretations of objects or situations. Two persons may have totally dissimilar perceptions of the same situation because of their individual differences on many levels (Pickens, 2005).

For online learning perceptions, Wei and Chou (2020) consider that they are derived from learners' attitudes towards learning by using computers and the Internet, they influence learners' use of the technology in the settings of their learning, their use of the learning materials, and their online learning performance. This study focuses specifically on Chinese undergraduates' perceptions of L2 online learning in EOT.

1.3.3.2 Components

As perceptions are one's attitudes or explanations of certain circumstances (Pickens, 2005), components of online learning perceptions vary according to different researchers' interpretations of the online circumstances. Liaw et al. (2007) report that college students' perceptions towards online learning environment have the following four dimensions: e-learning as a self-paced learning environment, an effective learning environment, a multimedia instruction environment, and an instructor-led learning environment. However, Wei and Chou (2020) view features of online learning, including flexibility, adaptability, convenience, and interaction as factors relevant to online learning perceptions.

This research deals with Chinese undergraduates' perceptions towards L2 teaching in EOT, which was a sudden shift from mostly face-to-face teaching to totally online teaching, no matter whether the instructors and learners were prepared or not. In this circumstance, online learning readiness would be an important factor affecting not only learners' attitudes towards EOT, but their learning performance. Thus, in this case, it was necessary to examine learners' perceptions regarding their readiness for EOT. Furthermore, knowing learners' real attitudes towards EOT, and understanding the extent of their readiness when encountering this emergent situation would be a great help for guiding online teaching in the future. Concerning learners' perceptions towards EOT in this study, the above mentioned characteristics of EOT as well as learners' readiness were necessary factors to explore.

The notion of online learning readiness was proposed by Warner et al. in 1998 (Wei & Chou, 2020). Since then, researchers have developed various instruments to measure online learning readiness from a 13-item (McVay, 2000) to a 38-item questionnaire (Bernard et al., 2014), from two dimensions (Smith et al., 2003) to four dimensions (Bernard et al., 2014), to five dimensions (Hung et al., 2010) of readiness, which include self-directed learning, motivation for learning, computer/Internet self-efficacy, learner control, and online communication self-efficacy. When exploring Chinese undergraduates' perceptions towards EOT, this study uses Hung et al.'s five dimensions of online learning readiness, together with other two items of information, namely respondents' trust and appreciation for EOL, to do the research. The explanations for the seven dimensions are as follows:

Self-directed learning is as an approach that helped to stimulate learners' assumption of personal responsibility and collaborative control over the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful learning outcomes (Garrison, 1997).

Motivation for learning is the process that initiates, guides, and maintains goal-oriented behaviours, which has direct influence not only on the whole learning process, but on the learning results.

Computer/internet self-efficacy means an individual's perceptions towards technology and an individuals' ability to use it. Bandura (1989) defines self-efficacy

as humans' judgment of capability to order and carry out a "course of action that is required to attain designated types of performance" (p.730).

Learner control means the degree to which learners can direct their own learning experience and process (Shyu & Brown, 1992). The meaning of learner control has evolved over time to include the characteristics of new learning paradigms as well as new technologies (Hung et al., 2010).

Online communication self-efficacy is an essential dimension to create opportunities for interactions and communications between students and their instructors in Web-based learning, so as to overcome the limitations of online communication.

Trust refers to learners' trust and confidence in online learning, while **appreciation** indicates learners' evaluation on online learning.

1.3.3.3 Review of previous studies

Bhagat et al. (2019) reported a study of 208 students from Taiwan with previous online learning experience. Bhagat used a bulletin board system and other instruments to examine the impact of five personality traits, namely extraversion, agreeableness, conscientiousness, neuroticism, and intellect/imagination on students' perception towards online learning. The research data showed that two personality traits, conscientiousness and intellect/imagination, had a larger positive impact on students' perceptions towards online learning, whereas neuroticism had significantly negative effects on participants of online courses. The results provide evidence that students with different personality traits have different preferences for and experiences in online courses.

Manegre and Sabiri (2020) made a survey of 35 online English teachers for their perceptions and opinions concerning their teaching in online virtual Spanish classrooms. The research results showed that for both teachers and students, teaching online created a positive teaching environment. In addition, the teachers also indicated that students learned online at the same or even faster than they did in traditional classrooms. Furthermore, they liked to see more subjects offered online, and they believed that online learning may be an alternative learning method to

replace traditional classroom learning.

Grether et al. (2020) conducted a study to examine how students experienced the unexpected shift to online learning during Covid-19 in the spring of 2020. Two surveys were sent six weeks apart to two groups of participants, numbering 310 and 87 respectively, in a small American public university to monitor their experiences with the shift to online learning. The results of the study demonstrated that the majority of students agreed with shifting classes online and they were concerned with balancing work, school, family life and educational changes made to online learning. In addition, open-ended responses to the survey indicated the following three major themes from their online learning experiences: unrest in personal life, concern for immediate and long-term impacts on education, and critiques on how the university handled the transition to online learning.

The above studies examined different aspects of learners' perceptions towards online learning, with varied findings. Learners with diverse personality traits had different preferences for and experiences in online courses. Before the pandemic, as online learning in most cases was a supplementary method for face-to-face teaching, and only occupied limited time slots, for most learners it provided a positive learning environment. However, when online learning became the only teaching approach in all educational institutions during Covid-19, learners' perceptions towards it also changed. The last example above mentioned feelings of unrest for learners' online learning during Covid-19. Thus, it is worth making a detailed study of learners' perceptions towards EOT.

1.4 Online learning strategies

The study of learning strategies benefited from the quick development of cognitive psychology in the middle of the 20th century. When Bruner et al. (1956) was researching the concept of learning process, they found that focusing strategy and scanning strategy could greatly improve learning efficiency and outcomes. Since then, the research on "cognitive strategies" progressed gradually, as Bruner's research provided a solid basis for the study of learning strategies. At the same time, cognitive psychology has also made great progress in the study of thinking processes, and general strategies not involving a specific subject. Memory strategy, organization

strategy and elaborative strategy emerged one after another, laying a foundation for the development of learning strategies. American psychologist Flavell (1971) proposes the concept of metacognition, which enriched the theory of learning strategies as it referred to the individual's self-awareness of his own cognitive processing, that is, the cognition of cognition. It was not until the 1980s that metacognition theory was applied to educational practice, which enormously enriched the theoretical research and training guidance of learning strategies (Gu & Zhao, 2015).

However, studies have found that strategy training not tailored to a specific subject did not play an obvious role in improving learners' academic performance, so the study of subject-specific learning strategies gradually developed. In the mid-seventies, the pioneering works of Rubin (1975) and Stern (1975) marked the beginning of the study of language learning strategy (Griffiths, 2004). And in the first decade of the new century, the study of LLSs has become the most active field in the study of discipline learning strategies.

1.4.1 Language learning strategies

1.4.1.1 Definitions

Zhang (2010) noted that the word "strategy" is derived from the ancient Greek word "strategia", meaning generalship or the art of war, whereas in nonmilitary settings, it refers to a plan, step, or conscious action towards achievement of an objective. The concept of strategy has become influential in education, and has been transformed into learning strategy (Oxford, 1990). In literature concerning cognitive science or language learning, the term "strategy" has a small range of synonyms, including "technique", "tactic" and "skills", so different researchers may have differential understandings of its definition. Bialystok (1983, as cited in Wenden & Rubin, 1987, p.7) states that there was little consensus concerning the definition or identification of LLSs. For instance, Stern (1983) holds the idea that learning strategies are the best reserved approach used by language learners, while Weinstein and Mayer (1986) regard them as "behaviors and thoughts that a learner engaged in learning" (p.315). For Chamot (1987), LLSs are "techniques, approaches or deliberate actions" (p.4). However, Wenden and Rubin (1987) believe they are "any sets of operations, steps,

plans, routines" (p.19), and O'Malley and Chamot (1990) regard them as "special thoughts or behaviors" (p.1). Though giving definitions of learning strategies by using diverse terms based on their understanding, researcher reach a census in the functions of learning strategies, that they can facilitate the learning, recall of both linguistic and content area information (Chamot, 1987), to contribute to the development of the language system constructed by learners and affected their learning directly (Rubin, 1987), or to make language learning more successful, self-directed and enjoyable (Oxford et al., 1988).

The above definitions of LLSs show that no two definitions are exactly the same. Though it is difficult to determine which definition is better, the definition given by Oxford (1990) was popular, which states that learning strategies are specific actions taken by the learner that can make learning easier, faster, more enjoyable, more self-directed, more effective and more transferable to a new situation. This definition makes no distinctions between strategy, approach, technique, and tactics, and does not emphasise the difference between "language learning strategy" and "language learner strategy". The former is defined as some form of activity used as a response to problems when and where they arise, and the latter is associated with successful learning, the strategy can be taught, accessible to learners, and documentable by researchers (Cohen et al., 2007).

Dörnyei and Skehan (2003) criticize the fuzzy definitions and terms as "rather inconsistent and elusive" (p. 608), and state that they have "been used in far too broad a sense, including a number of different things that do not necessarily belong together" (p. 610). Ellis (1994) points out some problems existing in the early definitions, with the following three being the major ones:

The first problem is whether LLSs are behavioral (observable), mental (unobservable) or both. For example, Oxford and Nyikos (1989, as cited in Ellis, 1994, p.531) define them as "behaviours or actions", whereas Weinstein and Mayer (1986) state that the term involves both behaviours and thoughts.

The second problem is that Stern (1983) distinguishes "strategies" and "techniques", by describing the former as general and deliberate approaches to learning, and the latter as evident in particular areas. However, Wenden (1987) blurs the distinction

between these two by referring “strategies” as specific actions or techniques (p.7).

The third dispute deals with learners’ awareness of strategy. Many researchers avoid addressing this issue, but Chamot (1987) considers strategies as “deliberate actions”. Seliger (1984, as cited in Ellis, 1994, p.531) distinguishes between “strategies” and “tactics”, by referring to the former as the abstract cognitive categories of processing information subconsciously or unconsciously, and the latter as learners’ deliberate responses to the learning circumstances. Chamot（1987) suggest that learners coping with new information deploy strategies consciously, and that these strategies gradually become subconscious with repeated application and self-adaptation.

Along with the above mentioned problems in the definitions, there are still other inconsistencies that need to be explained, including whether learning strategies have direct or indirect effects on interlanguage development, and what motivates the use of learning strategies. Though each of the above argument describes learning strategies from a unique perspective, putting them together may help us establish the general features of learning strategies:

The above definitions of learning strategies given by various scholars describe learning strategies from different perspectives, and reveal the following core features of learning strategies: (1) Learning strategies are formed with the development of learning activities. (2) The application of learning strategies is a dynamic execution process. (3) Some learning strategies are implicit, while others are explicit. In addition, they are different in levels. (4) All skills and methods that assist with learning can be considered learning strategies.

Therefore, learning strategies refer not only to explicit behavior, but to implicit psychological activities. Learning strategies include specific strategies and strategic awareness, as well as micro strategies and macro strategies, which are consciously carried out by learners, having indirect and direct effects on learning. Learning strategies are not a passive, step-by-step learning process, nor a series of learning activities. They are an operating system that is active and beyond the general learning procedures, but closely monitors and regulates learning activities.

After going into the twenty-first century, Dörnyei (2005) asserts that over the years,

there has been a lack of an unambiguous theoretical definition of the construct of LLSs. Griffiths and Oxford (2014) consider lack of consensus as the status quo in strategy research. In striving for consensus, Oxford (2017) proposes a new, integrated, and highly inclusive definition after she compiled, analyzed, and then coded for the existing 33 existing definitions of LLSs (Thomas & Rose, 2019). Oxford (2017) redefines LLSs as follows:

> L2 learning strategies are complex, dynamic thoughts and actions, selected and used by learners with some degree of consciousness in specific contexts in order to regulate multiple aspects of themselves (such as cognitive, emotional, and social) for the purpose of (1) accomplishing language tasks; (2) improving language performance or use; and/or (3) enhancing long-term proficiency. Strategies are mentally guided but may also have physical and therefore observable manifestations. Learners often use strategies flexibly and creatively; combine them in various ways, such as strategy clusters or strategy chains; and orchestrate them to meet learning needs. Strategies are teachable. Learners in their contexts decide which strategies to use. Appropriateness of strategies depends on multiple personal and contextual factors. (p. 48)

Many researchers consider Oxford's definition of LLSs made in 2017 as the better or the best we have right now (Thomas & Rose, 2019; Chang, 2019; Pei, 2022) because it does a lot for the field to tease apart the central issues related to the use of strategy (Thomas & Rose, 2019). This definition is rich in connotation, which not only covers the core elements, constitutive dimensions and essential characteristics of learning strategies, but contains the purpose, way of using learning strategies, the research paradigm and also research method of learning strategies. Anyway, it is too long, and still, this is an ideal scenario, as learners may not be self-regulated, agentic, and autonomous to select and use LLSs, some learners may still be other-regulated, non-agentic, and/or dependent on the other to choose, teach, scaffold, or monitor their use of strategies.

1.4.1.2 Classifications

As there is no accepted definition of LLSs, the classification of it has always been ambiguous; however its classification in early times was relatively simple. For

example, Bialystok (1983) divides LLSs into two categories: traditional LLSs and non-traditional LLSs, with the former being further divided into formal training strategy and monitoring strategy, and the latter into functional training strategy and reasoning strategy. Since 1990s, with developments in this field, the classifications of LLSs have been gradually systematized.

Rubin (1987) divides LLSs into three categories: learning strategies (including cognitive and metacognitive strategies), communicative strategies and social strategies. Based on information processing theory, O'Malley and Chamot (1990) classify LLSs into three categories, namely metacognitive strategy, cognitive strategy, and social or emotional strategy.

Oxford (1990) divides LLSs into two main categories, six sub-categories, and 64 micro-strategy skills, according to the relationship between LLSs and language learning materials. The two main categories are direct and indirect strategy, with the former including cognitive, compensation and memory strategies directly participating in the processing of target language information, and the latter including metacognitive, emotional and social strategies providing indirect support for language learning. Oxford argues that there is no hierarchical relationship between direct and indirect strategies, which contradicts the classification made by O'Malley and Chamot (1990). Oxford's taxonomy reveals the internal relationships among strategies, which is considered to be the easiest classification to understand and accept, which Ellis considers as "perhaps the most comprehensive classification of learning strategies to date" (1994, p.539). Based on this framework, Oxford designed a diagnostic table concerning the use of LLSs, namely the Strategy Inventory for Language Learning (hereafter SILL), which was widely used in later strategy surveys and studies by teachers and researchers to examine learners' use of strategies.

Stern (1992) divides learning strategies into five categories: management and planning strategies, cognitive strategies, experiential communication strategies, interpersonal strategies and affective strategies.

Cohen (1998) divides strategies into language learning and language using strategies. The former includes strategies of identifying, distinguishing, organizing, and reviewing materials, together with conscious memorizing. The latter includes

retrieval, reviewing, compensation and communicative strategies.

Of all the classifications of LLSs mentioned above, O'Malley and Chamot's classification reveals the internal hierarchical relationship of the three kinds of strategies. However, it only states that the cognitive process needs to be managed, but neglects the management of other strategies. As for Oxford's taxonomy, its direct strategies are similar to O'Malley and Chamot's cognitive strategies, while its indirect strategies are closer to their metacognitive and social/emotional strategies. In Oxford's taxonomy, the two kinds of strategies are on the same level, with no hierarchy. Cohen's classification is easy to understand, but it is difficult to judge whether the strategy is used for language learning or for language using.

After going into the new century, the research of LLSs was no longer prominent, and it was challenged by calls for shifting it to a broader research area by exchanging for, or combining with other concepts, such as self-regulation and language learning autonomy (Gu, 2012; Rose, 2012; Tseng et al. 2006). This trend would later see Oxford introduce and modify the Strategic Self-Regulation (S^2R) Model (Oxford, 2011b, 2017).

The S^2R Model assumes that the organization of strategies includes four main categories of strategies, namely, cognitive, motivational, social, and affective strategies, corresponding to their relevant meta-categories (Przybył & Pawlak, 2023). Papadopoulou et al.(2018) regard that this model involves a modification of Oxford's taxonomy made in 1990 by distinguishing between the four categories of strategies (cognitive, motivational, affective and sociocultural) and meta-strategies to reflect the learner's self-regulation of cognition, social interaction and affect. They conducted a research with 1,308 participants of Greek primary school students to confirm their hypothesis that SILL can be adapted to fit the S^2R Model by using SILL version 7.0 in Greek (Papadopoulou et al., 2018). As Oxford's strategy classification system is popular and easy to understand, so I take her theories of LLSs as my research framework, and also take SILL as the basis of Part IV of the questionnaire in my research.

1.4.2 Online learning strategies

The previous section indicates that due to slight differences in understanding the term

"strategy", researchers are unable to reach a consensus on the definition of LLSs. For the definition of online learning strategies, it is also the case. Different from face-to-face learning, online learning has its own implications. Being a kind of learning supported by computer networks, the online learning process involves not just gaining information, but understanding and using information in online circumstances. Moreover, online learning involves individual learning as well as social learning. In this section, I will describe the connotations of online learning strategies, followed by an analysis of their components and features.

1.4.2.1 Connotations

Based on the features of online learning mentioned in Section 1.3.1.3, I describe online learning strategy as a collection of various learning methods, steps, or operation skills used by learners in the process of online learning, with a purpose of helping learners adapt to, and improve the effectiveness of self-learning and collaborative learning supported in the online environment. As online learning is different from traditional learning, so strategies of online learning cannot be copies of traditional ones. As various technological factors, including computer technology, information technology and interactive platforms are all involved in the process of online learning, so online learning strategies include not only learners' skills of information processing, but also the basic computer and online communication skills required to process information in an online learning environment.

Unlike traditional learning strategies, online learning strategies in the network learning environment have undergone important changes. Network and digital technology provide possibilities for learners to determine their own learning speed, choose their learning contents, and make self-assessment. The continuous feedback of information provides convenience for students and teachers to carry out interactive teaching. Moreover, being different from traditional learning, students' online learning does not depend on their interactions with teachers or peers, but constructs knowledge by making use of the network platforms and digital resources to carry out consultation, discussion, and cooperative learning between teachers and learners, or among peer learners.

Specifically, online learning strategies are operation sequences that involve learners

making self-determining learning plans, selecting the most effective learning methods and learning approaches, in order to develop and evaluate the learning process, improve their own learning efficiency online, in accordance with their own specific learning objectives and characteristics. Generally speaking, online learning strategies are the measures and schemes adopted by online learners to achieve their online learning objectives. They are the basic conditions and main factors to improve the efficiency of online learning, ensure the learning effect, and control the process of network learning effectively. Online learning strategies are procedures, rules, methods, skills and self-regulation employed by learners to learn efficiently in online circumstances.

1.4.2.2 Components

Due to the above mentioned connotations of online learning strategies, it is difficult to classify (Chen et al., 2021). However, Oxford's six-dimension taxonomy of LLSs, mentioned in Section 1.4.1.1, is comprehensive and detailed (Perea, 2021), and particularly deals with strategies in language learning. Oxford's work mainly concerns face-to-face and cooperative language learning rather than online learning, as I could not find a systematic LLS classification concerning online learning, so following the research done by Chen et al.(2021), I still use it as the key reference for explaining online learning strategies in the current study.

Oxford's taxonomy (1990) divides LLSs into two categories, direct and indirect strategies, each containing three dimensions. The former contains memory, cognitive and compensation strategies, which are directly involved with the language being learnt and which require mental processing. The latter includes metacognitive, emotional and social strategies that are used to provide support and manage the learning process without directly involving the language being learnt. The detailed explanations of the strategies in online situations are as follows:

Memory strategies are a cluster of strategies with highly specific functions of storing and retrieving information when needed for communication (Oxford, 1990). According to Oxford (1990), memory strategies can be sub-divided into strategies to create mental linkages to remember the information, to use images and sounds to trigger the remembering process, to foster reviewing in order to increase the chances

of rememberance, and to employ physical actions aimed at associating words with meaning. In the past decade information technology has developed at a tremendous speed. Thanks to the ubiquitous use of smart phones, countless mobile apps, computer programmes, multimedia programmes have been developed to help learners memorize vocabulary.

Cognitive strategies are strategies with the function of manipulating and transforming the language being learnt (Oxford, 1990). In online circumstances, like in the traditional learning environment, cognitive strategies have further divisions for decoding and encoding information, for helping learners to analyse, to reason, and to create structures for input and output. Some multi-media tools may help learners to better understand or employ effective cognitive strategies.

Compensation strategies are the third direct strategy cluster that learners use to comprehend or produce texts despite their linguistic limitations and an insufficient repertoire of grammar rules and vocabulary (Oxford, 1990). In online circumstances, compensation strategies can also be further subdivided in two sections, namely strategies used to guess intelligently when listening or reading, and strategies used to overcome limitations when speaking or writing. Online apps and multi-media tools may provide learners with linguistic and non-linguistic clues, which help learners to guess meaning effectively.

Metacognitive strategies are the first indirect cluster of strategies involving not only the knowledge of one's own cognition processes, but also the ability to control them (White, 1999). These strategies help learners to regulate their own cognition and to manage their own learning process (Oxford, 1990). Whether in online or offline circumstances, metacognitive strategies are further divided into strategies aiming at focusing and centring, arranging and planning learning, and evaluating and self-monitoring one's own learning process.

Affective strategies involve inner feelings and experiences, namely motivation, attitude, emotions and values that influence language learning, generated during the interactions between learners and teachers, or among peer learners, which manifest in the learner's satisfaction with interactions, whether the learner relies on or alienates others, and whether they recognize or reject others. Oxford (1990) indicated that the

affective aspect is probably one of the biggest influences determining the success or failure of language learning. In online learning circumstances, affective strategies are more influential as learners encounter more difficulties than those in classrooms, including loneliness, helplessness, low motivation and a lack of interaction in activities.

Social strategies are a cluster of strategies that highlight the importance of social interaction, as learning a language necessarily involves other people (Oxford 1990). According to Oxford (1990), social strategies can be further divided into three subsections, namely strategies involving asking questions for clarification, verification or correction, strategies concerning different levels of cooperation with others, and strategies considering others' thoughts and feelings as well as their cultural understanding. For Zhang (2000), the basic function of teaching is to promote the dual construction of the learner and culture, to accelerate the cultural formation of the learner, and to help the learner establish and maintain relationships with others and orient him as a member accepted by society, according to social rules and behavior standards. In online circumstances, the dual function of teaching can be realized through online personality interaction (interaction between learners and online information resources) and social interaction (interaction between learners and teachers, or among peer learners). The emotional bond and value significance generated in social interaction will directly affect the social behavior of learners. Online learning strategies should pay more attention to the social growth and progress of individuals, promote the socialization of learners, and help them establish and maintain relationships with others. While the main purpose of learning is not social interaction, social interaction is the core of contemporary education and the key driving force of individual development.

1.4.2.3 Features

Based on features of online learning mentioned in Section 1.3.1.3 of this chapter, I examine the following four characteristics of online learning strategies, namely instrumentalism, humanism, learning autonomy, interaction and collaboration.

The first feature for online learning strategies is instrumentalism. Since the 1990s, the emergence of network technology has brought new vitality into education, resulting

not only in qualitative improvements, but the sharing of educational resources. As online learning strategies require learners to use networks to access information and share educational resources, so they have instrumental characteristics.

The second is humanism. The Internet provides learners with rich learning materials for them to decide what to learn, when to learn and how they learn according to their own needs. In online learning, learners can use their online learning strategies to analyse their learning tasks, put forward their personal goals and needs, choose their favorite learning methods to solve problems, evaluate their learning and find the gaps so as to improve their learning. As online learning requires communications between people, and focuses on their self-realization, so online learning strategies used in online learning process are the embodiment of humanism.

The third is learning autonomy. There is a significant gap between traditional learning and online learning, with the latter being largely autonomous, as learners can choose the contents of their learning, form cooperative groups, seek online learning resources, complete the learning process and evaluate the results independently. In short, online learning strategies used by learners in their online learning process are largely autonomous.

The fourth feature is interaction, collaboration and self-construction. Online learners can not only download their teacher's lecture notes, assignments and other related resources, but can also ask teachers questions whenever they have, join in group discussions with classmates and evaluate their online learning, which on one hand increases leaners' enthusiasm for learning; on the other hand enhances the communicative, collaborative and self-constructed abilities between learners and teachers, or among peers. Thus, interaction, collaboration and self-construction are basic characteristics of online learning strategies.

1.4.3 Review of previous studies

Since the mid-1990s, accompanied with the rapid development of information technology, some researchers began to concern themselves with learning strategies in an online environment. Later in the first decade of the new century, research into online learning strategies reached a peak.

Jiang (2004) studied non-English majors' L2 learning in both the traditional and online learning environments and made two questionnaires to compare the strategies used by learners in different learning circumstances. The results showed that students used learning strategies less frequently in both learning circumstances, with the frequency of using online learning strategies even lower than that in traditional situation. However, successful learners tended to use learning strategies more frequently. Therefore, frequent usage of L2 learning strategies was positively related to learners' learning achievement.

Liu (2020) surveyed 187 undergraduates' online English learning strategies during Covid-19 in Liaoning, China. Among all the participants, only 41 passed the College English Test, Band 4, a national English exam for Chinese undergraduates. The participants were divided into two groups, a high-scoring and a low-scoring group respectively, based on their English scores. The research results showed that high-scoring students were good at using meta-cognition strategies to make learning plans, and conduct effective self-management and self-assessment, while the low-scoring students were more likely to use social strategies, but displayed little or no meta-cognition.

Chen et al. (2021) reported results of their study of the influence of social strategies in online Chinese courses at an Australian university. The findings of their research, which surveyed 63 students, confirmed that online learners adjusted their learning behaviours to learning contexts, adopted and created strategies to meet their learning needs. In addition, the use of social strategy was influenced by various factors, including synchronous and asynchronous learning environments, different learning contexts, technology, and the interactants.

With the development of information technology, much research has been done into online learning strategies, which has expanded the research area of learning strategies. However, there have been very few studies of online learning strategies during Covid-19, and the existing research has various limitations. For instance, some studies (Jiang, 2004; Liu, 2020) used self-designed questionnaires but did not report internal consistency, which may leave doubts regarding reliability and validity. In addition, the number of research participants in some studies (Liu, 2020) was just

over 30, which was too small to have valid statistical result. Thus, it is necessary for this research to fill in the gap by studying online learning strategies during Covid-19.

1.5 L2 education in Chinese tertiary education

In the 1990s, accompanied with the development of internet, online learning first came into Chinese HEIs with the applications of LMS and LAN in instruction (Deng & Tavares, 2013; Moore, 2013). Online learning in Chinese tertiary education was first widely used in late 1990s in different levels of distance education provided by Chinese Radio and Television University, which was established by MOE in 1978 and renamed as Open University of China in 2012 (Open University of China, 2023, March). Gradually, online learning began to play a greater role in Chinese tertiary distance education (Wang, 2014), and later, it spread to undergraduates by using LMS or LAN in instruction. Since China began its opening up policy in early 1980s, English has taken the place of Russian, which was widely studied in the 1950s, to be almost the sole foreign language or L2 learned by students at all educational levels. Hereafter in this dissertation, L2 education for Chinese undergraduates specifically refers to English education.

1.5.1 College English

College English is one of the major compulsory courses in Chinese tertiary education for non-English majors. After China restored its national college entrance examination (hereafter NCEE) in 1977, English course in tertiary education was renamed as College English in the 1980s to show its importance from the perspective of educational administration. Since then, College English has not only developed into a systematic and independent subject, but become one of the most important components of the Chinese tertiary education curriculum (Ruan & James Jacob, 2009). Based on the requirement of "A Pilot of College English Curriculum Requirements" (hereafter Pilot of CECR) issued by the General Office of MOE (2004), College English became the only course spanning four years in Chinese tertiary education, with the first two years as a compulsory course and the last two for an elective one. At that time, on average, College English occupied about 6%-8% of an undergraduate's total credits (160-180 credits), and at least four to six teaching periods per week during the compulsory course period.

College English has two national corresponding achievement tests for two crucial bands in two pivotal stages, named Collge English Test, Band 4 and Band 6 (hereafter CET-4 and CET-6 respectively), with the former examining students' English proficiency after the compulsory period, and the latter checking students' English abilities after the elective period. Both of them are proficiency tests being held at the end of each semester. They all contain four parts, including listening, reading comprehension, translation and writing, intended to reflect students' English capabilities, with full points as 710. There is no official passing line for CET-4 or CET-6. However, as candidates with 425 points or more are eligible to apply for CET-6, which just equals to 60% of its total points, so 425 points are widely accepted as the passing scores for both CET-4 or CET-6 accordingly.

At H University, similar to most other Chinese universities, the undergraduates can attend CET-4 after their first year College English study, and take CET-6 once they pass CET-4. Due to their high social recognition, the two CET examinations have become significant conditions in undergraduates' job applications, having tremendous importance attached to them. Traditionally, in theory, the purpose of College English is to increase students' English proficiency, including their English listening, speaking, reading and writing abilities as a whole. However, in reality, College English is composed of only two types of courses: Intensive Reading and English Listening. The former focuses on improving the undergraduates' English reading and writing abilities, while the latter concentrates on developing their English listening and speaking proficiency.

In 2015, the College English Teaching Guide (hereafter CETG) was issued (National Committee of Guidance for College English Teaching), which for the first time proposed that College English should be made up of three kinds of courses: General English, English for Specific Purposes (hereafter ESP) and English for cross-cultural communications, to suit the needs of students with various English levels and in diverse institutions. For the above mentioned three types of courses, General English courses are basic English courses, which include traditional Intensive Reading course and English Listening course, suitable for first year students. ESP courses are related with students' learning specific major, which may help students learn English for professional knowledge. Cross-cultural communication courses are for training

students with “intercultural competence” (Clifford, 2009), or “global skills” (Haigh & Clifford, 2010), so as to provide them with a broader perspective on the curriculum (John, 2020). The cross-cultural communication courses mainly include History of English Speaking Countries, Western Culture, Chinese Culture, Western Civilization, British Literature and American Literature. All ESP and cross-cultural communication courses are provided with students who have finished their learning of general English courses.

1.5.2 College English teaching reforms

Since China’s opening up in early 1980s, it realized that language was one of the great barriers to international interactions (Ruan & James Jacob, 2009). Two decades later, when China’s accession to World Trade Organization in 2001, the increasing social, political, and economic progress resulted in great demand for professionals with high English proficiency. However, due to the traditional teacher-centred teaching approach, though Chinese students achieved high scores on L2 examinations, they had low English communication competence, especially with poor English listening and speaking abilities. Thus, College English teaching has long been a focus of criticism owing to university graduates’ poor English listening and speaking abilities, with even a CET-4 or CET-6 certificate holder being unable to carry on an English conversation fluently (Cai, 2016; Tian & Jiang, 2000).

From 1997 to early 2000s, there was an approximately 8% national increase in student enrolment in Chinese tertiary education each year. However, at the same time, the number of College English teachers did not increase correspondingly. Student number in English classes increased from an average of 50 to between 70 and 90, with some classes having over 120 students. College English teachers found it hard to teach such large classes as it was impractical to interact with or elicit responses from individual student in English. As a result, students’ English listening and speaking abilities deteriorated, which caused College English teaching became the focus of serious criticism from EADs (Zhang, 2002), undergraduates’ parents, English experts (Liu, 1999) and the society.

The combination of the above factors produced a new determination within the Chinese educational administration to make a top-down teaching innovation by

introducing new pedagogical theories and modern technical facilities into College English teaching. At the turn of this century, some Chinese universities established a small scaled LMS to provide opportunities for students to practice English online and got good results (Jia & Liu, 2004; Dong & Fu, 2004; Ma, 2004). Greatly encouraged by these achievements, a pilot version of CECR was published by MOE in early 2004 to commence a nation-wide CETI initiative. As information technology and network technology can assist language learning through repeated practice, particularly with the training of English listening and speaking abilities, Chinese HEIs were encouraged to adopt modern technology to assist their English teaching by MOE.

As Chinese HEIs differ greatly from each other in teaching resources, admission scores for NCEE and geographical locations, in 2004, 180 out of the total 1,700 universities and colleges across China were chosen as trial universities in the CETI initiative according to their ranking, prestige, and geographical distribution. These universities represented a range of universities typified by both their available teaching resources and levels of students' English proficiency. The pilot of CECR encouraged the trial universities to remould the existing unitary teacher-centered L2 teaching approach by introducing student-centred, computer-based classroom teaching models. The new teaching model was built on network technology, so that College English teaching and learning would be, to a certain extent, free from the constraints of time or place. The teaching focus shifted from raising learners' L2 reading and writing abilities to increasing their L2 listening and speaking abilities, and special attention was paid to students' autonomous learning by using network technology. LMS and LAN were used in instruction to assist students' L2 learning by providing large amount of audio files and video clips of native English speakers' speaking.

The CETI in 2004 lasted for a year and achieved good results (Zhuang et al., 2005) in the improvement of students' English listening and speaking abilities by providing chances for students to practice English with the help of network technology (Chen, 2016), which still influenced College English teaching even before the pandemic. The results attained by CETI ensured that student-centred, computer-based classroom College English teaching approach was expanded to more universities. Three years later in 2007, a modified version of CECR was officially issued (Higher Education

Department of MOE, 2007), based on the research achievements from the trial universities. Compared with the two versions of the CECR (pilot in 2004, 2007), the pilot version issued in 2004 emphasised using network technology to assist students' English learning, particularly to increase their English listening and speaking abilities, with face-to-face tutorials also very necessary. In addition, it advocated that traditional face-to-face classes should be kept for English reading, writing and translation classes (Chen, 2016). Though the revised version issued in 2007 still emphasised student-centred, computer or internet based classroom teaching, it did not require face-to-face tutoring. Moreover, the computer or internet based teaching was no longer limited to English listening and speaking courses, but expanded to all courses related to students' L2 learning. The issuing of the revised version of CETI in 2007 not only marked the extension of College English reform from a pilot program to universities across the country, but indicated that College English teaching in Chinese tertiary education as a whole has been pushed into the track of computer assisted language learning (hereafter CALL), which is an approach to learn L2 by using computers or other technologies to learn language learning materials, or to create environments where teachers and learners can interact with one another and the outside world (Stockwell, 2012).

By the 2010s, mobile technology had developed greatly and smart phones came into people's daily life. Mobile apps became widely used by undergraduates to help their L2 learning; MOOCs were also introduced and later became widespread in Chinese tertiary education. Late, MOE (2012) issued a document "Opinions on Comprehensively Improving the Quality of Higher Education" to start a national educational reform in tertiary education by reducing the total credits and teaching hours for undergraduates' graduation so as to save the time for increasing the undergraduates' self-learning and practical abilities by using modern technology. The credits for College English were reduced nationwide from 16 to 12, to 10 or even to 8 in some institutions. At the same time, different online teaching and learning platforms, together with various mobile apps and MOOCs came into the undergraduates' daily English autonomous learning to make up for their L2 learning in the reduced teaching hours. Xu et al. (2021) state that at the end of 2019, there were 1,292 national level MOOCs released in Chinese national MOOC platform,

and over 12,500 MOOCs in various Chinese MOOC platforms ready for students to visit.

In 2015, National Committee of Guidance for College English Teaching issued CETG to start another round of College English teaching innovation. This CETG advocated a teacher-oriented, student-centred teaching approach, and intended to change the English teaching process from emphasising "the purpose of teaching" to "the necessity of learning", so as to change students' passive English learning into an active one. As far as the teaching method was concerned, this CETG advocated higher institutions to fully use various modern technologies, namely micro-lectures, MOOCs and flipped classrooms, together with other high-quality web resources to create diverse range of environments for English learning in order to encourage learners' independent and personalized learning. Five years later, a new edition of CETG was issued (National Committee of Guidance for College English Teaching, 2020), which outlined a similar teaching approach to that of the 2015 edition. However, the CETG 2020 advocated online courses and blended ones, which were a combination of both face-to-face teaching and online teaching, as the preferred teaching methods.

1.5.3 College English learning from CALL to MALL

In the early 21st century, science and information technology developed at an extraordinary speed, big data, cloud computing, and even artificial intelligence (hereafter AI) arose sequentially. Mobile information technology became widespread, and developed from 2G to 5G, which has rapidly developed implications for education. Due to easy access to wireless networks, mobile technology has come into every aspect of people's life, with mobile learning being one such case.

Crompton (2013) states that mobile learning appeared as a recognized term in 2005, which Traxler (2005) defines as "any educational provision where the sole or dominant technologies are handheld or palmtop devices" (p.4), with mobile phones and tablets as the devices commonly used. In the early 2010s, along with the popularization of smart phones, mobile apps were released in vast number to meet various demands. Mobile application, or application software, with a short form of whether "mobile app", or simply "app", was generally downloaded from app stores in mobile phone whether for free or not, with an intention to run on smart phones, tablets

and other mobile devices for diverse purposes (Gangaiamaran & Pasupathi, 2017). Sweeney and Moore (2012) stated that the number of language learning apps even reached "as high as 1,000 to 2,000 in total". Three years later, the Statista Inc. (2015) reported that the extensive use of mobile devices had resulted in over a million apps being available for users in both the Google Play and Apple iTunes app stores, with educational apps comprising 9.95% of the total.

In China, a large number of English learning apps have been designed to meet the needs of the huge number of students in different levels of education, with the total enrollment number of undergraduates reaching 1,893.10 million nationwide in 2022 (Chinese Ministry of Education, 2023, July 5). English learning apps designed for Chinese university students can be roughly divided into three types. The first type intends to improve learners' specific English abilities in a certain way. For example, "Quora" aims to enhance students' English reading and writing abilities. "Shanbay" and "BaiCiZhan" are dictionary apps helping students to remember English vocabulary. The second type includes popular Chinese social communication apps, including "WeChat", "QQ", "Fetion", "blog" and "Weibo (microblog)", which are also commonly used in English learning by providing students with English resources shared by others, or published by official accounts. The third type is apps that correspond to online teaching platforms. XueXiTong and Treenity (ZhiHuiShu) are just two popular ones among them, with the former having 1 billion visits a day before the Covid-19 pandemic.

As far as mobile app assisted English learning in Chinese tertiary education is concerned, Chinese scholars have done much related research. In the early 2010s, Li and Li (2011) studied the use of popular Chinese social apps, including QQ, Fetion, blog and micro-blog to assist College English reading instruction. The results showed that social apps were popular for students' English learning at Chinese universities. Five years later, Li et al. (2016) did a survey on how mobile app assisted the undergraduates' English learning. Their research results showed that 79.92% of Chinese undergraduates frequently used 1-2 apps for their daily English learning, and 37.37% of them had used those apps for over a year. Concerning students' purposes for using apps, 40.37% of the respondents used dictionary apps to help them to recite English vocabulary, while the others mainly used apps to improve their specific

English abilities. 33.13% of them using apps for English speaking abilities, 24.02% for increasing their English reading competence, and 2.48% for increasing their English writing abilities. As a results, the wide use of mobile apps in tertiary L2 learning changed College English from CALL into mobile assisted language learning (hereafter MALL).

1.5.4 College English in the times of blended learning

In the 2010s, accompanied with the swift development of mobile learning, MOOCs appeared and online learning reached another peak. HEIs increasingly offered online courses, with enrollment number also growing rapidly (Wei & Chou, 2020). Allen and Seaman (2017) reported that in autumn 2015, over six million American college students (29.70% of American undergraduate enrollment) were enrolled in at least one online course. In April 2019, China MOOC Action Declaration reported that over 12,500 MOOC courses in various Chinese MOOC platforms had already been studied by over 270 million learners (MOE, 2019, April 9).

Before the pandemic, blended learning in College English teaching had been popular, which was classroom teaching based with whether MOOCs assisted, or online teaching platform assisted. For the undergraduates' learning the MOOCs, some were required by their L2 teachers, others for their self-learning. Concerning using the online teaching platform for L2 learning, L2 teachers can upload related learning resources or provide links for associated MOOCs for L2 learners' self-learning or autonomous learning. L2 learners can read reading materials, watch video clips, and upload their homework in the online teaching platform. Strictly speaking, there were no pure L2 online courses at that time, but only blended or mobile assisted College English teaching.

1.5.5 College English amid the Covid-19 pandemic

Starting from January 2020 to December 2022, China experienced a three-year pandemic period involving six academic semesters. Within the three years, Zhengzhou, capital of Henan Province and also the location of H University underwent lockdowns in five out of the six semesters, varying from two weeks to a whole semester each time. Whenever there was a lockdown, H University would immediately shift its face-to-face teaching to online teaching, College English was

also the case using whether synchronous or asynchronous online teaching to replace classroom teaching, Among all the lockdown periods in the three years during the pandemic, the first period in early 2020 was the longest and also the most difficult one, as being the extreme first in number, it encountered the most challenges, which was also the time chosen for conducting this research.

Starting from the CETI in 2004, College English went ahead of other courses in Chinese tertiary education by using modern technology to assist its teaching and learning process. The shift from face-to-face teaching to EOT was also based on the development and applications of modern technology. During the three years in the pandemic, teaching modes and learning strategies in tertiary education all changed greatly, with challenges and problems arising at the same time, and College English was no exception. In Section 1.3.2.2, I reviewed several L2 studies in EOT, among which the studies of Bao (2020) and Zhuang et al. (2020) focused on College English. However, both of the two studies were limited in research number, and dealt with L2 instruction in top Chinese universities in big cities, which were less representative. Thus, in this study, I intend to explore Chinese undergraduates' perceptions of L2 learning and strategies in EOT at a typical university in a densely populated, but economically underdeveloped area, which would be more representative and meaningful.

1.6 Gaps in the literature

Half a year after the outbreak of Covid-19 in early 2020, just as I was about to start my research, studies related to the shift from face-to-face L2 teaching to EOT began to appear. Now, three years have already passed, though related studies have achieved various results, the existing literature still has gaps in the following aspects. Thus, it is necessary to explore the limitations of studies concerning L2 EOT in detail.

Limited research of L2 EOT in tertiary education

When I started to do this research more than three years ago, the number of studies concerning L2 EOT was very few. As the time for EOT varied greatly due to different lockdown periods worldwide, the research results concerning it appeared gradually in various regions, but with a limited amount, particularly regarding

research in tertiary education, as primary and secondary education cover more students and extensive research areas compared with the tertiary one.

Narrow L2 EOT research scope

Among the limited L2 EOT studies in tertiary education, their research scope is narrow as many of them concern more from the perspectives of teachers instead of learners, such as challenges teachers encountered in EOT, their perceptions towards EOT and their instructional strategies used in online teaching (Rapanta et al., 2020; Todd, 2020). As for the literature related to studies on undergraduates' L2 online learning, they are even fewer, and most of them are concerned with the improvement of L2 specific abilities in online situation, such as reading or writing (Xu, 2021; Aljafen, 2022; Sun, 2021). There are very few studies relating to learners' online learning perceptions or learning strategies in tertiary education. Furthermore, I haven't found any research dealing with the whole panorama of L2 undergraduates' online learning perceptions and their learning strategies in EOT. Thus, it is very necessary and meaningful to conduct this study, which will not only get a broad view of undergraduates' L2 learning experiences in EOT, but offer practical steps for L2 teachers to improve online teaching and train learners' necessary online learning strategies so as to deal with potential emergent situations in the future.

Simple extant L2 EOT research methodology

Among the limited studies of L2 EOT in tertiary education, the research methodology of the extant studies is quite simple as quite a number (Ng, 2020; Bao, 2020; Lee, 2021) of them are qualitative studies, which may be influenced by the researchers' experiences and biases and also difficult to get replicated results. The existing quantitative studies (Hartshorn & McMurry, 2020; Hussein et al. 2020) are not practical for exploring new phenomena or documenting participants' perspectives, as they may be statistically significant in paper but insignificant in reality. Because mixed research methods have the advantages of both quantitative and qualitative studies, this study aims to use mixed method to produce an overall design with multiple and complementary strengths (Johnson & Christensen, 2017, p.975) to conduct the research on Chinese undergraduates' perceptions of L2 learning and strategies in online learning during the Covid-19 pandemic.

Small L2 EOT research scale

Concerning scales of L2 EOT studies in tertiary education, many of them are rather small. Many quantitative studies only have around 40 participants (Hussein et al., 2020; Hartshorn & McMurry, 2020), and qualitative ones have just a few of interviewees. Small scaled studies may not only lack statistical validity, but have more accidental factors. Thus, large-scaled related research is needed for getting precise results, and for increasing the validity and credibility of the research as well.

It is evident that like many other viruses, Covid-19 could become seasonal (AFP, May 2020), so no one can predict when physical distancing will be required in the future, but online teaching might become a "regular occurrence" (Wong, 2020, p.2). Thus, it is necessary for international L2 researchers to do related studies and share their research results, pedagogical ideas, resources and methods used in dealing with emergencies.

This chapter has reviewed SCT and motivation theories, and extant literature relating to online learning perceptions, online learning strategies and L2 education, which provides a valuable context for the present study. The notion of learners' perceptions and learning strategies within the online circumstance, as well as technology enhanced teaching reforms in Chinese tertiary education, offers a profound understanding of issues relating to the L2 EOT during the pandemic. The attempts to find problems and dilemmas of L2 online teaching in EOT provide a valuable start for further discussion and solutions to the issue.

Chapter 2 Research Methodology

This chapter describes the current case study, its research design and research methodology. It first introduces the case study and the design of its mixed research methods. Then it explores background information of the selection process for the research institution and participants, and offers pilot studies to determine the working of the research instruments and the research effects on participants as well. After that, it provides a full exploration of the data collection process, together with making the validity and reliability for both quantitative and qualitative approaches. Next, it makes detailed description of data analysis methods. Finally, it discusses limitations of the research methodology as well as ethical considerations at the end of this chapter.

2.1 Research method

2.1.1 Case study approach

Case study is a qualitative research methodology widely used in education (Gall et al., 2003). It provides a unique example of real people in real situations (Cohen et al., 2018), and is often the preferred method when a contemporary phenomenon (a case) in a real-life context is being studied, which can enable readers to understand how ideas and abstract principles can fit together (Yin, 2018). As I intend to make an in-depth study of Chinese undergraduates' perceptions and learning strategies in EOT during the Covid-19 pandemic at H University, a key provincial university of finance and economics in Henan Province, I use case study method to conduct this research, by taking H University as the case.

According to Punch (2014), a case study has the following four characteristics: First, it must have boundaries, and the researcher needs to identify and describe the boundaries of the case clearly. Second, it is a case of something, which needs stressing though it may seem obvious. Third, there is an explicit attempt to preserve the wholeness, unity and integrity of the case. Finally, multiple sources of data and multiple data collections are likely to be used. In addition, Denscombe (2014) holds similar ideas that a case study is characterized by an "in-depth study of one setting; a focus on processes, interactions and relationships; holism; a concern for the particular; multiple methods of data collection; and focus on natural settings" (as cited in Cohen et al., 2018, p.376).

Following the above features of a case study, the case in this research takes place within the boundaries of H University, and the current research is the undergraduates' perceptions and learning strategies in EOEL during Covid-19. Furthermore, the research steps taken, including the selection of participants and the research instruments, should reduce preconceived ideas, and focus on the case, so as to preserve the integrity of this study. Finally, this research collects data from multiple sources, including quantitative and qualitative studies.

As far as the advantages and weaknesses of case studies are concerned, Wellington (2015) points out that they are "illustrative and illuminating, accessible and easily disseminated, holding the reader's attention and being vivid accounts which are 'strong on reality'"(as cited in Cohen et al., 2018, p.378). In addition, Nisbet and Watt (1984) indicate that case studies provide insights into other similar situations and cases, thereby assisting interpretation of other similar cases (as cited in Cohen et al., 2018, p.379). However, critics of the case study approach consider that it is difficult in choosing, knowing and setting boundaries to a case study (Denscombe, 2014). In addition, due to its uniqueness to one particular situation, a case study may not be replicable, representative, typical or generalisable (Bryman, 2012; Yin, 2018; Wellington, 2015). Furthermore, Nisbent and Watt (1984) express that case studies are not easily open to cross-checking as they are selective, biased, personal and subjective.

2.1.2 Case study context

As far as choosing H University, the boundaries of the case study in this research is concerned, it is located in Henan, a densely populated province in central China with medium economic development, which is the representative of the vast, moderately developed areas in China. Having the largest population in China (over 100 million), this province has many local universities, with an exception of having only two "double first-class universities" in China, referring to whether world-class universities or universities with first-class discipline. As about 90% students of H University come from local areas, it indicates that it is a typical local university. Due to its dense population, Henan has had the largest number of high school graduates registering for NCEE for many years. Since 2018, this number has gone over a million successively, it was 1.16 million in 2020, 1.25 million for three consecutive years in 2021, 2022

(Tecent News, 2022, March 16), and 2023 (Sohu News, 2023, June 3), which roughly occupied a tenth of the total population of national senior high school graduates each year. As a result, Henan high school graduates have the lowest chance to enroll at a university in China.

As a key provincial public university with an enrollment of 27,000 undergraduates and 2,100 staff in 2023, H University's key disciplines are economics, management and law, along with other disciplines, including arts, science and technology. Since the implementation of China's opening up policy in the early 1980s, Chinese students nationwide have had a strong preference for learning finance and economics in order to earn more money. As a result, since its establishment in 1983, H University has attracted large number of local high school graduates with relatively high scores in NCEE. Despite having higher scores in NCEE, the English abilities of high school graduates at H University are generally poor, especially their English listening and speaking abilities, as living in a moderately developed inland area provides students with few opportunities to communicate with the outside world. Thus, historically, there has been lower motivation for local students to learn a foreign language well.

In accordance with national policies, the administration of H University has attached great importance to College English teaching since its founding. In the early 2000s, College English occupied 16 credits of the total 180 credits for an undergraduate at H University within the first two academic years, with students having four credits for College English in each semester. The distribution of the four credits in each semester was giving undergraduates' four College English teaching periods each week in total, two for English reading and writing, and the other two for English listening and speaking, which were all held in traditional classroom environments. At the end of 1st year university study, the undergraduates could take CET-4, which has been highly recognised by society, particularly for graduates' job application. If students failed CET-4, or were unsatisfied with the scores, they had additional chances at the end of each subsequent semester to take the examination before graduation. The undergraduates passing CET-4 could take CET-6 in the end of next semester.

According to the reports on undergraduate teaching quality of H University in 2020-2021, 2021-2022 and 2022-2023 academic years (Henan University of

Economic and Law, 2023, 2022, 2021), the CET-4 cumulative passing rates of its undergraduates for Class 2021, Class 2022 and Class 2023 are 82.69%, 82.01% and 86.70% respectively; and the CET-6 cumulative passing rates for the above mentioned classes are 36.06%, 41.15% and 44.76% successively. The cumulative passing rates mentioned above meant that the undergraduates' best performance for taking several CET-4 or CET-6 examinations before their graduation was chosen when statistics were performed. Since CET-4 and CET-6 are all academic tests, universities may not release their undergraduates' achievements to the public. I checked the undergraduates' teaching quality reports for many other Chinese universities, weather top or local universities, but cannot find any information related to their graduates' CET-4 or CET-6 scores. Koolearn CET-4&6 (2024, Jan.8), an educational institution specialized in CET training under New Oriental Education and Technology Group, the most influential L2 training institution in China, reported the averages scores of CET-4 and CET-6 for top 200 universities respectively in a recent exam, of which Henan Normal University ranking 122, and it was the unique Henan local university in the ranking, and the rest universities were almost all elite universities in China. In addition, Koolearn also mentioned that the passing rates of CET-4 for Chinese key universities and other universities were about 68% and around 41%, and for CET-6, the passing rates were near 55% close to 34% accordingly. Compared with the passing rates of CET-4 and CET-6 mentioned by Koolearn, the cumulative passing rates for CET-4 and CET-6 for H University indicated that the CET scores for the undergraduates at H University should at least be in the upper middle class within Henan province.

Like other Chinese universities, H University also suffered from the enrollment expansion and shortage of English teachers around the new century. Fortunately, it was chosen as one of the only four national CETI trial universities in Henan province. As a result, in early 2004, modern technical facilities, including LMS, LAN and English learning platforms, provided by the press publishing College English textbooks, were introduced to assist the undergraduates' College English learning. Since then, H University took a constructivist approach as the theoretical framework of its College English teaching innovation, which viewed learning as an active process and focused on transforming L2 teaching from a teacher-centred to a student-centred teaching practice. The teaching focus of College English classes also shifted from reading and

writing to listening and speaking, and attached great importance to students' autonomous learning by using modern information technology. The trial of the national CETI lasted for a year and got good results in improving students' English listening abilities by providing more chances for them to practice English with the help of network technology (Li, 2006).

A decade into the new century, mobile technologies developed in an unimaginably quick way, smart phones and mobile apps began to play an important role in assisting the undergraduates' English learning at H University. Fast internet speeds and low costs not only made English learning free from the restrictions of time and space, but pushed it to a new flexible stage. Gradually, more computer applications, including mobile learning apps, web-courses, micro-lectures, MOOCs and flipped courses were used to assist the undergraduates' College English learning at H University (Li et al., 2016).

Having used network and mobile technology to assist its undergraduates' English learning for over a decade after CETI, H University adjusted its total credits required for graduation from 180 to 160 credits. Accordingly, the total credits of College English were reduced from 16 to 10, with three credits for each of the two semesters in the first academic year, and two for each semester in the second year. Due to the reduction of credits for College English in each semester, the two teaching periods for English reading and writing were kept the same in the four semesters, while the teaching periods for English listening and speaking were reduced from two to one lesson in the two semesters of the first academic year, and were removed completely from the second year's curriculum. Consequently, various teaching platforms and English learning apps were used to supplement undergraduates' English learning, and improve their English listening and speaking abilities.

The process of technology-assisted English teaching at H University reflects the broader application of technology-enhanced English teaching in Chinese tertiary education. As this case study is based on a mixed research paradigm, and deals with Chinese undergraduates' perceptions and learning strategies in online English learning during Covid-19 at H University, it may not be replicable, and may not be representative, typical or generalizable. However, due to its strong basis in reality, it may provide insights into other, similar situations and cases, thereby assisting

interpretation of other similar cases (Nisbet & Watt, 1984).

Having been a trial university in national CETI in 2004, H University has the experience of using network technology to assist its undergraduates' English learning for nearly 20 years.

2.1.3 My positionality as a case study researcher

As this research is a case study which requires in-depth data, I, as a researcher, should possess the following abilities to deal with the continuous interactions between "the issues being studied and the data being collected" (Yin, 2018, p.82). First, a researcher should have the ability to gather data. As a case study may use various research methods, namely questionnaire, interview, observation, tests and archived records to collect data, a qualified researcher should not only be a good questioner, a listener, but be a reader to "read between the lines" (Yin, 2018, p.84), so as to get data fitting for the research purpose and to make knowledgeable deduction (Cohen et al., 2018). Then, a researcher should seize the issues being studied. In order to keep a case study on track, a researcher needs to bear the knowledge required to make inferences and interpretation by categorising and integrating data getting from diverse sources and research methods. Finally, a researcher should attach great importance to research ethics. Being honest, avoiding deception and bias are basic values for a researcher. Moreover, a researcher should have the highest ethical standards in dealing with sensitive or private material and data, and protecting all kinds of rights of research participants.

2.2 Research design

2.2.1 Guidance of SCT on research design

SCT advocates that language learning is not only a psychological process within individuals, but also a process of socialization, greatly influenced by social and cultural environment. In the Covid-19 pandemic, significant changes have taken place concerning L2 learners' learning in environment, resources, styles and strategies. Thus, in the research design of this study, the pandemic should be identified as a specific sociocultural event, which changed face-to-face learning into online, reduced learners' opportunities for L2 language practice and face-to-face interactions with their teachers and peers, but increased their anxiety in L2 learning and difficulties in adjustment of

their L2 learning strategies, due to the restrictions and lockdowns imposed by the epidemic.

As there are diverse social and cultural factors relating to this case study, much data to deal with and more research methods needed in this research design, so I intend to use a mixed research method, composed of both quantitative and qualitative studies in this research. For quantitative research, I design a questionnaire to know learners' learning environment, their perceptions and learning strategies; with a particular section to ask for learners' sociocultural information, namely family background, financial status, cultural background, and technical support, etc., so as to analyze how these factors interact with L2 learners' learning perceptions and strategies during the pandemic. For qualitative research, I conduct semi-interviews to know L2 learners' inner feelings and ideas when experiencing online learning, changes and challenges in their L2 learning environment during the epidemic and how these changes affect their L2 learning strategies. Thus, I can analyze how sociocultural factors affect learners' perceptions towards online learning, and how they adjust learners L2 learning strategies and effects during the epidemic so as to improve L2 learners' online learning in the future.

2.2.2 Research design

This study is a case study predominantly uses mixed data collection instruments, with an empirical approach, a questionnaire survey with undergraduates for quantitative method, and interviews with undergraduates and English teachers for qualitative study. Cohen et al. (2018) state that as the world is a mixed, not exclusively quantitative, nor qualitative one, people see the world in multiple ways, and have various opinions. In a word, mixed data collection instruments encourage people to look at the world in different ways, and to share those multiple, different views in making sense of the world and discussing their views and values. Yin (2018) also indicates that mixed-method research can enable researchers to address broader or more complicated research questions than case studies alone. Furthermore, Creswell and Plano Clark (2011) consider that mixed research methods provide a more complex picture of the phenomenon under study than that produced by a single approach, as they overcome the weaknesses and biases of single approaches. For this case study, I used mixed data collection instruments, with the combination of quantitative and qualitative approaches

so as to provide a better understanding of research problems and questions than either approach on its own.

Concerning the order of making the quantitative and qualitative research in this study, I use sequential mixed research method, in which quantitative and qualitative approaches of the study occur in time order (Teddlie & Tashakkori, 2009). One research approach determines the following one with the major findings from all research approaches being synthesized afterwards (Cohen et al., 2018). The whole process of this case study is shown in Figure 2.1.

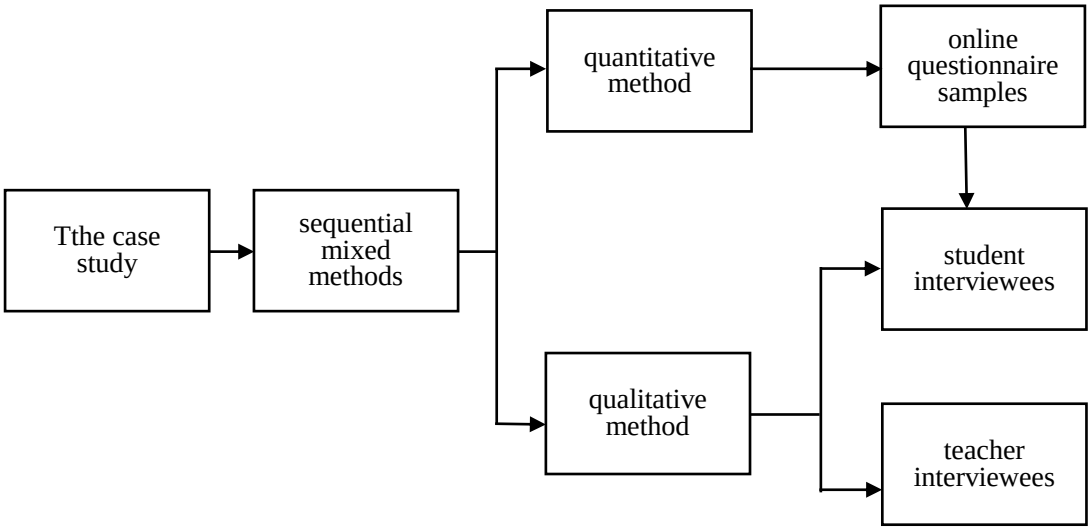

Figure 2.1 Process of the research design of the case study

Figure 2.1 indicates the process of the research design of this case study, and shows clearly that the instrument for quantitative study is an online questionnaire survey, for qualitative study, it is interviews for both students and teachers. In this study, I use the same group of students as research participants in both the quantitative and qualitative studies. I first made an online survey among the undergraduates, then, after getting their permission, I selected student interviewees from questionnaire participants, as I considered that the more the research participants attended the research, the better they would understand the research purpose so as to fully express their ideas concerning their perceptions and strategies towards Covid-19.

As far as the five research questions mentioned in the introduction of this dissertation are concerned, I used an online questionnaire for quantitative study to gather the primary data of the participants' perceptions and their online English learning strategies

towards EOEL. Then, based on the data, I made variance analysis to explore whether there are differences for undergraduates' online perceptions and strategies between various student groups, including different gender, major and English scores. After that, I conducted correlation analysis among the undergraduates' online learning perceptions, strategies and their English scores. Finally, I made interviews with questionnaire respondents to know the challenges encountered by the respondents for qualitative study.

Though Gray (2014) mentions that online questionnaires affect the reliability and accuracy of a study as it is impossible to confirm that those completing the online questionnaires are who they say they are, it is still the best choice for a medium sized online questionnaire due to its convenience, accuracy, and quick speed in calculation.

Because limited questions in the questionnaire can neither cover the needed and specific information, nor explore profound information concerning the undergraduates' EOEL caused by Covid-19, I conducted interviews with questionnaire respondents for qualitative study of this research, which was a necessary form of qualitative research, as well as a supplementary tool for quantitative research in this study. Hochschild (2009) also indicates that interviews can do what surveys cannot, as they explore issues in depth, see how and why people frame their ideas, and makes connections between ideas, values, events, opinions and behaviours, etc.

Apart from using the mixed data collection instruments of a questionnaire survey and interviews with students to get the data, I also conducted interviews with English teachers to provide various vantage points to the questions coming from more sources to add to the texture and multidimensionality of the study, serving as a method of triangulation to enhance the qualitative case study (Duff, 2014). In addition, this triangulation also increased the accuracy of data and reliability, provided a "practical, problem-driven approach to research" (Denscombe, 2014, p.160), and enabled compensation between strengths and weaknesses of research strategies (Cohen et al., 2018). For Adelman et al.(1980), triangular techniques are suitable when seeking a more holistic view of educational outcomes, or when requiring elucidation of a complex phenomenon. Moreover, they are useful when engaging in a case study, a particular example of a complex phenomenon; and when an established approach

produces a limited and distorted picture.

In this study, for both undergraduates and teachers, I used semi-structured interviews, which consisted of a list of questions to be discussed and permitted a degree of flexibility in how the participants responded (Bryman, 2016) to get more detailed information by providing more open-ended questions. The interviews could also be considered dialogues of open communication and discussion (Silverman, 2019) as they allow participants to express their view of the world. During the interviews, I used a portable audio-recorder to record all interviews, and maintained an attentive attitude while asking the participants probing questions to clarify or illustrate their statements. Concerning the time period, each interview lasted over 30 minutes, with the longest being over an hour.

This research used mixed data collection instruments to complement the advantages of both the quantitative and qualitative research, as results from different instruments could verify and explain each other, and improve the validity of the research, as well as collecting data from different sources.

2.3 Participants and selection criteria

This research is a case study involving H University, a local university in central China as the boundaries of the case, with 612 undergraduates mainly from Class 2022 (second year) and Class 2023 (first year) as the target research groups. Students of these two classes were chosen as research samples because when Covid-19 first broke out in early 2020, they were the only two Classes of students learning College English as a compulsory course. Moreover, they had studied at H University for at least half a year, and were accustomed to English learning in tertiary education not only in face-to-face English classes, but with modern technology assisted classes. Having experienced EOEL for a whole semester from February to July 2020, the respondents had become familiar with their new online English learning environment, and had formed various habits and employed various learning strategies to learn English online.

2.3.1. Questionnaire participants

In order to let the questionnaire participants better represent students of Class 2022 and Class 2023 at H University, quota sampling, which has been described as the non-probability equivalent of stratified sampling (Bailey, 1994), was used in

questionnaire participants' selection. For Cohen et al. (2018), a quota sample is like a stratified sample, which tries to represent significant characteristics, or strata of a wider population, and sets out to represent those in the proportions in which they can be found in a wider population. As far as the significant statistical features of the undergraduates of Class 2023 at H University were concerned, their total number was 6,667, with 2,324 male students and 4,343 female students, or 1,118 science students and 5,649 arts students. Based on these data, for Class 2023 at H University, the ratio for male and female students is about 1:2; for science and arts students the ratio is about 1:5. Among the total 6,667 undergraduates of Class 2023, only 427 (6.40%) come from other provinces; the rest are all from areas within Henan Province, which means that H University is really a local university. Concerning the statistical features of Class 2022, though the number of students differed with those of Class 2023, all the ratios were exactly the same.

As College English is a required course at Chinese higher institutions, and H University has long been in the frontline of CETI, students at H University could choose their favorite English teacher to attend the class since 2016, so students in the same English class have the recognition of their chosen English teacher, though they come from different schools with various majors. As a researcher, it is impossible for me to contact students from different schools and majors, the best and the most convenient method I can do in choosing the questionnaire participants is to ask College English teachers for help. Half a year later after the EOEL, around the turn of the year 2021, I invited 10 teachers teaching College English at H University to recruit questionnaire respondents by sending an invitation letter (see Appendix 7) and the participant information sheet (hereafter PIS, see Appendix I) both for students to their English learning WeChat or QQ class groups. Each of those 10 College English teachers taught three to five classes in either Class 2022 or Class 2023, with an average of 65 students in each class. The invitation letter served as an introduction to potential participants to know the aim of the research, and to understand that their involvement in the research was voluntary. The PIS emphasised the anonymity, privacy and confidentiality of their involvement. Those interested in the research signed the consent form electronically (see Appendix 6); then their English teacher forwarded them the questionnaire link to take part in the study.

A link to the online questionnaire was given to the respondents to answer the questions whenever convenient. This study intended to involve about 600 participants in total, a medium size, not only to keep the reliability of the sampling, but to decrease the possibilities of error, as the chances of a sampling errors decrease as the sample size increases.

Based on the pilot questionnaire done in early January 2021, the revised questionnaire link was forwarded to the potential participants by their English teachers in early February 2021, which coincided with the end of the first semester of the 2020-2021 academic year. Within about ten days, I got 795 respondents. Among those, the number of valid responses was fewer than 600, mostly because some respondents chose the same answer for all the Likert scale statements. Later, after the new semester started in March 2021, I invited five more English teachers at H University to help to send the invitation letter and the PIS to their students. In April, I finally got a total of 1,517 samples.

Of all the 1,517 responses, 276 were invalid because they chose the same answer for all the Likert scale statements. Another 245 responses did not provide their English scores of the EOL semester, which also caused those samples to be considered invalid as the scores were pivotal data in the questionnaire. After deleting the above two kinds of void samples, the 828 remaining samples were valid responses which could be used for analysis. However, among those valid ones, only 102 of them were science students. As this research used the quota sampling method to choose research samples, and the ratios for students' major and gender at H University is 1:5 and 1:2 respectively, based on the 102 science students, the largest sample number of arts students could only be 510, making 612 in total. Concerning the 1:2 ratio of gender at this university, among the total 612 samples, there should be 204 males and 408 females. Consequently, I chose the final 612 samples among the 828 valid samples by following the ratios of genders and majors respectively. Detailed distributions of genders and majors for questionnaire samples are shown as follows in Table 2.1:

Table 2.1 Distributions of gender and major for questionnaire samples

Method	Questionnaire Samples				Total
Concerning gender	204 males		408 females		612
	46 science students	158 arts students	56 science students	352 arts students	612
Concerning major	102 science students		510 arts students		612
	46 males	56 females	158 males	352 females	612

2.3.2 Interviewees

2.3.2.1 Student interviewees

Concerning the number of interviewees in qualitative research, scholars have not reached an agreement, so it was difficult to judge how many samples should be considered. Hennink et al. (2017) hold the idea that saturation is a core guiding principle to determine sample sizes in qualitative research. What is the saturated number? Galvin (2015) finds that in one empirical study "saturation" was largely achieved after 12 interviews. Hennink et al. (2017) consider that saturation was reached at 9 interviews, with the range of thematic issues identified. In addition, for them, 16 to 24 interviews were needed to reach meaningful saturation. However, Galvin (2015) holds the idea that 8–17 was by far the most common range of interviews. Based on the above ideas, I chose 12 interviewees, which allowed me to consider the ratios of students' gender and major at H University, and met the demands of achieving "saturation" according to both Galvin (2015) and Hennink et al. (2017).

In order to find the 12 interviewees, I searched the information left by the 102 questionnaire respondents, including their telephone numbers, QQ numbers or email addresses for future interviews. Then I made phone calls, wrote emails and sent QQ messages to those respondents leaving contact information. Luckily, I got 28 responses. By using the convenient sampling method, I selected 12 interviewees out of the 28 respondents, with ratios of 1:2 and 1:5 in gender and major respectively, and considering their English CET-4 scores, with distributions of low-scoring and high-scoring students as well. However, as the total number for the interviewees was only 12, it was impossible to satisfy the exact ratios mentioned above. The ratios of interviewees are as follows: Concerning gender, there were four male and eight female interviewees; regarding student majors, there were two science students and 10 arts

students. Among the four male students, there was one science student and three arts students; for the eight female students, there was one science student and seven arts students. I chose respondents of different gender and major having different scores accordingly in order to try to let them represent a wider spectrum for convenient and purposeful sampling. There still was a limitation in choosing student interviewees, as the 12 interviewees could not represent all the 612 respondents. Detailed information of student interviewees concerning their gender, major and CET-4 scores is as follows in Table 2.2:

Table 2.2 Detailed information for undergraduate interviewees

No.	Code number	Interviewee	Gender	Class	Majors	Scores
1	S_1	Helen	female	2022	arts	high
2	S_2	John	male	2023	arts	low
3	S_3	Jane	female	2022	science	low
4	S_4	Alice	female	2023	arts	high
5	S_5	Laura	female	2023	arts	middle
6	S_6	Lisa	female	2023	arts	middle
7	S_7	David	male	2023	science	middle
8	S_8	Edward	male	2023	arts	low
9	S_9	Ben	male	2023	arts	high
10	S_{10}	Emily	female	2023	arts	high
11	S_{11}	Sarah	female	2022	arts	low
12	S_{12}	Sherry	female	2023	arts	middle

Table 2.2 indicates that I gave each of the 12 student interviewees a commonly used English pseudonym and a code number, with S standing for student, for anonymity and differentiation.

2.3.2.2 Teacher interviewees

Teacher interviewees served not only as participants of the research; but as observers in the investigator triangulation, which refers to the use of more than one observer (or participant) in a research setting (Cohen et al., 2018). Data is discovered independently by each of them (Silverman, 1993). I intended to choose several English teachers in different age groups (young, middle aged and old) with over 10 years' English teaching experience at H University, so that they would be familiar with the development of College English teaching. In addition, those teacher interviewees should have various degrees of online teaching involvement in their teaching process. The choice of teacher

interviewees did not stress the number, but their representativeness. I sent out invitation letters (see Appendix 8) through WeChat to 10 English teachers who met the requirements, and whose students had undertaken the questionnaire, and got seven responses. Based on my knowledge of them, I chose three of the more suitable candidates according to the above inclusion criteria, including gender, age group, years of teaching experience, online teaching involvement, and those responded attaching the PIS (for teachers, see Appendix 2) and consent form. Finally, the interviewees returned the signed consent forms. The teacher interviewees included a male with a bachelor's degree in his mid-40s, and two females with master's degree in their late 30s and 50s respectively, who all had been working at H University from 15 to 30 years. More importantly, some of the questionnaire respondents, and three student interviewees came from classes of these three English teachers. Detailed information about the three teacher interviewees are as follows in Table 2.3:

Table 2.3 Detailed information of teacher interviewees

No.	Interviewee	Gender	Age	Classes teaching	Working time at H University	Online teaching involvement before Covid-19
1	Miss Yin-T_1	female	late 30s	Class 2022	15 years	shallow
2	Mr. Chen-T_2	male	mid-40s	Class 2023	20 years	middle
3	Mrs. Li-T_3	female	late 50s	Class 2023	over 30 years	profound

In order to identify the three teacher interviewees, I gave each of them a title according to their gender and marital status, a pseudonymous surname, and a code number, with T standing for teacher. Both the teacher and student interviewees were forwarded the interview questions before the interview actually took place to ensure that the questions were clear, pertinent, and allowed participants to express their own ideas. Moreover, they also had the right to suggest changes to the questions if they found them intrusive or personal.

2.4 Piloting Study

As a pilot study can not only determine how well the research instruments work (Bryman, 2012), but judge the effects of research on participants (Oliver, 2003), it is necessary for both quantitative and qualitative research to carry out pilot studies in order to "iron out any problems of overlap of categories" (Cohen et al., 2018, p.545), and improve or refine the researcher's data collection plan in reference to the research

instruments and the procedures to be followed (Yin, 2018). For a quantitative research instrument, everything relating to the questionnaire should be piloted (Oppenheim, 1992), whether the pilot study focuses on matters of coverage and format by gaining feedback from limited respondents (Cohen et al., 2018); or it reduces the long list of items on the questionnaire through statistical analysis and feedback (Kgaile & Morrison, 2006). For a qualitative research instrument, a pilot interview schedule can provide interviewers with some experience of using it and can infuse them with a sense of confidence (Bryman, 2012). In addition, it can enhance the reliability of interviews (Silverman, 2019). As a result, I made pilot studies in this research and described the procedures for the questionnaire and interview respectively as follows:

2.4.1 Pilot questionnaire

The pilot questionnaire in this research was closed and structured, making up of four parts, with a total of 72 statements and questions, which were all in Chinese so that the respondents could totally understand them. Part I and Part II included 32 multiple choice questions and statements relating to the demographic information of the respondents and their general status in EOEL. Part III and Part IV consisted of 40 statements with 5-Likert scale answers concerning the undergraduates' perceptions (seven dimensions) and English learning strategies (six dimensions) in their EOEL during Covid-19. All the responses to the 5-point Likert scale ranged from 1-5 indicating strongly disagree, disagree, neutral, agree and strongly agree respectively.

Though a questionnaire containing four parts, with 72 questions and statements was long, it could not be split into several separate questionnaires as it was impossible to invite the respondents four times to attend various questionnaires because the 72 statements and questions were all related to each other, which required answers of the same respondent from the beginning to the end. In short, the lengthy questionnaire was the only choice.

After publishing the questionnaire to Wenjuanxing.com, I sent the link to two English teachers at H University to ask them to forward the questionnaire link to their students. Within three days, I got 57 responses.

Then the reliability and validity of the pilot questionnaire were tested. Bryman (2012) regards reliability as the "concerns with the question of whether the results of a study

were repeatable" (p.46), while considers validity as the "integrity of the conclusions that were generated from a piece of research" (p.47). As for the reliability of the pilot questionnaire, I tested the Cronbach's Alpha value of all the 40 Likert scale statements in Part III and IV, which were all higher than 0.6, showing that all the statements in the pilot questionnaire were reliable, and that there was no need to revise them. For validity, exploratory factor analysis (hereafter EFA) was used to predict and check the factor loading value. As all the factor loading values were higher than 0.7 (with the critical point as 0.5), it indicated that all the statements had strong expressive abilities for the variables; as a result, it was not necessary to delete or revise those statements.

However, reflections on the pilot questionnaire revealed that more information relating to the respondents' demographic information and their general status in EOEL were needed in Part I and II, so questionnaire items in those two parts were increased from 32 to 42. In addition, some dimensions in Parts III and IV only consisted of two or three statements, which would not be enough for analysis, particularly when a statement was deleted due to meaningless data. Thus, the questionnaire increased the number of statements in those two parts from 40 to 55, with each of the seven dimensions for students' perceptions and six dimensions for their learning strategies containing no less than four statements. In short, the number of questions and statements in the subsequent version increased from 72 to 97.

2.4.2 Pilot interview

The pilot interview was done with only two undergraduates to check the consistency and relevancy of the open-ended questions prepared for the interviews. Two interviewees, one female high-scoring student and one male low-scoring student were invited on April 24 and April 27, 2021 respectively to conduct pilot interviews. Both of the two interviews were made face-to-face in the small conference room of the School of Foreign Languages of H University, which was a spacious, well-lit and quiet room with comfortable seating. I prepared 20 semi-structured questions with open answers, and the language used in the pilot interviews was Chinese, the mother tongue for both the interviewer and interviewees, which made the interviews clear and concise. The first interview lasted over an hour, and continued by telephone three days later to ask for more information; the second lasted about 50 minutes. Both the two pilot interviews

were recorded with a potable audio-recorder, and transcripts were made later by myself in order to do the thematic analysis. The pilot interviews made me notice that not all the semi-structured questions prepared were well-planned. Finally, I reduced the number of interview questions from 20 to 12 in order to increase the clarity and brevity of the questions.

2.5 Data collection

In this study, I collected quantitative and qualitative data, specifically questionnaire and interview data to answer the research questions, and describe the contents of each of them described in this section. The questionnaire data generalized the outcomes of the research, gained an overall picture and patterns of the response, and measured correlations and relationships, differences and key underlying factors in order to suggest cause and effect (Cohen et al., 2018). Concerning interview data, interviews for students elucidated the undergraduates' perceptions and learning strategies in EOEL; and interviews for teachers served more as a triangulation. As each type of data offered various perspectives of the topic of this research, those data as a whole provide answers to the research questions in a comprehensive view.

2.5.1 Quantitative data collection

2.5.1.1 Quantitative data collection instruments

Cohen et al. (2018) state that a questionnaire offers benefits of standardized and open responses to a range of topics for a large sample or population, it can be cheap, reliable, valid, quick and easy to complete. This research used the improved online questionnaire in the pilot study as the instrument to collect quantitative data as e-surveys not only provide the potential for a wider respondent group (Glover & Bush, 2005), but get rid of the restrictions of time and space for the respondents to answer survey questions. The final version of the questionnaire (see Appendix 3) was still in Chinese in order for the respondents to have a better understanding. The questionnaire retained the same four parts as the pilot one, but increased the number of questions and statements relating to the respondents' demographic information in the first two parts to 42, and the number of Likert scale statements concerning the respondents' seven-dimension online learning perceptions and their six-dimension learning strategies in the latter two parts to 55, with no fewer than four Likert scale statements

for each dimension. The questionnaire contained a total of 97 questions and statements which took the participants 25 to 30 minutes to complete. The final version of the questionnaire (English version) is included in Appendix 3.

Due to the reasons mentioned above in Section 2.4.1, this questionnaire used Wenjuanxing to conduct the e-survey as it has more questions and statements than those in the pilot survey. The questionnaire had clear instructions in each part in order to guide the respondents to finish the survey without confusion. In addition, the first two parts had open-ended questions in order to give participants opportunities to fully express their own ideas. As Frankfort-Nachmias and Nachmias (1992) emphasise the "need for confidentiality of participants' identities" for questionnaire, the respondents completed the questionnaire without any identifying marks, such as names and addresses, in order to ensure complete and total anonymity.

2.5.1.2 Questionnaire data collection

As the questionnaire consists of four parts, the questionnaire data collection comes from each part, laying the emphasis on one aspect of the respondents' online English learning.

The data acquired from Part I is derived from the answers to 17 questions relating to the demographic information of the respondents, including their gender, age, family income, parents' education level, their majors and the years for their English learning, etc. The data acquired from Part II is from the respondents' answers to 25 questions concerning their status of EOEL during Covid-19, including their use of mobile apps, the online English learning platforms they used, and their learning habits in EOEL after the breakout of Covid-19.

The data in Parts III and IV are derived from the respondents' answers to the 5-point Likert scale statements, with responses ranging from 1-5 signifying strongly disagree, disagree, neutral, agree and strongly agree respectively. The data attained from Part III includes the respondents' answers to 31 statements on their perceptions towards EOEL, which I designed with regard to five-dimension online learning readiness proposed by Hung et al. (2010), including the respondents' motivations for online learning, their computer or internet self-efficacy, self-directed learning, learner control, and online

communication self-efficacy for 20 statements, together with two more dimensions, the respondents' trust and appreciation for EOL, for 11 statements that I added myself.

The data from Part IV was derived from responses to 24 statements concerning the respondents' strategies in EOEL, which I designed with reference to SILL conducted by Oxford (1990) and Cheng and Zheng (2002). Following Oxford's classification of learning strategies, the 24 statements were concerned with six dimensions, including cognitive strategies, meta-cognitive strategies, affective strategies, compensation strategies, memory strategies, and social strategies.

2.5.1.3 Validity and reliability for the questionnaire

For Grbich (2013), validity is the trustworthiness and truth of the matter, while Woodrow (2014) considers it as the overall quality of the project, which reflects whether the research could be reasonably believed, and how sure a researcher is that the instrument measures what it claims to measure. Anyway, for Bryman (2012), validity is in many ways the most important criterion of research.

As the quantitative study of this research is a questionnaire made up of four parts, with Part I and Part II dealing with multiple choice questions, and the other two parts containing Likert scale statements, the validity of the quantitative research in this study focuses on Part III and Part IV of the questionnaire, relating to the undergraduates' online English learning perceptions and their learning strategies. Researchers divide validity into various kinds. Shadish et al. (2002) identify four major types, which are construct validity, statistical conclusion validity, internal and external validity. Among them, construct validity is out of ordinary because it is regarded as a fundamental type of validity by Cohen et al. (2018), and is considered by Loevinger (1957) to incorporate the other types of validity and concerns constructs or explanations rather than methodological factors, including the meaning and definition factors. As a result, construct validity and reliability were made for the quantitative research of this study by using the Statistical Package for the Social Sciences (hereafter SPSS) 22.0.

2.5.1.3.1 Construct validity for the quantitative research

In this study, I used factor analysis, a statistical test to provide evidence for making the construct validity of Part III and IV of the questionnaire, which dealt with students'

perceptions and online English learning strategies respectively. Part III contains 31 statements in seven dimensions, while Part IV has 24 statements in six dimensions. There are two types of factor analysis, exploratory factory analysis (hereafter EFA) and confirmatory factor analysis (hereafter CFA), with the former used to investigate possible relationships between variables mentioned by name, and the latter used to confirm or reject hypothetical relationships between variables (Woodrow, 2014). The EFA and CFA are done separately for both Part III and Part IV of the questionnaire in the following section.

Exploratory factor analysis (EFA)

First, I established the suitability of the data for an exploratory factor analysis (EFA) by conducting Kaiser-Meyer Olkin (hereafter KMO) and Bartlett tests. In general, the minimum threshold of KMO is 0.5, indicating poor suitability. If KMO is between 0.6-0.8, it means good; if KMO exceeds 0.8, it is interpreted as excellent and suitable for making a factor analysis. The Bartlett test also explains whether there is correlation between variables. Second, Principal Components Analysis was adopted to extract factors, and the eigenvalue-greater-than-one rule was used as the standard. This study analyzed the EFA of Part III and Part IV of the questionnaire, dealing with the undergraduates' perceptions and learning strategies in EOEL, and the results are shown in Table 2.4 and Table 2.5.

Table 2.4 Results of EFA for Part III of the questionnaire

Factor	Items	Factor Loading						
		1	2	3	4	5	6	7
motivation for online learning	motivation 1	0.261	0.172	0.132	**0.748**	0.257	0.099	0.041
	motivation 2	0.115	0.261	0.193	**0.778**	0.120	0.128	0.205
	motivation 3	0.055	0.237	0.274	**0.765**	0.063	0.086	0.165
compute/internet self-efficacy	C/I self-efficacy 1	0.322	0.117	0.122	0.180	**0.769**	0.186	0.100
	C/I self-efficacy 2	0.255	0.164	0.142	0.158	**0.800**	0.127	0.124
	C/I self-efficacy 3	0.143	0.204	0.455	0.139	**0.609**	0.168	0.153
self-directed learning	S-d learning 1	0.195	0.183	**0.761**	0.203	0.163	0.181	0.188
	S-d learning 2	0.241	0.188	**0.625**	0.331	0.300	0.105	0.100
	S-d learning 3	0.104	0.275	**0.671**	0.198	0.106	0.086	0.424
	S-d learning 4	0.098	0.216	**0.556**	0.237	0.118	0.060	0.529

learner control	learner control 2	0.148	0.183	0.352	0.216	0.130	0.146	**0.715**
	learner control 4	0.341	0.144	0.219	0.152	0.121	0.298	**0.628**
online communi-cation self-efficacy	O-C self-efficacy 1	0.207	0.207	0.104	0.046	0.428	**0.445**	0.521
	O-C self-efficacy 2	0.102	0.209	-0.008	0.132	0.173	**0.801**	0.191
	O-C self-efficacy 3	0.379	0.158	0.233	0.138	0.161	**0.706**	0.115
	O-C self-efficacy 4	0.460	0.103	0.296	0.071	0.122	**0.605**	0.123
trust for online learning	trust 1	**0.743**	0.214	0.094	0.069	0.302	0.217	0.084
	trust 2	**0.822**	0.156	0.061	0.128	0.230	0.130	0.174
	trust 3	**0.777**	0.224	0.199	0.132	0.131	0.206	0.113
	trust 4	**0.683**	0.350	0.189	0.198	0.169	0.164	0.170
	trust 5	**0.413**	0.606	0.165	0.284	0.133	0.129	0.219
appreciation for online learning	appreciation 1	0.336	**0.723**	0.124	0.198	0.198	0.158	0.148
	appreciation 2	0.240	**0.778**	0.252	0.193	0.174	0.180	0.088
	appreciation 3	0.150	**0.782**	0.221	0.268	0.101	0.158	0.176
Eigen value		3.599	2.954	2.668	2.494	2.402	2.214	2.055
% of Variance		14.996	12.308	11.118	10.390	10.009	9.225	8.562
Cumulative %		14.996	27.304	38.423	48.813	58.822	68.047	76.609
KMO					0.952			
Bartlett test					10126.979			
P value					0.000			

Dealing with the EFA for undergraduates' perceptions towards EOEL, Table 2.4 indicates that as the factor load value of seven items (statement No.4 of online learning motivation; statement No.4 of compute/internet self-efficacy; statements No.1 and No.3 of learner self-control; and statements No. 4, 5 and 6 of appreciation for online learning) in Part III of the questionnaire were less than 0.4, the EFA of Part III was made after the deletion of those seven items. The final results are as follows: KMO value was 0.952 > 0.8, and the Bartlett test value is 10126.979 ($p=0.000<0.1$), revealing that the data was suitable for factor analysis. Table 2.4 also shows that seven factors were extracted, following Hung et al.'s five dimensions of online learning readiness, together with another two dimensions, trust and appreciation, surveyed in Part III of the questionnaire. In addition, the variance interpretation rates of the seven factors after rotation were 14.996%, 12.308%, 11.118%, 10.390%, 10.009%, 9.225% and 8.562%

respectively, following the cumulative variance interpretation rate of 76.609%. Furthermore, all factor load values of those items were all over 0.4, with the lowest being 0.413. Finally, the corresponding relationship among factors and items was good, showing that the data were suitable for factor analysis.

Table 2.5 Results of EFA for Part IV of the questionnaire

Factor	Items	Factor Loading					
		1	2	3	4	5	6
cognitive strategies	cognitive s2	0.230	0.214	0.220	**0.816**	0.114	0.113
	cognitive s3	0.164	0.239	0.098	**0.811**	0.231	0.113
	cognitive s4	0.152	0.346	-0.003	**0.545**	0.439	0.305
meta-cognitive strategies	meta-cog s1	0.268	0.262	0.314	0.265	**0.665**	0.088
	meta-cog s2	0.334	0.052	0.418	0.292	**0.597**	0.096
	meta-cog s3	0.418	0.179	0.148	0.149	**0.682**	0.238
	meta-cog s4	0.584	0.230	0.221	0.165	**0.502**	0.182
affective strategies	affective s1	**0.739**	0.147	0.292	0.266	0.248	0.127
	affective s2	**0.765**	0.171	0.241	0.255	0.225	0.184
	affective s3	**0.742**	0.333	0.180	0.164	0.195	0.199
	affective s4	**0.608**	0.378	0.135	0.022	0.348	0.222
compensation strategies	compensation s2	0.252	**0.694**	0.103	0.234	0.286	0.208
	compensation s3	0.304	**0.684**	0.220	0.241	0.124	0.185
	compensation s4	0.212	**0.611**	0.331	0.379	0.096	0.169
memory strategies	memory s1	0.370	0.318	**0.510**	0.348	0.062	0.153
	memory s2	0.197	0.610	**0.471**	0.206	0.146	0.179
	memory s3	0.193	0.218	**0.804**	0.134	0.205	0.169
	memory s4	0.258	0.201	**0.722**	0.054	0.262	0.229
social strategies	social s3	0.260	0.143	0.245	0.191	0.119	**0.808**
	social s4	0.192	0.326	0.195	0.125	0.202	**0.747**
Eigen value		3.439	2.695	2.511	2.483	2.345	1.819
% of Variance		17.194	13.474	12.555	12.413	11.725	9.095
Cumulative %		17.194	30.668	43.224	55.636	67.361	76.456
KMO		0.955					
Bartlett test		8570.389					
P value		0.000					

Table 2.5 deals with the EFA for students' learning strategies towards EOEL. As the factor load values of four items (statement No. 1 of cognitive strategies; statement No.1

of compensation strategies; and statements No.1 and No.2 of social strategies learner self-control) were lower than 0.4, the EFA was made after the deletion of these four items. The results were as follows: KMO value was 0.955 > 0.8, and the Bartlett test value is 8570.389, (p=0.000<0.1), revealing that the data was suitable for factor analysis. It could be seen from this table that six factors were extracted by following the six dimensions of Part IV of the questionnaire. The variance interpretation rates of the six factors after rotation were 17.194%, 13.474%, 12.555%, 12.413%, 11.725%, and 9.095% respectively, following the cumulative variance interpretation rate as 76.456%. Moreover, the factor load values of the research items were all over 0.4, with the lowest as 0.471. Therefore, the relationship among factors and research items was good, which showed that the data were suitable for factor analysis.

Confirmatory factor analysis (CFA)

In this research, confirmatory factor analysis (CFA) was conducted to test the hypothetical 7-factor structure of students' perceptions and the 6-factor structure of their online learning strategies respectively, and various fitness indices of them, such as AGFI, CFI, IFI, RMSEA and RMR were tested to examine model fit. As CFA is a technique classed as structural equation modelling, which is less reliable with small samples, and Chi Square (X^2) value is not considered to determine model fitness due to its extreme sensitivity to sample size. The assumptions of CFA concern multivariate normality and sample size, over 200 in general (Woodrow, 2014) for small and medium sized models. Therefore, the 612 samples in this study are adequate. Amos 21.0 is used to do the CFA. The results of CFA for both Part III and Part IV of the questionnaire in this research are shown as follows in Table 2.6 and Table 2.7 respectively:

Table 2.6 Fit index results for CFA of Part III of the questionnaire

fit index	χ^2	df	χ^2/df	p	GFI	AGFI	CFI	NFI	IFI	TLI	RMSEA	RMR
value	1047.282	231	4.534	0.000	0.862	0.820	0.918	0.898	0.919	0.902	0.076	0.055
acceptable fit	-	-	<5	>0.05	>0.9	>0.8	>0.9	>0.9	>0.9	>0.9	<0.08	<0.1

Table 2.6 shows the CFA for Part III of the questionnaire, dealing with the undergraduates' perceptions of online English learning. The results of CFA for this part, X^2 =1047.282, X^2/df=4.534, AGFI=0.820, CFI=0.918, IFI=0.919, TLI=0.902, RMSEA=0.076, and RMR=0.055, all verified that the hypothesized model of the 24-item perceptions of the questionnaire was an acceptable fit for the data. Various fitness indices were in the ranges of acceptable model fitness (i.e., X^2/df=4.534<5,

AGFI: 0.820>0.8, CFI: 0.918>0.9, RMSEA: 0.076<0.08). Finally, the results of the CFA for Part III of the questionnaire confirmed that the model fitness was acceptable between the proposed model and the observed data.

Table 2.7 Fit index results for CFA of Part IV of the questionnaire

fit index	χ^2	df	χ^2/df	p	GFI	AGFI	CFI	NFI	IFI	TLI	RMSEA	RMR
value	678.132	155	4.375	0.000	0.896	0.859	0.938	0.922	0.939	0.924	0.074	0.038
acceptable fit	-	-	<5	>0.05	>0.9	>0.8	>0.9	>0.9	>0.9	>0.9	<0.08	<0.1

Table 2.7 shows the fit index results of the CFA for Part IV of the questionnaire, which relates to the undergraduates' online English learning strategies. The results of CFA for this part, X^2=678.132, X^2/df=4.375, AGFI=0.859, CFI=0.938, NFI=0.922, IFI=0.939, TLI=0.924, RMSEA=0.074, and RMR=0.038, verified that the hypothesized model of the 20-item strategies of the questionnaire was an acceptable fit for the data. Various fitness indices were within the ranges of cutoff values for an acceptable model fitness (i.e., X^2/df=4.375<5, AGFI: 0.859>0.8, CFI: 0.938>0.9, RMSEA: 0.074<0.08), indicating that the results of the CFA for Part IV of the questionnaire were confirmed, and that the model fitness was acceptable between the proposed model and the observed data. Finally, the CFA for both Part III and Part IV of the questionnaire denoted that all the statements in these two parts of the questionnaire were reasonable and that the seven dimensions for Part III, and the six dimensions for Part IV of the questionnaire were verified, with a good construct validity.

2.5.1.3.2 Reliability for the questionnaire

Woodrow (2014) considers that reliability refers to "the consistency of the results and how sure readers can be of the replicability of the research" (p.25). The most frequently reported statistic used for reliability is Cronbach α., and the higher the coefficient, the more reliable an instrument is (Woodrow, 2014). In general, the value of a Cronbach α higher than 0.8 indicates a good reliability level; lower than 0.6 shows the poor one. Though the questionnaire contains 55 items using the 5-point Likert scale in Part III and Part IV together, comprising seven dimensions and six dimensions respectively, 11 items (seven in the perception part and four in the strategy part) were deleted due to their lower factor load value when making the factor analysis. Thus, only 44 items in Part III and IV of the questionnaire after the deletion received the reliability test, with the results shown in Table 2.8.

Table 2.8 Results of reliability for Part III and Part IV of the questionnaire

Research Variables		Items	Cronbach Alpha
Online learning perceptions		24	0.953
	motivation for online learning	3	0.834
	compute/internet self-efficacy	3	0.834
	self-directed learning	4	0.867
	learner control	2	0.746
	online communication self-efficacy	4	0.834
	trust for online learning	5	0.902
	appreciation for online learning	3	0.889
Online learning strategies		20	0.954
	cognitive strategies	3	0.841
	meta-cognitive strategies	4	0.878
	affective strategies	4	0.898
	compensation strategies	3	0.824
	memory strategies	4	0.848
	social strategies	2	0.784

Table 2.8 shows that the reliability of coefficient values of Part III and Part IV as a whole of the questionnaire were all higher than 0.9, indicating an excellent reliability level as a whole. As far as each dimension of the two parts of the questionnaire is concerned, the reliability values for each dimension are all higher than 0.7, indicating a high reliability value. Finally, we can draw a conclusion that the data of the samples are basically accurate and reliable, and can be used for subsequent analysis.

2.5.2 Qualitative data collection

2.5.2.1 Qualitative data collection instruments

The qualitative data collection instruments are the semi-structured interviews for both the respondents and English teachers after the improvement of the pilot interview studies. As previously mentioned, I deleted obscure and ambiguous interview questions, and reduced the number of semi-structured interview questions for students and teachers from 20 to 12, in order to get focused information.

2.5.2.2 Interview data collection

In this research, 15 semi-structured interviews were undertaken, with 12 for

undergraduates and three for English teachers. Among the 12 interviews for students, two were pilot interviews made in late April 2021, while the other 10 post-pilot ones were carried out in June and July 2021. In addition, the three interviews for English teachers were held in July and September 2021. In the following part, I will describe the procedure of data collection for the post-pilot interviews for both undergraduates and English teachers.

All student interviewees knew the intention of the research, as they were all questionnaire respondents, who had left contact information for taking further interviews. For teacher interviewees, I sent them invitation letters to introduce the purpose of the research. The interviews for both the students and teachers are semi-structured, with questions being designed to elicit additional information. In this study, all interviews are face-to-face ones with 12 questions, reduced from 20 in pilot qualitative studies for student interview, for each respondent and teacher interviewee, as more questions would make detailed communication between the interviewer and interviewees challenging. The final versions of the interview questions for both the respondents and teachers are in Appendix 4 and Appendix 5 respectively. Before the interview, each interviewee was asked to read and sign the informed consent form. As all undergraduate and teacher interviewees are native Chinese, I conducted all interviews in Chinese so that not only the interviewees could express themselves freely and accurately, but I, also a native Chinese could better comprehend what they attempted to say. All interviews were carried out in the small conference room of the School of Foreign Languages at H University. As for the time periods for making the interviews, they varied from 43 minutes to one hour and 26 minutes due to the dissimilarities of the interviewees' personalities and responsiveness. Some participants were talkative, exploring topics that had nothing to do with the study. Others were quiet, and hesitant to answer basic questions. Details are shown as follows in Table 2.9 and Table 2.10 for student and teacher interviewees respectively:

Table 2.9 An overview of the characteristics for student interviewees

No.	Interviewee	Interview method	Gender	Majors	Scores	Date	Time
1	Helen-S_1	interview	female	arts	high	21/04/2021	41 min
		tele-interview				26/04/2021	10 min
2	John-S_2	interview	male	arts	low	26/04/2021	46 min
3	Jane-S_3	interview	female	science	low	12/05/2021	45 min
4	Alice-S_4	interview	female	arts	high	25/06/2021	1h16 min
5	Laura-S_5	interview	female	arts	middle	28/06/2021	50 min
6	Lisa-S_6	interview	female	arts	middle	01/07/2021	59 min
7	David-S_7	interview	male	science	middle	01/07/2021	1h26 min
8	Edward-S_8	interview	male	arts	low	01/07/2021	43 min
9	Ben-S_9	interview	male	arts	high	02/072021	1h 6 min
10	Emily-S_{10}	interview	female	arts	high	02/07/2021	45 min
11	Sarah-S_{11}	interview	female	arts	low	05/09/2021	50 min
12	Sherry-S_{12}	interview	female	arts	middle	06/09/2021	43 min

Table 2.10 An overview of the characteristics for teacher interviewees

No.	Interviewee	Interview method	Gender	Age	Date	Length
1	Miss Yin-T_1	interview	female	late 30s	08/07/2021	45min
2	Mr. Chen-T_2	interview	male	middle 40s	06/09/2021	50min
3	Mrs. Li-T_3	interview	female	late 50s	10/09/2021	60min

In order to collect accurate data, I audio-recorded the whole process of each interview and made necessary notes to assist recollection after the end of each interview. Though being semi-structured interviews, I typically asked questions in the same order in each interview, and tried to stimulate discussion as topics of interest emerged (Kvale, 2007). When critical utterances arose, I asked interviewees to share their ideas, and sometimes restated the idea expressed by the interviewee in order to prevent misunderstandings of the interviewees' intended meaning.

I stored the online questionnaire results downloaded from the website, interview audio files, and orthographic transcription of the interviews in my portable hard disk, and all data were pseudo anonymised through pseudonyms and password protection. The interview audio-files were also transferred to portable hard disk protected by password.

2.5.2.3 Validity and reliability for qualitative research

Cohen et al. (2018) state that in mixed methods research, whether quantitative or qualitative, the research method has to follow specific validity and reliability requirements. In this part, I explore the validity and reliability for qualitative study of this research by using the following three specific methods:

First is the sample integration. Onwuegbuzie and Johnson (2006) advocate sample integration by using the same samples in both quantitative and qualitative research as a means to increase the validity of the research so as to make high-quality inferences. As this study used sequential mixed methods to do the research, all 12 student interviewees in qualitative research were chosen from questionnaire respondents, so they knew more information, including background information and purposes relating to this study, which may help them to give accurate descriptions relevant to the study.

Second is the careful piloting of interview schedules. As Silverman (2019) states that piloting enhances the reliability of interview, this research conducted two pilot interviews with a carefully arranged timetable, through which the whole interview process was examined and questions were tested. The results indicated that it would be better to let the interviewees know in advance some considerations during the interview, including getting their permission for the recording, asking them to browse through the questions, and asking them to feel relaxed, etc.. In addition, the pilot study also showed that though semi-structured open questions allow interviewees' to fully express their ideas, closed questions can raise the reliability of the interview by reducing the unanticipated issues. As a result, I combined some interview questions and adjusted the question orders so as to strengthen the focus of the interview.

Third is triangulation. Triangulation is a powerful way of demonstrating concurrent validity (Denscombe, 2014). It involves using more than one method or source of data in the study of social phenomena (Bryman, 2012, p.392), which is often characterized by a mixed methods approach to a problem in contrast to a single one (Cohen et al. 2018). In this study, I used investigator triangulation by using the three English teacher interviewees' as observers in the research setting. The teachers were participants in L2 teaching, and also observers of the undergraduates' online English learning, including their class performance, homework assignment completion and participation in extracurricular activities, which provided more valid and reliable research data. By using triangulation, this mixed methods research not only increased the reliability and accuracy of the data, but reduced the research bias by providing a "practical, problem-driven approach to research" (Denscombe, 2014, p.160).

2.6 Data analysis

In this section, I describe the methods used for data analysis to answer the research questions. As Creswell (2009) considers data analysis to involve "data transformation, exploring outliers, examining multiple levels, or creating matrices that combine the quantitative results and the qualitative findings" (p.224), data analysis in this study consisted of quantitative data analysis of the questionnaire, together with the qualitative data analysis of the interviews.

2.6.1 Quantitative data analysis

In this research, quantitative data refers to the respondents' answers to the questionnaire. So for Part I and Part II of the questionnaire, the data relates to answers to the multiple choice questions, which are mainly calculated automatically by Wenjuanxing.com. Parts III and IV obtain data through Likert scale statements. In this study, I first analysed the quantitative data of the respondents' demographic information, including their gender, age, family income, parents' education level, their majors, their years spent learning English, etc. Then the data concerning the undergraduates' status of EOEL during Covid-19 was studied, including the frequency of their use of mobile apps, the online English learning platforms they used, and their learning habits in EOEL after the breakout of Covid-19.

As far as the data obtained from the 5-point Likert scale statements in Part III and Part IV of the questionnaire is concerned, I used SPSS 22.0 to do a correlation analysis and analysis of variance in order to answer the research questions. For correlation analysis, I explored the correlation among the undergraduates' online English learning perceptions, their online learning strategies, and their online English scores. In addition, I studied the correlation among the respondents' online English scores of EOT semester, their NCEE scores and CET-4 scores, which were postponed a semester due to their EOEL, to see whether there were relationships between those variables. Then, I made variance analysis, including students' English online learning perceptions, strategies and their English scores, to see whether there were significant differences in the above mentioned aspects between male and female students, between arts and science students, and between high-scoring and low-scoring students.

2.6.2 Qualitative data analysis

The qualitative data analysis in this research deals with the semi-structured interviews of both the student and English teacher interviewees. As the purpose for qualitative data analysis actually is to interpret the interview data, thematic analysis is used to examine the themes drawn from the qualitative data, and collected from the transcribed interviews. Thematic analysis is an analytic method to handle large volumes of qualitative data without losing the context (Lapadat, 2010), to identify, analyze and report themes within data (Braun & Clarke, 2006), and even to understand a little-known situation (Fereday & Muir-Cochrane, 2006).

Before analyzing the qualitative data, I first transcribed the semi-structured interview data in Chinese by using Iflyrec, the software developed by IFLYTEK, a leading company in the field of speech recognition in Asia-pacific region. Then I translated the transcripts from Chinese into English with revisions of getting rid of irrelevant information, including initial greetings and information relating to the interviewees' background information. In the process of my translation, I increased the familiarity with the manuscript. As I got my MA in Chinese-English Translation at the University of Bristol, so I am qualified in the transcripts translation. In order to keep the quality of the translation, I invited an English teacher with the qualification of Chinese-English translation recognized by Chinese government from H University to check my translation.

After making the preparations, I used the six-step thematic analysis approach advanced by Braun and Clarke (2006) to analyse and interpret the texts in order to make sense of the data. As scholars (Charmaz, 2014; Floersch et al., 2010) consider that there is no requirement for the minimum text length in coding, and the text unit is flexible in thematic analysis, I concentrate on identifying themes within the text rather than examining micro-units of text. The process is as follows:

First, familiarise myself with the data. After translating the transcripts of the interviews, I read the original Chinese and the translated transcripts again, listened to the audio recordings when necessary, and reviewed the initial notes I have taken during the interviews so as to be familiar with the raw data.

Then, generate initial codes. I coded manually the data by highlighting potential areas

for making thematic patterns, using sticky notes to identify snippets of data (Braun & Clarke, 2006), and making notes on the text in the margins when ideas appeared or leading the study to a new direction. I used two types of approaches (splitter and lumper) both a priori and inductive coding to generate initial coding. The codes, their excerpts, and the notes on them were all clearly seen, which left tracks of the reasons for coding.

After that, search for themes. I searched for themes by collating codes into potential themes after combining similar, or the same codes from the initial ones, further abstracting and reducing themes. The potential themes are based on "substantive relevance" (Patton, 2002, p.467), which are determined by whether they are consistent and strong evident in interview data for the intended purpose of the research, or they can provide a profound or further understanding of the issue being studied.

Then, review themes. I reviewed themes by checking if the themes worked in relation to the coded extracts, and considered whether they appeared to form a coherent pattern. In addition, I needed to consider the validity of individual themes in relation to the data set, and whether my candidate thematic map 'accurately' reflected the meanings evident in the data set as a whole (Braun & Clarke, 2006).

Furthermore, define and name themes. I defined and named themes by ongoing analysis to refine the specifics of each theme using evidence from the data collections to explain how and why they emerged. Usually, I use a broader category to recognize or describe a theme, but when the code itself is complicated and meaningful, I use a code or a slightly extended code to name the theme (Braun & Clarke, 2022).

Finally, produce the report. Based on the above process, I wrote the report of my explanations and analysis derived from the sufficient data extracts showing the prevalence of the theme by capturing the essence of the point I wish to show in my report.

2.7 Limitations of the methodology

Just as the sun has its spots, the results of research are conditioned as much by the limitations of the approach as by its strengths (Oliver, 2014). As a case study using mixed methods, the limitations of the methodology of this research mainly appear in the following three parts, and should be acknowledged.

First, the methods for choosing research objects were not perfect. In this study, quota sampling was used to choose questionnaire respondents with the considerations of the ratios 1:2 and 1:5 of the undergraduates' genders and majors respectively at H University. Though it is a convenient method in statistics for choosing research samples, the 612 chosen respondents, including 204 males and 408 female respondents, or 102 science students and 510 arts respondents, still cannot represent all of the undergraduates at H University due to the diversity of the respondents. Moreover, as sequential mixed research methods were used in this study, student interviewees were chosen among questionnaire respondents, so with the deliberation of many requirements, including students' gender, major and their English scores, these methods further restricted the choice of student interviewees. As a result, in this research, though the chosen questionnaire respondents and the interviewees satisfy the above requirements, they may not be the most suitable ones, or the ones telling the most illuminating stories during an interview.

Second, the timing of this research is another unavoidable limitation. EOT began in the first semester of 2020, after the emergence of Covid-19, Zhengzhou, the city in which H University is located, was subject to five sequential lockdowns. The first period was the longest, lasting a whole semester, and is the focus of this research. The questionnaire of this research was made in early 2021, and the interviews for both students and teachers were made from April to September 2021. Though the questionnaire was done soon after getting the ethical approval, it was still over half a year later than the first period of online learning at H University. Thus, students' initial ideas and perceptions about EOL had become memories, which were stale and had to be recalled. The data I obtained in this research is only related to the undergraduates' recollections of the first online learning period during Covid-19.

Concerning the undergraduates' perceptions towards EOT, for most of them, the initial EOT period may not have been the most suitable time for them to state their perceptions towards EOT. As the educational administration, teachers and students were not prepared for EOT, their perceptions towards it were more negative, and full of worries and complaints. If the research time is shifted to the second or the third period of lockdown, when students became familiar with online teaching, for which the preparations had improved, then their perceptions towards EOT may be more objective.

As for the undergraduates' learning strategies, the EOT period was also the time for students to form and adjust their L2 online learning strategies. However, one semester may not have been long enough for students to form fixed online learning strategies. If the research was done in the later online learning periods at H University, the undergraduates' online learning strategies may have been more fixed.

Third, the self-reporting in the interviews of the qualitative study of this research by both student and teacher participants may be biased and subjective (Nisbet & Watt, 1984). Both the open-ended questions in questionnaire and interviews ask student participants and teacher interviewees to fully express their own ideas. Though it is a good method with the intention to assess the real situation in the participants' online English learning and teaching, the self-reporting data has the possibility to be selective, biased, personal and subjective, with reflections of personal ideas and attitudes of the participants. The biased data may not only influence the truth of the self-reporting, but question the validity of the research.

2.8 Ethical considerations

As ethical treatment of research participants is a central feature of research that hopes to acquire valid, reliable and beneficial knowledge to all parties concerned (Flick, 2007), I used the ethical guidelines of British Educational Research Association (hereafter BERA, 2018) and Code of Practice on Investigations Involving Human Beings (hereafter CPIIHB) issued by the University of Strathclyde (2020) as guidelines to help weave through the maze of potential ethical difficulties that arise during a study involving humans (Barbour, 2008).

The ethical guidelines of BERA (2018) state that research should occur "within an ethic of respect for the person; knowledge; democratic values; and quality of educational research" (p.5). The CPIIHB of the University of Strathclyde (2020) requires a researcher to protect the dignity, rights, safety and well-being of all actual and potential participants, and also mentions some specific ethical principles, including informed consent, anonymity, confidentiality, participant coercion and participant discomfort. Following the guidelines of the above two guidelines, I filled in the ethics form provided by the University and got the approval from my supervisors and ethics committee. I started my data collection only after I obtained ethical approval letter in

November 2020 from the School of Education Ethics Committee, University of Strathclyde.

The notion of informed consent was crucial as Crow et al. (2006) state that research participants should be given enough related information about the research to let them make a well-informed decision whether or not to be involved. For this research, I first sent an Invitation Letter (for students) to those interested in this research to be potential participants, which made it clear that they could withdraw from the research at any time. Then, I fully informed them about what the study entails through the PIS (for students). Finally, those expressing interest in participation were offered the opportunity to take part in the study, and at the same time, the voluntary Informed Consent was given to them to sign.

Anonymity of participants was maintained at all times. Information obtained from participants was protected through anonymity and confidentiality without being used to identify either the institution or individuals. For all the interviewees, I ensured confidentiality by aggregating data to a non-traceable state in order to ensure that an individual's response was unknown by others (Cohen et al., 2007). I used pseudonyms for both student and teacher participants in order to protect their anonymity. All data was pseudo-anonymised and only I could have access to it. All data was stored on a portable hard disk and I preserved the anonymity of participants by ensuring that all identifiable information was removed from all relevant dissemination materials.

As far as confidentiality in this research was concerned, the participants may experience lack of trust/protection by worrying about unauthorised access to related research information. I assured the participants that I was the only one dealing with and having access to the raw data. Code names were stored on a portable hard disk, separate from the anonymised data. Information shared by the participants was treated confidentially and was not provided to third parties in the process of data collecting, analysis and reporting.

Study participants may feel stressed or embarrassed, or have negative emotional reactions due to perceived coercion. So I sent an invitation letter to their Wechat English class groups, serving as an introduction for those potential participants. Later, I chose those interested as participants and sent them the PIS and consent forms to allow

the participants to make their own decisions regarding participation. I made the participants understand that they needed not answer any question they preferred not to answer, and that they were free to withdraw from the study at any time without any consequences.

Concerning participant discomfort, Sudman (1998) states that if a research participant felt embarrassed, or mentally distressed, or if research produces negative emotional reactions, it is regarded as harmful to the participants. Participants may experience discomfort when research questions feel intimidating. So I forwarded the survey and interview questions to the participants in advance to let them decide whether to take part in the research. The participants may withdraw from the questionnaire, or stop the interview, and the interviewee also had the option to ask for the interviewer to destroy the recording. As this research may have reminded participants of their worries and anxiety during the hard time of lockdown, and may have caused embarrassment or distress in some participants, I informed research participants that they had the right not to answer any question they preferred not to answer.

In conclusion, by taking College English teaching at H University in central China as the case, this study is a case study using a sequential mixed method, with a questionnaire for quantitative study, and interviews with students as a qualitative one, in which student interviewees were chosen from the questionnaire respondents. By using quota sampling, this study chose 612 questionnaire participants and 12 student interviewees considering the ratios for student gender and major at H University to do the research on Chinese undergraduates' perceptions of L2 learning and strategies in EOT during the very first period of Covid-19, with the interviews with three English teachers used as triangulation. In addition, this chapter also explained the pilot study, the process of data collection and analysis, and explorations of validity and reliability. Finally, this chapter also analysed limitations of the research and explained ethical procedures to ensure the process followed the proper requirements.

Chapter 3 Findings

This chapter reports results of the questionnaire survey and findings of both the quantitative and qualitative research of this study, and answers research questions about Chinese undergraduates' EOEL status, their perceptions and learning strategies amid Covid-19, the differences between various student groups, and correlations between online learning perceptions, strategies and academic performance. In addition, it presents findings of themes that emerged from the qualitative study relating to challenges encountered by the undergraduates' in their EOEL and students' expectations for future L2 learning. Instead of reporting the quantitative and qualitative research findings separately, this chapter integrates them to draw a richer picture and answer specific research questions.

3.1 Results of the respondents' general information

This section reports results from Part I and II of the questionnaire, including demographic information of the 612 respondents, and information related to their online learning experiences before and during Covid-19, as well as their extracurricular English learning during Covid-19.

3.1.1 The respondents' demographic information

The first part of the questionnaire deals with the respondents' personal information, and the results are shown in Table 3.1.

Table 3.1 The demographic information of the respondents and of their English learning

Items	Divisions	Numbers	Percentage
Hometown	a. Henan province	540	88.24%
	b. Other provinces	72	11.76%
Class	a. Class 2024(1st year student)	0	0.00%
	b. Class 2023(2nd year student)	521	85.13%
	c. Class 2022(3rd year student)	77	12.58%
	d. Class 2021(4th year student)	14	2.29%
Age	a. 16 years old or below	2	0.33%
	b. between 17-18	17	2.78%
	c. between 19-20	464	75.82%
	d. between 21-22	126	20.59%
	e. between 23-24	3	0.49%

	f. 25 or above		0	0.00%
Majors	a. arts (510)	a) economy	219	35.78%
		b) management	144	23.53%
		c) social sciences	37	6.05%
		d) law	110	17.97%
	b. science (102)	a) mathematics	46	7.52%
		b) computer science	56	9.15%
Time for learning English	a. 5 years or below		65	10.62%
	b. between 6-8 years		211	34.48%
	c. between 9-12 years		275	44.93%
	d. between 13-15 years		51	8.33%
	e. 15 years or over		10	1.63%
Family annual income	a. CNY 0—29,999		94	15.36%
	b. CNY 30,000--49,999		106	17.32%
	c. CNY 50,000—99,999		163	26.63%
	d. CNY 100,000--14,999		116	18.95%
	e. CNY 150,000--19,999		58	9.48%
	f. CNY 200,000 or above		67	10.95%

The results of Table 3.1 indicate that 540 (88.24%) out of the total 612 respondents are from local areas of Henan province, which shows that H University can be regarded as a typical local university. Of the total 612 respondents, 521 (85.13%) are students of Class 2023, 77 (12.58%) are from Class 2022 and only 14 students (2.29%) are from Class 2021. As I distributed the questionnaire link only to students of Class 2022 and Class 2023, the 14 students from Class 2021 may have got the link from their university mates or friends. Their attendance can be ignored as it only occupied a very limited portion. There were no questionnaire respondents from Class 2024, as expected. The respondents who studied English at H University for at least half a year when EOT occurred should have formed their own English learning habits and strategies, and experienced the changes in that semester. As far as the ages of the students are concerned, they vary from 16 to 24, with the majority of them (75.82%) aged from 19 to 20. As for the respondents' majors, the 102 science students are enrolled in mathematics (7.52%) or computer science (9.15%), while the 510 arts students are from various social science majors, including economics (35.78%), management (23.53%), law (17.97%) and other majors of social sciences (6.05%).

Concerning the respondents' experience of learning English, it varies from 5 to 15 years.

275 (44.93%) of the respondents have learned English for 9 to 12 years, and the second largest group (34.48%) from 6 to 8 years. This data indicates schools in different areas of Henan have different age periods for their students to start to learn L2. Almost half of the respondents (44.93%) started their English learning between Grade One (12 years) and Grade Three (9 years) in primary school; while another one third of the students (34.48%) began their English learning in the first year of junior middle school (6-8 years). Interviews with students (Helen-S_1, Jane-S_3, David-S_7 and Sherry-S_{12}) confirmed this deduction, as primary school pupils in major cities of Henan Province start their English learning in Grade One, while pupils in small cities start L2 learning in Grade Three. However, students in the countryside usually start their English learning in the first year of junior middle school. The possible reasons for the different time periods for giving L2 lessons to pupils lie in decisions made by local educational administrations, and the shortage of English teachers in the countryside, as well as in small cities in Henan Province. Students from different areas of Henan Province have significant variations in English learning from the very beginning. The scores of the respondents' four important English exams, including the NCEE and CET-4, English exam for the recent semester, and English exam during the EOT semester were also collected for later analysis.

The economic status of the respondents is also investigated in the questionnaire. The results show that about one third (33.68%) of the respondents' annual family income is lower than CNY 50,000, which is the average annual family income in the local area, according to 2021 Henan Statistical Bulletin (Henan Provincial Bureau of Statistics, 2022, March 12). The above information indicates the following three features of the respondents: First, most of them (88.24%) are local residents. Second, about one third of them (33.68%) come from lower income families. Third, the respondents experienced significant differences in L2 learning since childhood. It is widely believed that the younger a child learn L2, the better the result will be.

3.1.2 The respondents' online learning experience before Covid-19

Concerning the undergraduates' online learning before Covid-19, results of Part II of the questionnaire are as follows in Table 3.2:

Table 3.2 The respondents' online learning before Covid-19

Items	Divisions	Numbers	Percentage
Do you have the online learning experience before Covid-19?	a. yes	368	60.13%
	b. no	244	39.87%
If yes, the number of courses having online learning experiences	a. one	28	7.61%
	b. two	77	20.92%
	c. three	33	8.97%
	d. more than three courses	230	62.50%
If having, the specific online learning methods	a. asynchronous online learning, based on MOOC, provided by some certain e-learning platforms.	73	19.84%
	b. blended learning, not restricted to MOOC, but with teachers' regular classroom teaching and coaching.	166	45.10%
	c. face-to-face learning, assisted by online learning	107	29.08%
	d. synchronous online learning	22	5.98%

The results of Table 3.2 indicate that 368 (60.13%) respondents had online learning experiences before Covid-19, with 263 (71.47%) of those having taken three or more online courses. With 160 as total credits being required for graduation for an undergraduate at that time at H University, and most courses being worth two credits, three courses will be worth at least 6 credits. Thus it is estimated that for those having online courses at H University before Covid-19, online courses occupy about 3% of their total courses.

When asked about their specific online learning method, respondents mentioned the following four major methods: blended learning, asynchronous online learning, online learning assisted face-to-face teaching, and synchronous online learning, regardless of students' acceptance and convenience. Two student interviewees, Jane-S_3, a low-scoring science student, and Helen-S_1, a high-scoring arts student, gave detailed explanations for their online learning in the qualitative study:

> Before the pandemic, my online learning was more related to selective courses of liberal education, occupying only 8 out of the total 160 credits for each student at H University. We are required to finish those 8 credits of courses from second year to fourth year study, among which there are some courses related to L2 learning, for example, English Literature, History of Western

> Civilization, Cultural and History of English Speaking Countries. In addition, there are also some courses of second foreign language we may choose to study, such as French, German, Japanese, and so on. However, all foreign language courses are not online courses. (Jane-S_3)

Through exploration, I found that more of those online elective courses are courses of liberal education, have rich online resources provided by various e-learning platforms, but due to H University specializing in economics and law, some courses lack teachers. For example, without teachers teaching astronomy and biology, H University may require students to have online courses, or MOOCs provided by teachers from other universities instead. In addition, there were also teachers using online resources to assist their teaching before the pandemic, as Helen-S_1 stated: "Before the pandemic, my English teacher provided us with many online resources in XueXiTong (a popular learning management platform in China), and asked us to submit homework online in this learning system".

Furthermore, the respondents also explained that more of this kind of online learning was for self-learning, as only 22 (5.98%) of those who studied online considered their learning as synchronous online learning. 73 (19.84%) of them regarded their learning experience as asynchronous online learning based on MOOCs, provided by some certain e-learning platforms. However, 166 (45.10%) of them stated that their online learning was a kind of blended learning, which was not restricted to recorded courses, but with their teachers providing them with some online learning materials and regular classroom teaching and coaching. Furthermore, 107 (29.08%) of those online learners indicated that their method of study was online learning assisted face-to-face learning. It is clear that before Covid-19, at H University, a university based on face-to-face teaching, online learning was popular only for students' self-learning in limited elective courses of liberal education. For the majority of its courses, online learning was just a method used to assist students' face-to-face learning, not online learning in real sense. This is distinct from purely online courses, which are designed based online from the instructional design procedure, course content, technology, learning activity, assessment and the course accessibility as a whole (Liu et al., 2021).

3.1.3 General information of the undergraduates' emergency L2 online learning

The second part of the questionnaire relates to the general information of the undergraduates' emergency L2 online learning, which unexpectedly lasted for a whole semester. The results are shown in Table 3.3.

Table 3.3 General information of the undergraduates' emergency L2 online learning

Items	Divisions	Numbers	Percentage
Method to access the Internet by students in EOEL	a. using home-based WiFi connection	525	85.78%
	b. be a WiFi squatter to get free WiFi connection from other houses	20	3.27%
	c. using mobile data	66	10.78%
	d. others	1	0.16%
The device once used in EOET	a. laptop	325	53.10%
	b. computer	15	2.45%
	c. smart phone	225	36.76%
	d. tablet	44	7.19%
	e. others	3	0.49%
The online teaching method in EOET	a. asynchronous teaching based on MOOC	38	6.21%
	b. hybrid (asynchronous + synchronous) online teaching	217	35.46%
	c. synchronous online teaching	357	58.33%
The online teaching platform or app mostly used by English teachers in EOET	a. QQ	205	33.50%
	b. XueXiTong	163	26.63%
	c. DingTalk	134	21.90%
	d. Tencent Meeting	76	12.42%
	e. WeChat	24	3.92%
	f. Zoom	3	0.49%
	g. Rain Classroom	3	0.49%
	h. Icourse	2	0.33%
	i. Xuetangx.com	1	0.16%
	j. other	1	0.16%

This table indicates that during Covid-19, 85.78% of the respondents used home-based WiFi connections, and 10.78% of them used mobile data to carry out their EOEL. Very few research reports the method for the respondents to access internet. The research done by Kaisara and Bwalya (2021) at a Namibian university with 134 respondents indicated that most of their respondents (66.00%) used mobile data packages to connect to the Internet, only 31.00% of them had a home-based WiFi connection. Anyway, compared with home-based WiFi connection, mobile data package has higher costs, and it is restricted not only in the amount of mobile data, but in the data speed. In addition, in some remote or mountainous areas of Henan Province, it was unavoidable for the respondents to encounter problems with mobile data. Thus, the frequent usage of mobile data package at H University denotes potentials of more challenges for those

mobile data users in EOET.

Concerning the devices used in EOEL, Table 3.3 shows that 53.10% and 2.45% of the respondents chose laptop and computer respectively, and 36.76% of them used smart phones instead. However, this result differs greatly from the study of Froman et al. (2020) at an American college, in which 94.00% of the total 2,809 samples used computers or laptops, only 5.10% of them used cellphones to have online learning during Covid-19. Anyway, this result is similar to the research result also done in China by Wang et al. (2022), of which 54.47% of the total 1,285 students collected from several higher institutions in Shandong used smartphones to perform their EOL, while the rest using computers (37.98%), tablets (7.55%). When asking student interviewees reasons for their preference for using smartphones, John-S_2, a low-scoring arts student said: "students use smartphones for online learning mainly for convenience, some do not have laptops, and the rest do not have home-based WiFi connections". Mrs. Li-T_3, the teacher interviewee in her late 50s also confirmed this through her observation:

> Chinese high school students, whether in the city or in the countryside, are not allowed to use mobile phones at schools, nor do they use personal computers, laptops, or tablets to assist their high school learning. What they concentrate on their study is to learn courses examined in NCEE well so as to get higher scores to enroll in key universities. However, becoming university students is a turning point, which may provide them with various excuses to have their own mobile phones, namely having becoming an adult, contacting their parents, or assisting their learning. As a result, a mobile phone has become a standard accessory for all Chinese first year university students. However, as for laptops, only a limited portion of first year university students in Henan come to the university with their new laptops. Perhaps this is due to the reason that Henan is not an economically developed area. Anyway, within one or two years, the portion for students' owing a laptop increases greatly. When I ask first year students to submit their homework online in XueXiTong, about one fourth of them submitted a photograph of their written homework, saying they did not have laptops with them. Then, I would ask them to go to public computer rooms at university. Later, within a year or two, a large number of them would buy their first laptop. (Mrs.Li-T_3)

Though Shandong and Henan have economic differences due to their belonging to coastal area and less developed inland area respectively, the research results all show that over one third undergraduates of the two universities preferred to use mobile phones in their online learning. It seems that some Chinese undergraduates used smartphones in EOT for convenience. In fact, the profound reason is due to the socio-economic inequality of the undergraduates. Concerning the annual family income (CNY 5,000) in Henan Province, laptops and tablets are more expensive with their entry-level prices being around CNY 3,000 and 1,000 respectively. Apart from that, users have to pay extra fees for their WiFi connections. Compared with them, mobile phones are cheaper, as a phone for a couple hundred yuan (CNY) can meet the needs of online learning. Moreover, all three Chinese major mobile operators (China Unicom, China Mobile & China Telecom) all give away a mobile phone to the customer buying their mobile plan. In this way, the consumer may just spend only a few tens of yuan (CNY) a month for using the phone, which is affordable for all undergraduates. However, the more usage of smartphones also imply potentials for more challenges among Chinese undergraduates' emergency L2 online teaching as mobile phone screens are too small to see clearly, and too difficult to type words as well.

Apart from owing a mobile phone, WiFi connection is another element of the socio-economic inequality of the undergraduates. Apart from 85.78% of the respondents using their self-owned home-based WiFi connection, 10.78% of them are unable to afford home-based WiFi connections. Some remote areas of Henan lack the infrastructure to provide residents with home-based WiFi connections, so they are required to use mobile data instead. Student interviewees mentioned similar cases in the interview (Lisa-S_6). The use of mobile data not only increases the undergraduates' expenses, but does not ensure a fast speed. 3.27% of the respondents reported being a WiFi squatter by getting free WiFi connections from other houses, which was also mentioned by student interviewees (Lisa-S_6; Edward-S_8). Of course, those figures recall the appropriately one third of the respondents (33.98%) coming from lower income families, who may encounter more challenges in EOEL.

As for online teaching methods during EOET, teachers at H University mainly used three modes in the early times of EOT. Among them, synchronous online teaching

(58.33%) was the most frequently used, followed by hybrid online teaching (35.46%), and asynchronous online teaching (6.21%). In this research, I use hybrid online teaching to refer to the combination of asynchronous and synchronous online teaching during EOT, while blended teaching indicates the combination of face-to-face teaching and online teaching before Covid-19 so as to distinguish these two terms. According to teacher interviewees (Miss Yin-T_1; Mrs. Li-T_3), in the first half of the spring semester in EOET in early 2020, teachers could choose the teaching mode of their preference. However, eight weeks later, after the mid-term examination, the teaching administration at H University required all teachers to use synchronous or live online teaching modes, with the intention for students to have more real-time online interactions with teachers and among peers. It not only contradicted the definition of online learning given by Singh and Thurman (2019) mentioned in 1.3.1.2, which requires that online learning be in an asynchronous environment, but laid hidden challenges of EOT, as it was not online learning in real sense. Since then, the proportions of the divisions of the teaching modes have changed greatly (Miss Yin-T_1; Mrs. Li-T_3). The result of changing the teaching mode to synchronous online teaching was not the result expected by the university administration, as Jane-S_3, a female student interviewees expressed the following opinions: “synchronous online learning is more like a migration from face-to-face class into online without consideration of the features of online teaching; as we can neither often see our teacher, nor our classmates, but always the screen”. Laura-S_5, a female arts student mentioned: “Though it has a similar form to face-to-face teaching, it is different in fact, as the interactions online between teachers and students are very limited”. Helen-S_1, a female high-scoring arts student stated: “Tough I prefer online teaching, face-to-face coaching is very necessary as I can communicate with teachers and classmates”.

Considering online platforms or apps used by English teachers when giving emergency online English instructions at H University, the results show that the top four are QQ (33.50%), XueXiTong (26.63%), Ding Talk (21.90%) and Tencent Meeting (12.42%), occupying 94.45% of the devices in online teaching. The rest only occupy 5.55%, a very limited portion, in which WeChat itself taking up 3.92%. Among the top four popular online teaching tools, QQ is not only one of the earliest social apps in China, but the most welcome one among Chinese youngsters for the following four reasons:

First, it is youngster friendly. Compared with other social apps, QQ emphasises on the expressions of its users' personal ideas, its users can record every bit of their life without many restrictions, which satisfies youngsters to pursue individuality and freedom. Second, it is multi-functional. QQ performs better in gaming, social media, and powerful group function, which provides youngsters with mutual thoughts and ideas to enjoy pleasant communications and experiences here. Third, it focuses on its user habit cultivation. As QQ is among the earliest Chinese social apps launched in late 1990s, for those born around the new century, QQ accompanied their growing up and has become part of their lives. Fourth, QQ has youngster-centred marketing strategies. For attracting youngsters, QQ has been committed to reform in personalized design and innovative features so as to meet the social needs of the younger generation born in the new century. As a result, QQ has become the main social tool for youngsters in the past two decades.

For the other favourite learning apps, XueXiTong is the official teaching platform assigned by H University, which can not only provide students with the functions of attending lectures, but manage their learning process. As for the other two, Ding Talk and Tencent Meeting, they are all popular Chinese computer applications. Apart from having the above mentioned functions, Ding Talk is excellent in managing a working team; and Tencent Meeting is good at arranging and having meetings, and delivering synchronous online classes as well, like Zoom. However, for the remaining online platforms or apps, they either lack outstanding features in giving lectures, like WeChat, the most popular social app in China, or only have limited users, like Rain Classroom (0.49%) and Icourse (0.33%). In the early days of the emergency online instruction, due to having little knowledge of online teaching platforms, English teachers at H University tried various platforms and apps, and gradually concentrated on the above mentioned four teaching platforms or apps due to their popularity and convenience.

3.1.4 The undergraduates' extracurricular emergency L2 online learning

As language is not only learned during class, learning after class also plays an important role in students' English learning. Information regarding the undergraduates' extracurricular English learning during EOEL is also investigated in the second part of the questionnaire, and the details are shown in Table 3.4.

Table 3.4 Results of the respondents' extracurricular emergency L2 online learning

Items	Divisions	Numbers	Percentage
The most frequently used method for students to learn English after class	a. reading English books	65	10.62%
	b. using English learning apps	389	63.56%
	c. watching English videos	138	22.55%
	d. listening to radio programmes	12	1.96%
	e. others:	8	1.31%
Number of English learning apps installed by students to assist their English learning	a. 0	14	2.29%
	b. 1-2	318	51.96%
	c. 3-5	253	41.34%
	d. over 5	27	4.41%
Number of English learning apps students use more than once per week	a. 0	24	3.92%
	b. 1-2	444	72.55%
	c. 3-5	128	20.92%
	d. over 5	16	2.61%
Categories of English learning apps most frequently used by students	a. apps for English reading	54	8.82%
	b. apps for English listening	80	13.07%
	c. apps for English speaking	50	8.17%
	d. apps for English writing	26	4.25%
	e. apps for English dictionaries	399	65.20%
	f. others	3	0.49%
Average time for students' using electronic products to learn English online apart from the daily online class learning in timetable	a. 0 hour	12	1.96%
	b. within half an hour	145	23.69%
	c. half an hour -- 1 hour	273	44.61%
	d. 1hour --2 hours	103	16.83%
	e. over two hours	79	12.91%

Table 3.4 shows that concerning methods of the respondents' extracurricular English learning during EOEL, the vast majority (63.56%) of them used apps to learn English, and the second highest percentage (22.55%) of the respondents watched English videos. Reading English books, the traditional English learning method, has dropped into the third position (8.82%), which was only used by less than 10% of the respondents. Considering detailed information with the respondents' using apps for their English study, 51.96% of the respondents have 1-2 apps, and 41.34% of them have 3-5 apps installed in their smart phones for learning English. This result reveals that within the past five years, more students at H University used more apps to assist their English learning, as the research done by Li et al. (2016) at H University with over 2,000

participants indicated that 79.92% of the participants used 1-2 English learning apps, and only 18.74% of them had 3-5 apps for English learning. Of all the 12 student interviewees, Alice-S_4, a high-scoring arts student, had installed six English learning apps, Lisa-S_6, a middle-scoring arts student, had eight, which was the most among all the 12 student interviewees, while Jane-S_3, a low-scoring science student, had only two apps installed related to English learning. Though the number of English learning apps installed in students' mobile phones cannot determine their English learning abilities, it at least implies students' positive English learning attitudes.

The results also show the respondents' high frequency for using those apps, as 72.55% of them reported using 1-2 apps, and 20.92% of them reported using 3-5 apps more than once per week. As far as the categories of those apps are concerned, most of them (65.20%) were dictionary apps, the other popular ones were for English listening (13.07%), reading (8.82%), or speaking (8.17%). Alice-S_4 for example, installed and used 6 English learning apps; three were dictionary apps (Bubeidanci, Shanbei English, and Baicizhan), two were apps for English speaking (Liulishuo English, TED), and one app was for increasing spoken English abilities (FiF spoken English). Of all the six apps, only FiF spoken English was required by her English teacher, who assigned oral homework by using this app. The other five apps were installed by the student. When asked how she had discovered those apps, she said she heard of them from recommendations from teachers or classmates. Apart from the above information concerning the respondents' extracurricular English learning during EOEL, it is interesting to see that the respondents also have a high frequency of extracurricular English learning, with over 70% of respondents using various electronic devices to learn English after class for over half an hour. We can draw the conclusion that English learning apps played an important role in the respondents' extracurricular English learning, with dictionary apps the most frequently used.

3.1.5 Evaluations on emergency L2 online teaching

Evaluations on emergency L2 online teaching are carried out in both the quantitative and qualitative studies of this research. As for the quantitative study, two aspects of the questionnaire are related with students' evaluation of EOT, with the first having two questions in Part II of the questionnaire survey, and the second as the dimension

"appreciation for online learning" in one of the seven dimensions in the respondents' perceptions in Part III of the questionnaire. For the qualitative study, the respondents' evaluation on EOT was also asked in the semi-structured interviews. As both the questionnaire and the interviews were done half a year after the EOT, the respondents' evaluation on it would be objective, fair, and carefully considered. In this section, I only report findings related to the first aspect mentioned above, and results concerning the second aspect will be shown in Section 3.2.4, a section reporting details of the dimensions of the respondents' online learning perceptions.

Two questions in Part II of the questionnaire survey show the respondents' evaluation of emergency L2 online learning and teaching, and the results are as follows in Table 3.5:

Table 3.5 The undergraduates' evaluations on emergency L2 online learning and teaching

Items	Divisions	Numbers	Percentage
Students' evaluations on EOEL (from the aspect of students' learning)	a. much worse than classroom learning	65	10.62%
	b. worse than classroom learning	259	42.32%
	c. the same as classroom learning	192	31.37%
	d. better than classroom learning	80	13.07%
	e. much better than classroom learning	16	2.61%
Students' evaluations on online English teaching (from the aspect of teacher's teaching)	a. much worse than classroom teaching	40	6.54%
	b. worse than classroom teaching	199	32.52%
	c. the same as classroom teaching	281	45.92%
	d. better than classroom teaching	72	11.76%
	e. much better than classroom teaching	20	3.27%

The questionnaire results indicate that after experiencing emergency L2 online learning and teaching for a whole semester, the questionnaire respondents in general did not give high evaluations. Only 15.68% (from students' learning aspect) and 15.03% (from teachers' teaching aspect) of respondents considered that online learning and teaching were better or much better than classroom learning and teaching. Over half (52.94%, from students' learning aspect) and one third (39.06%, from teachers' teaching aspect) of respondents regarded that online learning and teaching were worse or much worse than classroom learning and teaching. Surprisingly, even 31.37% (from students' learning aspect) and 45.92% (from teachers' teaching aspect) of respondents viewed online learning and teaching the same as classroom learning and teaching respectively.

In the qualitative study, student interviewees gave detailed explanations for their evaluation on EOT. Considering those holding the idea that online learning and teaching are the same as classroom learning and teaching, Helen-S_1, a high-scoring female student explained:

> In online learning, our timetable for classes was exactly the same as what we had in classroom teaching, which was 45 minutes for an online teaching period, with 10 minutes break in between. So some of us did not feel obvious differences than before in our class learning experience. Besides, in live online teaching classes, some teachers used their classroom teaching approaches, which gave students an idea that online teaching was just a copy of classroom teaching, but online. In this case, some students consider online learning and teaching the same as classroom learning and teaching. (Helen-S_1)

However, Ben-S_9, a high scoring male student gave answers from another aspect. He said that as online learning and teaching, like classroom learning and teaching, also had benefits and drawbacks, so it is common for students to give them the same evaluation (Ben-S_9).

Apart from making the above evaluations on online learning and teaching, student interviewees also pointed out positive and negative aspects of online learning and teaching, as well as challenges they encountered in EOT. In this section, I just report positive answers of student interviewees regarding online learning and teaching, leaving the negative ones, as well as challenges they encountered in EOT in Section 3.2.4 and Section 3.6 respectively.

For positive answers of student interviews concerning online learning, based on my familiarization with the original data of student interviews, I coded the data manually. When the codes are rich and sophisticated, I searched for and found the following four themes, which I named convenience and effectiveness, repetition, personalised learning, and increased various abilities.

Convenience and effectiveness are the most striking features of online learning mentioned by student interviewees, who said that in online learning circumstance, they could learn at anytime and anywhere, without any restrictions of time and space

(Alice-S_4; Sarah-$S_{11;}$ Edward-S_8). In addition, they said that online learning saved time and cost. When asking for detailed information, Laura-S_5 said that as the first lockdown period lasted for a whole semester, online learning saved not only time for her transportation between her hometown and the University twice a week, but transportation fees and dormitory payment.

Repetition is a striking feature of online learning. Alice-S_4 said that online learning provided students possibilities to review courses by re-watching recorded lectures in online learning, which was unimaginable in classroom learning, as repetition for classroom lectures was very necessary sometimes.

Personalised learning is another obvious feature for online learning. Student interviewees indicated that in online learning, they could not only choose the time and place to learn, but select among large amount of learning materials and resources they were interested in to learn (John-$S_{2;}$ Jane-S_3).

In qualitative study, many student interviewees stated that apart from the above mentioned positive features of online learning, they also increased various abilities through online learning. For example, online learning made them become more independent learners (Lisa-$S_{6;}$ Emily-S_{10}), improved students' digital literacy (Edward-$S_{8;}$ Helen-S_1), and developed their self-discipline and learning autonomy (Lisa-$S_{6;}$ John-S_2).

As far as online teaching is concerned, providing more teaching resources and teaching approaches are two significant positive themes getting from student interviewees. In terms of the former, students mentioned that unlike classroom teaching, in online teaching prospect, teachers uploaded many learning resources in online teaching platforms, namely PDF files of various units of textbooks, videos clips of related teaching contents, links of correlated MOOCs, teachers' courseware for lecturing, and even videos of teacher's lecturing (Laura-$S_{5;}$ Sherry-$S_{12;}$ John-S_2). Considering the latter, students stated that before the university administration required all teachers to use synchronous online teaching approach, compared with classroom teaching, online teaching had various teaching approaches, including asynchronous based on MOOC, hybrid, the combination of asynchronous and synchronous, and synchronous (Helen-$S_{1;}$ Laura-S_5), as mentioned in student interviews.

3.2 Results of the respondents' perceptions

This section deals with results from Part III of the questionnaire with the intention of answering the first research question: "What are the undergraduates' perceptions towards the EOET amid Covid-19?" This part of the questionnaire contains 31 statements using the 5-point Likert scale related to the undergraduates' online learning perceptions. Responses can be measured across seven dimensions, including the respondents' motivations for online learning, their computer or internet self-efficacy, self-directed learning, learner control, online communication self-efficacy, trust for online learning, and their appreciation for online learning. In Chapter 2, Section 2.5.1.3.1, I mentioned that as the factor load values of 7 statements of Part III of the questionnaire were less than 0.4, these 7 statements were deleted, leaving 24 statements in Part III of the EFA. Then I made the construct validity in Section 2.5.1.3.1 for this part of the quantitative research, in which the results of EFA of Part III, the undergraduates' perceptions towards EOET show that the KMO value of this part is 0.952 > 0.8, and the Bartlett test value is 10126.979, ($p=0.000<0.1$), revealing that the data is suitable for factor analysis. Moreover, seven factors were extracted in the factor analysis, just following the seven dimensions of Part III of the questionnaire. Then results of the mean and standard deviation (hereafter SD) values of the seven dimensions of the undergraduates' perceptions towards EOET are shown as follows in Table 3.6:

Table 3.6 Results of the undergraduates' perceptions towards L2 EOL

Research Variables		Items	No.	Min	Max	Mean	SD
Learners' perceptions	motivation	3	612	1.0	5.0	2.95	0.83
	computer/internet self-efficacy	3	612	1.0	5.0	3.51	0.87
	self-directed learning	4	612	1.0	5.0	3.12	0.83
	learner control	2	612	1.0	5.0	3.29	0.88
	online communication self-efficacy	4	612	1.0	5.0	3.38	0.79
	trust for online learning	5	612	1.0	5.0	3.53	0.81
	appreciation for online learning	3	612	1.0	5.0	3.26	0.90
Total average		24	612	1.0	5.0	3.31	0.68

As the minimum and the maximum values of the Likert scale are 1 and 5 respectively, any mean over 3 would be considered with recognition of the respondents (Hang et al.,

2013). Table 3.6 shows that of all the seven dimensions of the undergraduates' perceptions towards EOET, the means of the seven dimensions vary from 2.95 to 3.53, with the mean (hereafter M in the bracket) of motivation (M=2.95) as the lowest, and also the only one less than 3, indicating the respondents' lower motivation towards it. Concerning the means of the other six dimensions of the perceptions, they are all higher than 3. The means of computer/internet self-efficacy and trust for online learning are even higher than 3.5, denoting the respondents' higher recognition towards them. Apart from the above mentioned dimensions, another dimension, online communication self-efficacy (M=3.38) aroused my attention. Though its mean value ranking was the third from the top, its SD value (SD=0.79) was the lowest among all the seven dimensions, showing the respondents' having the slightest variance in this dimension. In the following section, I will report findings relating to respondents' motivation, computer/internet self-efficacy, trust for online learning, and online communication self-efficacy in detail, as they have whether the highest or lowest mean or SD values among all the seven dimensions. In addition, I will report findings of the respondents' appreciation for online learning to correspond with findings in 3.15, evaluations of emergency L2 online learning and teaching.

3.2.1 The respondents' motivation for emergency L2 teaching

In this case study, among the seven dimensions of perceptions, the mean of motivation is the lowest. As far as the dimension of motivation is concerned, it contains three statements, and the means for two of them are lower than 3, which are "I feel that learning English online is motivating" (statement number 44, hereafter $S_{No.44}$, M=2.98), and "I can concentrate on my online English learning" ($S_{No.45}$, M=2.82), also showing the respondents' low opinion towards them. With such a low recognition of motivation in this research, are learners willing to learn L2 online during Covid-19? When asking the respondents for their motivations for EOET in qualitative study, they gave explanations in interviews.

Alice-S_4, a high-scoring female respondent of arts from Class 2022, explained the influence of her L2 motivation due to Covid-19:

> I am a 3rd year student now. When I was a 2nd year student last spring, I planned to learn English well and passed CET-6 by taking the exam for the

> second time. Thus, I could get the chance to be exchanged to our cooperative university in the UK. However, due to Covid-19, all national English examinations were postponed from summer to winter, including CET-4 and CET-6. Even worse, all student exchange programmes at our university stopped with no restarting time. Worse still, the teaching mode of English classes was shifted from face-to-face teaching to online teaching because of having no other choice, which I had to try to adjust. All those uncertainties made me lose the goals in my university life, so did the motivation in my English learning. (Alice-S_4)

The recall of Alice-S_4 indicated that her ideal L2 self has been lowered as her goal in L2 learning was greatly influenced by the pandemic. Helen-S_1, a high-scoring female respondent of arts, stated her worries and sad experience during Covid-19, lowering her motivation level in ought-to L2 self in L2 learning:

> I am anxious and a bit scared to experience the lockdown and the online learning amid Covid-19. As there were so many new things that I was unfamiliar with in online learning, and no predications for what would happen in the future concerning the pandemic, so I worried my university learning, English learning included, and found it hard for me to have a high motivation to set clear goals and follow them in my English learning as what I have done in the past. (Helen-S_1)

Jane-S_3, a 2nd year low-scoring female science respondent, expressed the elements influencing her L2 learning experience:

> I am not used to the online English learning during the pandemic as on one hand, I do not have much online learning experience; on the other hand, as a poor English learner, my English learning is not so active, so my English teacher always gave me extra attention during face-to-face classes. When the pandemic came, face-to-face teaching shifted to online teaching, which made communications between English teacher and students and communications among my classmates hard to achieve. In addition, I noticed that not only I needed time to adjust to the new teaching mode, but my English teacher and my classmates were also new to it. You can imagine that apart from learning

> English, so many new things related to English learning would definitely decrease my English learning interests. (Jane-S_3)

Apart from the above examples expressing various constructs of motivation related to L2 ideal self, L2 ought-to self, and L2 learning experience, Laura-S_5, a middle-scoring female respondent of arts, explained the distractions diverting her attention from L2 learning and affecting her motivation:

> When I learn online at home during the pandemic, my parents' talking and my younger brother's crying could all disperse my attention for English learning. Moreover, various online attractions, including the pop-up windows of computer games, and messages from the unclosed social apps were all tempting, which lessened my motivation to learn English well. (Laura-S_5)

The above four examples clearly explain various reasons causing the respondents' low motivation of English learning from various constructs, L2 ideal self (Alice-S_4), L2 ought-to self (Helen-S_1) and L2 learning experience (Jane-S_3 & Laura-S_5) in EOEL in the migration of the teaching mode from face-to-face teaching to online teaching, which explain the respondents' lower motivation in EOEL.

3.2.2 Computer/internet self-efficacy and trust for online learning

The two dimensions having higher means are computer or internet self-efficacy (M=3.51) and trust for online learning (M=3.53). The former contains two statements with higher recognition, which are "I am confident in mastering the usage of online learning software" ($S_{No.47}$, M=3.68), and "I am confident in using the Internet to search and gather information for online English learning" ($S_{No.48}$, M=3.57). During the interviews, all student interviewees expressed their confidence in using electronic devices and considered mastering the usage of software and computer applications as an easy thing. The latter has the highest recognition (M=3.53) among the seven dimensions; it contains three higher recognition statements, which are: trust for the EOET team ($S_{No.63}$, M=3.67), trust for teachers' online teaching method ($S_{No.64}$, M=3.65) and trust for students' online English learning groups ($S_{No.65}$, M=3.52). As online learning is the only choice to continue higher education amid Covid-19, it may explain the reason for the respondents having a high level of trust for it. Furthermore, as confidence and trust, like motivation, are also the bases for doing things well,

confidence in using electronic devices and trust for online learning can compensate for respondents' low motivation to learn English well.

3.2.3 Online communication self-efficacy

Though the mean (M=3.38) of online communication self-efficacy ranks the third from the top among the total seven dimensions, its SD is 0.79, which is the lowest among the seven dimensions. As SD is the measure of variability reflecting the difference of a collection of quantitative values from the mean (Woodrow, 2014), so the lowest SD shows that questionnaire respondents have the slightest differences concerning their ideas in this dimension. Of all the four statements in this dimension, two of them have higher means, at 3.44, while the other two statements have comparatively low means, which are "I am willing to express my ideas and feelings online" ($S_{No.60}$, M=3.29), and "I am willing to actively communicate with my classmates and instructors online" ($S_{No.61}$, M=3.36). The lower means and lowest SD indicate that most respondents lack enthusiasm for social interaction in online classes, including both teacher-student communications and peer interactions.

In classroom teaching, communications between teachers and students or among peers are easy to achieve by using eye contact, class discussions and peer collaborations. Conversely, in online circumstance, teacher-student interactions and peer engagements become difficult due to the restrictions of the screens. The sudden change from face-to-face teaching to EOT requires both students and teachers to adjust to new online circumstances. However, the respondents were frustrated by the lack of communication and interactions with teachers and among peers in their L2 online learning. Students encountered challenges without the presence of their peers, and with no encouragement or eye contact from their teachers. As some L2 teachers used synchronous or prerecorded lectures, students had little or no interaction with their instructor, unless the instructor and students had other means of communication.

For teachers, students' reactions towards the sudden change were also far from their expectations. Quite a number of student interviewees, including David-S_7, Ben-S_9 and Sherry-S_{12} perceived no significant differences between their teachers' delivery of English courses in traditional classrooms and online teaching. They mentioned that some teachers adopted teacher-centred teaching modes in online classes, causing

students to lose interest in expressing ideas or to communicating with others in L2 learning. Sherry-S_{12}, a middle-scoring arts student stated that:

> It's difficult for me to concentrate on online lectures as on one hand I am not within teachers' eye contacts, and on the other hand, staring at computer screen for a long time really makes me tired. For me, online teaching is a bit different from face-to-face teaching, it seems that teachers have the authority over the class, and give lectures without caring much for the reactions and interactions from students. Thus, in my attending online lectures, I prefer to stay online silently without answering questions actively. For me, online learning is a bit dull and boring. (Sherry-S_{12})

Sherry-S_{12} is just an example of those passive L2 online learners due to their unused to the sudden change of EOET. But three teacher interviewees expressed different ideas. During EOET, restricted by Internet and unable to communicate with students face-to-face, but only online, all three English teacher interviewees expressed that they had tried new teaching methods to adjust to the new online circumstances by giving lectures, organizing diverse activities for students, and trying to carry out peer interactions whether giving lectures synchronously or asynchronously. Mrs. Li-T_3, a female teacher in her late 50s having experience of using computer to assist her English teaching for over 10 years, said:

> I considered the self-learning features of online learning and expected the internet jam in the beginning of national online teaching, so I gave students several asynchronous sessions. I uploaded all learning materials I used in teaching and those I could collect to XueXiTong, the official online teaching platform of H University, for students to learn by themselves. Those materials included PDF files of textbook units, related reading materials and video clips. I also uploaded some prerecorded micro-lectures for important points of my teaching. In addition, I used the discussion forum and WeChat, a popular social app in China to keep contact with students. However, this only lasted for several weeks as H University required all teachers to have synchronous lectures after XueXiTong expanded its data capacity and could support live lectures. (Mrs. Li-T_3)

Though Mrs. Li-T_3 tried to provide chances for students to adjust to the new online learning circumstances, she also admitted that: "compared with face-to-face teaching, students' attitudes towards online learning were reluctant, and they were not motivated to join in online class activities".

Miss Yin-T_1, a female teacher in her late 30s, said:

> I found it difficult to motivate students to have meaningful and authentic interactions with peers, and to provide them opportunities to negotiate meanings in online teaching. In addition, due to students' passive attitudes towards online learning, teachers' arrangement for group discussions, pair works, or peer feedback to help students scaffold knowledge through their social interaction with others are also hard to achieve. (Miss Yin-T_1)

Miss Yin-T_1's statement indicated teachers' difficulties in EOET because of the students' passive L2 online learning and lacking motivation. Mr. Chen-T_2, a male teacher in his late 40s, mentioned other reasons causing difficulties in teachers' teaching, that teachers did not receive training before face-to-face classroom teaching was shifted to online teaching; thus, teachers found it hard to adjust to giving lectures online. Though teachers tried hard to be facilitators and advisers instead of knowledge transmitters and class controllers in the process of online teaching, with the lack of motivation, generated by the online format, it was difficult to arouse students' interests in teacher-student communications and peer interactions by attending online courses.

3.2.4 Appreciation for online learning

In this section, findings of the respondents' results for the last dimension of their perceptions toward EOT, "appreciation for online learning" will be reported in order to correspond to respondents' evaluation on online learning and teaching in Section 3.1.5, in which I reported ideas of the students having positive evaluation on online learning and teaching, and those possessing the same evaluation on online circumstance as classroom learning and teaching. Though the mean (M=3.26) of the respondents' appreciation for online learning ranked the third from the bottom among all the seven dimensions of the respondents' perceptions, the means of two statements of this dimension are among the lower ones of all statements, which are statement

N0.70 “Students can learn as much from online English learning as from traditional classroom teaching.”(M=3.17) and statement No.69 “Compared with traditional classroom teaching, online English teaching can provide a better learning experience” (M=3.19). The lower means of the two statements indicate students’ low appreciation for their emergency L2 online learning. However, the SD of the dimension “appreciation for online learning” (SD=0.9) is the highest among all the seven dimensions, which indicates that the respondents have the greatest difference in this dimension.

In qualitative interviews, more interviewees expressed their low evaluation on emergency online learning and teaching. In the following, I will report student interviewees’ negative evaluation on online learning and online teaching respectively, leaving findings of challenges encountered by learners in EOT being reported in Section 3.6.

Concerning the aspect of online learning, the interviewee’s low evaluation concentrated on learners’ distraction and reduced focus, as student interviewees reported that in online learning, they were unable to concentrate on learning effectively when the lecture or seminar video was longer than 15 minutes and the disengagement was caused by nearby disturbance, absence of the instructor’s physical presence, eyestrain caused by long staring at screen, and lacking motivation (Ben-$S_{9;}$ Helen-S_1). Moreover, poor technology and internet connectivity were other reasons causing learners’ low evaluation on online learning. In the interviews, student interviewees gave some examples, including poor and unreliable internet connection, slow and unfamiliar e-learning platforms, poor learning experience with the learning platform, as well as serious technological problems with the hardware and software of online learning (Helen-$S_{1;}$ Sherry-S_{12}).

As far as the aspect of online teaching is concerned, student interviewees’ low evaluation centred on inadequate interactions and support. Some interviewees mentioned that due to their lack of prior online learning experience, they had bad interactions with teachers or peers (Sarah-S_{11}; John-S_2). Some regarded that attending lectures without actually seeing real persons was a disaster (David-S_7; Lisa-S_6; Ben-S_9). Many interviewees stated that they not only lacked sufficient

interactive, in-person interactions and communications with teachers or among peers (Emily-S_{10}; David-S_7), but lacked adequate support from instructors, peers and administration (Alice-S_4; Laura-S_5). If we consider that EOT is just a temporary replacement of the normal classroom teaching in an emergency, it will be easy to understand the respondents' low evaluation of it.

3.3 Results of the respondents' learning strategies

This section answers the second research question "What are the undergraduates' learning strategies towards the EOET amid Covid-19?" from the findings from Part IV of the questionnaire, which is based on the SILL of Oxford and questionnaire designed by Cheng and Zheng (2002). This part contains 24 statements of 5-point Likert scale involving six dimensions of LLSs divided by Oxford (1990), including cognitive strategies, meta-cognitive strategies, affective strategies, compensation strategies, memory strategies and social strategies. In Chapter 1, Section 1.4.2.2, I explained the reasons for choosing the classification of L2 learning strategies made by Oxford (1990) in this research, as it was the most comprehensive (Ellis, 1994, p.539), and widely accepted. In Chapter 2, Section 2.5.1.3.1, I mentioned that when making the EFA for undergraduates' strategies towards EOEL, the factor load value of four statements of Part IV of the questionnaire were less than 0.4, therefore, the EFA of Part IV was made after the deletion of those four statements, leaving 20 statements. Then I calculated the construct validity for this part of the quantitative research, in which the results of EFA Part IV of the questionnaire show that KMO value was $0.955 > 0.8$, and the Bartlett test value is 8570.389, ($p=0.000<0.1$), revealing that the data is suitable for factor analysis. Moreover, the research also shows that six factors were extracted in the factor analysis, following the six dimensions of Part IV of the questionnaire. The results of the means of the six dimensions of the undergraduates' online learning strategies are shown as follows in Table 3.7:

Table 3.7 Results of the respondents' L2 online learning strategies

Research Variables		Items	No.	Min	Max	Mean	SD
Learning strategies	cognitive strategies	3	612	1.0	5.0	3.71	0.83
	meta-cognitive strategies	4	612	1.0	5.0	3.33	0.84
	affective strategies	4	612	1.0	5.0	3.35	0.85
	compensation strategies	3	612	1.0	5.0	3.53	0.84
	memory strategies	4	612	1.0	5.0	3.34	0.80
	social strategies	2	612	1.0	5.0	3.32	0.91
Total Average		20	612	1.0	5.0	3.42	0.71

Table 3.7 shows that all the means of the six dimensions of L2 learning strategies are higher than 3.3, indicating that all six strategies are used frequently by the respondents. Among the means of the six strategies, cognitive strategies (M=3.71) and compensation strategies (M=3.53) are the top two, indicating the undergraduates' more frequent usage of these two strategies. This result is the same as the survey study of Wang (2003). The mean of social strategies (M=3.32) is the lowest among the six, its value is still over 3, higher than the median 2.5, showing that it is also used frequently. In the following, I will report findings of the above mentioned three dimensions, cognitive, compensation and social strategies in detail.

3.3.1 Cognitive strategies

The respondents' high frequent usage of cognitive strategies indicates that though they have low motivation for EOET, those having higher scores in NCEE still have not only the intention, but the abilities to search, analyse, organize and summarise information in online English learning. The specific questionnaire statements with high values of mean relating to this strategy are as follows: "I can intentionally install English learning apps to help English learning" ($S_{No.75}$, M=3.72), "I can use search engines to search for online English resources" ($S_{No.76}$, M=3.77), and "I manage to complete the assignments in online English learning without feeling unduly stressed" ($S_{No.77}$, M=3.63).

During the interviews, over half of the interviewees said that apart from one or two apps required to download by their English teachers, all the other English learning apps installed in their mobile phones or tablets were downloaded by themselves. The qualitative research results indicated that the number of English learning apps installed by the 12 student interviewees varied between two to eight. Jane-S_3, a low-scoring student having the smallest number of English learning apps was easy to understand. However, Lisa-S_6, a middle-scoring student having the largest number of English learning apps revealed that she had a positive attitude to learn English well. In addition, at present, it is not strange that the undergraduates grew up along with the development of Internet search engines as the primary method of getting information. In China, due to Google being blocked, Baidu, the most popular search engine in China has been given a nickname as "Duniang" (mother of searching information),

because it is like a mother who knows everything, of course through searching. David-S_7, a male middle-scoring science student, said:

> I have the habit of writing an English diary online, which I find helpful for my English learning, as I can use English words and expressions I have learned not only to write down my life experience, but to organize those words and phrases easily to express my ideas and thinking towards persons and daily life. (David-S_7)

David-S_7's statement indicates that based on the undergraduates' previous online learning experience and their frequent usage of cognitive strategies for L2 online learning, many undergraduates can accept their online English learning and complete their assignments. In conclusion, having learned at university for at least a year before the pandemic, the high-scoring respondents in NCEE have high cognitive abilities, which can support not only their online English learning, but their usage of English.

3.3.2 Compensation strategies

Compensation strategy refers to language learners' attempts to utilize strategies to help them communicate in the target language successfully (Oxford, 1990). The undergraduates' high recognition of using compensation strategies shows that the undergraduates have the abilities to make use of speculation to make up for deficiencies in understanding, when encountering new English words, phrases or sentences. The questionnaire statements with high mean values are as follows: "When communicating with others online, I can use internet emoticons to enrich the contents of expression." ($S_{No.87}$, M=3.54), "When enjoying English videos online, I can guess the meaning of words or sentences" ($S_{No.88}$, M=3.51), and "When finding useful English learning materials online unable to finish, I can download and save them first" ($S_{No.89}$, M=3.54). Over half of the interviewees (Helen-S_1; Jane-S_3; David-S_7; Ben-S_9; Emily-S_{10}; Sarah-S_{11}; Sherry-S_{12}) state that it is common for them to use various emoticons to enrich the contents of statements when communicating online in English as they are concise and lively, expressing ideas by clicking on the keyboard even without typing. When enjoying English videos online, the plot, scenery, body language, and facial expressions may all help them to guess the meanings of words (Helen-S_1; David-S_7; Ben-S_9), though several interviewees also admitted that a large

portion of the materials downloaded and saved would never be opened (Ben-S_9; Emily-S_{10}; Sherry-S_{12}). Having learned English for at least 6-8 years, the respondents with high usage of cognitive strategies became experienced English learners who were skillful in employing reasonable speculation in their daily English learning, or in other words, they had mastered the compensation strategies in their EOEL.

3.3.3 Social strategies

Oxford (1990) indicates that language is a form of social behavior, as communication occurs between and among people, social strategies mean learning a language through communications with other people, which contains three aspects: asking questions, cooperating with others, and empathising with others. Among the six dimensions of the respondents' online learning strategies, the lowest mean of social strategies (M=3.32) shows that they are the strategies used the least by the respondents in EOET, as online teaching caused by Covid-19 reduces or restricts chances for them to communicate with others, to cooperate with others, and to understand others in the process of learning English. The questionnaire statement "I can use English to take part in some online activities, including taking part in group activities and expressing opinions" ($S_{No.97}$, M=3.28) has the lowest mean among the statements in this dimension.

In interviews, over half of the student interviewees (Helen-S_1; John-S_2; Laura-S_5; David-S_7; Ben-S_9; Emily-S_{10}; Sarah-S_{11}) could recall their communications with teachers during the class, but they could not remember having group activities during their English courses. In teacher interviews, Mrs. Li-T_3, a female teacher in her late 50s having experiences of computer assisted English teaching, also mentioned her experience of having online courses:

> Tencent Meeting is a popular computer application, and I often use it to give live lectures. However, though its functions have improved much since EOT, at present, it is still unable to arrange online group activities. If I need to arrange group activities when giving lectures, I have to ask my students to use social media, for example, WeChat class group instead, in which students can express their ideas whether in texts or in voice. (Mrs. Li-T_3)

Mrs. Li-T_3's statement explains that limitations of technology are part of the reasons

for teachers' unable to arrange various kinds of class or group activities. However, when asking respondents if there were any differences in using social strategies during face-to-face classroom learning and online learning, no one identified any big differences. The lowest usage of social strategies actually indicates the low practice of communications and collaborations among peers in EOEL.

3.4 Results of the differences in various undergraduate groups

This section answers the third research question about whether there are differences between various student groups (male/female students, science/arts students, high/low-scoring students) on their perceptions and learning strategies in their EOEL during Covid-19. I use one-way ANOVA to make variance analysis to find out whether there are significant differences in the total seven dimensions of the respondents' perceptions and the six dimensions of their online learning strategies between the various undergraduate groups, including male and female students, science and arts students, and high-scoring and low-scoring students.

3.4.1 Differences between male and female respondents

The following section outlines the variance analysis between male and female undergraduates. Two English scores of the respondents, including their English scores of the previous semester and those of the EOT semester, are compared between male and female respondents. The results are shown as follows in Table 3.8:

Table 3.8 Variance analysis between different gender

Gender groups / Variables	Gender(M±SD		F	P
	Male (N=204)	**Female (N=408)**		
English scores of last semester	79.72±9.95	83.85±7.15	32.03	**0.00****
English scores of EOT semester	79.17±10.13	82.13±7.37	17.02	**0.00****
Perceptions	3.31±0.73	3.31±0.65	0.00	0.99
motivations	3.03±0.84	2.97±0.83	0.70	0.40
computer/internet self-efficacy	3.47±0.98	3.53±0.80	0.56	0.45
self-directed learning	3.15±0.88	3.09±0.80	0.76	0.38
learner control	3.30±0.92	3.28±0.86	0.05	0.82
online communication self-efficacy	3.40±0.85	3.37±0.76	0.12	0.73
trust for online learning	3.47±0.90	3.56±0.76	1.72	0.19
appreciation for online learning	3.26±0.95	3.25±0.87	0.05	0.82
Learning strategies	3.38±0.79	3.44±0.67	1.02	0.31
cognitive strategies	3.57±0.91	3.78±0.77	8.27	**0.00****

meta-cognitive strategies	3.34±0.92	3.32±0.79	0.07	0.79
affective strategies	3.26±0.90	3.39±0.82	3.25	0.07
compensation strategies	3.47±0.91	3.56±0.81	1.69	0.19
memory strategies	3.36±0.88	3.32±0.76	0.23	0.63
social strategies	3.32±1.01	3.34±0.86	0.05	0.83

* $p<0.05$ ** $p<0.01$

Table 3.8 indicates that male and female respondents have significant differences ($p<0.01$) in three variables, which are their English scores of last semester, English scores of the EOT semester, and their cognitive strategies as well. Comparing the means and SD of the English scores of the two semesters for male and female respondents, it is obvious that for both semesters, the average scores of male students are all lower, but the SD of the two scores are all higher than those of the female students. As for the average score gap between female and male for last semester, it is 4.13 (83.85-79.72); for the online learning semester, it is 2.96 (82.13-79.17). In addition, comparing the SD of the scores for both male and female respondents of the two semesters, the SD values for male students ($SD_{\text{last semester}}=9.95$; $SD_{\text{EOT semester}}=10.13$) of the two scores are all higher than those of female students ($SD_{\text{last semester}}=7.15$; $SD_{\text{EOT semester}}=7.73$), which shows that for both semesters, the score gap of males are all bigger than those of females. Comparing the English scores for both male and female students and their SD of two semesters as a whole, we can draw a conclusion that in general, female respondents as a group have higher English scores than male respondents, and that there is comparatively little difference between their scores. This perhaps owes to female students not only have an advantage in language learning, but are apt at memorizing things (Wucherer & Reiterer, 2018), which may contribute to memorizing vocabularies in L2.

Of all the seven dimensions of the undergraduates' perceptions and the six dimensions of their learning strategies, only the cognitive strategies for male and female undergraduates have significant differences, with the mean of females (M=3.78) higher than that of the males (M=3.57), and the gap of females (SD=0.77) smaller than that of males (SD=0.91), showing that female respondents as a whole make more frequent use of cognitive strategies, with slighter differences among them than those of male students.

3.4.2 Differences between students with various majors

The variance analysis between students with different majors and the research variables are made, and the results are shown in Table 3.9 as follows:

Table 3.9 Variance analysis between different major groups

Major groups / Variables	Majors(M±SD)		F	P
	Science (N=102)	Arts (N=510)		
English scores of last semester	79.15±11.10	83.02±7.75	**15.54**	**0.00****
English scores of EOT semester	78.68±9.29	81.64±8.26	**10.49**	**0.00****
Perceptions	3.17±0.74	3.34±0.66	**5.30**	**0.02***
motivations	2.91±0.81	3.01±0.84	1.36	0.24
computer/internet self-efficacy	3.33±0.92	3.55±0.85	**5.28**	**0.02***
self-directed learning	3.04±0.84	3.13±0.82	0.85	0.36
learner control	3.10±0.88	3.32±0.87	**5.62**	**0.02***
online communication self-efficacy	3.21±0.83	3.41±0.78	**5.53**	**0.02***
trust for online learning	3.35±0.88	3.57±0.79	**6.44**	**0.01***
appreciation for online learning	3.15±0.94	3.27±0.89	1.71	0.19
Learning strategies	3.36±0.71	3.43±0.71	0.97	0.32
cognitive strategies	3.55±0.86	3.74±0.82	**4.59**	**0.03***
meta-cognitive strategies	3.20±0.80	3.35±0.84	2.81	0.09
affective strategies	3.30±0.82	3.36±0.85	0.37	0.54
compensation strategies	3.50±0.80	3.54±0.85	0.14	0.71
memory strategies	3.37±0.77	3.33±0.81	0.26	0.61
social strategies	3.25±0.84	3.35±0.92	0.95	0.33

* $p<0.05$ ** $p<0.01$

Table 3.9 shows that for science and arts respondents, in $p<0.01$ level, there are significant differences for their English scores between the previous semester and the EOT semester. In addition, in $p<0.05$ level, there are significant differences between their cognitive strategies, perceptions as a whole, and four out of the seven dimensions in their perceptions, including computer/internet self-efficacy, learner control, online communication self-efficacy, and trust for online learning.

From this table, it is clear that concerning the English scores of the two major groups for the previous semester and the EOT semester in $p<0.01$ level, the means of the English scores of arts students ($M_{\text{last semester}}=83.02$; $M_{\text{EOT semester}}=79.15$) for the two semesters are all higher than those of the science students ($M_{\text{last semester}}=81.64$; $M_{\text{EOT semester}}=78.68$). For the previous semester, the average English score gap for the two

major groups is 3.87; for the EOT semester, it is 2.96. In addition, comparing the SD of the English scores for both science and arts students of the two semesters, the SD values for science students ($SD_{last\ semester}$=11.10; $SD_{EOT\ semester}$=9.29) are all higher than those of arts students ($SD_{last\ semester}$=7.75; $SD_{EOT\ semester}$=8.26) in the two semesters, showing that the English score gaps of science students of the two semesters are all bigger than those of the arts students. When comparing the scores of male and female students, together with science and arts students in the two semesters, it is clear that for all of them, their scores during the online learning semester are all lower than those of the previous semester.

Apart from the above differences between various major groups, there are also differences for them in other aspects. Seen from this table, in $p<0.05$ level, arts students have higher means than science students in cognitive strategies (M_{arts}=3.74; $M_{science}$=3.55), for perceptions as a whole (M_{arts}=3.34; $M_{science}$=3.17), and for 4 specific dimensions of perceptions, including computer/internet self-efficacy (M_{arts}=3.55; $M_{science}$=3.33), learner control (M_{arts}=3.32; $M_{science}$=3.10), online communication self-efficacy (M_{arts}=3.41; $M_{science}$=3.21), and trust for online learning (M_{arts}=3.57; $M_{science}$=3.35), which shows that arts students have higher recognitions in all the above aspects. This conclusion is easy to understand and accept with the only exception that arts students have higher recognition than science students in the dimension of computer/internet self-efficacy, as mentioned previously. This is surprising, as the 102 science students of the research respondents come from majors of mathematics (7.52%) and computer science (9.15%). A possible explanation is that the dimension of computer/internet self-efficacy in the respondents' perception towards EOT concentrates more on the respondents' L2 learning, which is not related to their professional computer knowledge and abilities. In addition, the SD values of arts students for the above mentioned aspects have smaller differences than those of science students, indicating the gap for the recognition of those variables by arts majors are smaller than those of science students.

3.4.3 Differences between various score groups

The results of the variance analysis between different scoring groups are shown as follows in Table 3.10:

Table 3.10 Variance analysis between different score groups

Scoring groups / Variables	Different Scoring Groups(M±SD)		F	P
	the low-scoring (N=165)	**the high-scoring (N=165)**		
English scores of last semester	77.56±10.34	86.86±5.84	**56.98**	**0.00****
English scores of EOT semester	76.26±9.88	84.75±7.04	**49.51**	**0.00****
Perceptions	3.15±0.69	3.45±0.70	**8.25**	**0.00****
motivations	2.90±0.79	3.07±0.94	1.88	0.15
computer/internet self-efficacy	3.37±0.90	3.66±0.83	**4.49**	**0.01***
self-directed learning	2.93±0.83	3.27±0.88	**7.14**	**0.00****
learner control	3.07±0.87	3.49±0.91	**9.71**	**0.00****
online communication self-efficacy	3.24±0.82	3.54±0.79	**6.00**	**0.00****
trust for online learning	3.34±0.83	3.65±0.83	**6.58**	**0.00****
appreciation for online learning	3.09±0.89	3.37±0.98	**4.25**	**0.01***
Learning strategies	3.31±0.68	3.61±0.70	**8.46**	**0.00****
cognitive strategies	3.58±0.83	3.91±0.77	**7.26**	**0.00****
meta-cognitive strategies	3.17±0.80	3.55±0.85	**9.17**	**0.00****
affective strategies	3.21±0.80	3.55±0.87	**7.05**	**0.00****
compensation strategies	3.44±0.83	3.73±0.82	**6.12**	**0.00****
memory strategies	3.27±0.75	3.51±0.85	**5.22**	**0.01***
social strategies	3.23±0.86	3.43±0.99	1.88	0.15

* $p<0.05$ ** $p<0.01$

Kelley (1939) states that 27% from the two extremes of the upper and lower groups of students in score distribution are optimal for the study of test items. So before making the analysis, I divided all the 612 questionnaire respondents into three groups by taking the mean of the respondents' CET-4 scores and their English scores of EOT semester, as the validity cannot be guaranteed if taking the respondents' English scores for one time as the standard to divide them into different groups. Those scoring in 27% of the top and bottom were considered as high-scoring and low-scoring students respectively, and the remaining 282 in between were considered as middle-scoring students. This research only makes variance analysis between high-scoring and low-scoring groups in their English scores, perceptions and learning strategies in EOT.

Table 3.10 shows the significant differences between the low-scoring and high-scoring groups. The average English scores of the high-scoring group are 9.30 (86.86-77.56) and 8.49 (84.75-76.26) points higher than those of the low-scoring

group during the previous semester and EOT semester respectively. In addition, the SD of the English scores of high-scoring group ($SD_{\text{last semester}}$=5.84; $SD_{\text{EOT semester}}$=7.04) is lower than that of the low-scoring group ($SD_{\text{last semester}}$=10.34; $SD_{\text{EOT semester}}$=9.86), indicating that the score gap among high-scoring students are smaller than those of the low-scoring students.

Apart from having significant differences between high-scoring and low-scoring groups of the two semesters, the two groups also had significant differences both in the perceptions and online learning strategies as a whole ($p<0.01$). In particular, at $p<0.01$ level, 4 out of the total seven dimensions of perceptions, namely self-directed learning, learner control, online communication self-efficacy, and trust for online learning, as well as 4 out of the total six dimensions of learning strategies, including cognitive strategies, meta-cognitive strategies, affective strategies and compensation strategies have significant differences between the two scoring groups. In addition, at $p<0.05$ level, another 2 dimensions of perceptions, computer/internet self-efficacy and appreciation for online learning, together with one dimension of strategies, memory strategies, also have significant differences between the two groups. Only 2 dimensions, motivation and social strategies are exceptions, as there were no significant differences between high-scoring and low-scoring groups for these 2 dimensions. As far as the means of the dimensions having significant differences between the two scoring groups are concerned, it is obvious that the means of the answers of the high-scoring group are all higher than those of the low-scoring one, indicating that the high-scoring group members had high recognitions in the above mentioned dimensions of perceptions; or made frequent use of the above mentioned online learning strategies.

3.5 Results of the correlation analysis

This section tries to answer the fourth research question whether students' online learning perceptions and online learning strategies affect their online learning performance by using correlation analysis to explore the relationship between each of the two items among the undergraduates' perceptions, their online learning strategies, and their English performances in the EOT semester. The correlation is measured by the Pearson correlation coefficient, with its value between -1 and +1. If the value is greater than 0, it shows a positive correlation, otherwise a negative one. The higher the absolute value of Pearson correlation coefficient is, the closer the relationship between the two variables will be. With 0.4 as the critical point, the Pearson correlation coefficient higher than 0.4 is more considered to have a close relationship between the two variables.

Firstly, I analyze the correlation between the undergraduates' perceptions (seven dimensions as a whole) towards EOT and each of the six dimensions of their online learning strategies, and the results are shown in Table 3.11.

Table 3.11 Correlations between the undergraduates' perceptions and each dimension of their learning strategies

Variables	1	2	3	4	5	6	7
1 perceptions	1						
2 cognitive strategies	.643**	1					
3 meta-cognitive strategies	.672**	.642**	1				
4 affective strategies	.661**	.600**	.797**	1			
5 compensation strategies	.663**	.683**	.658**	.687**	1		
6 memory strategies	.605**	.586**	.705**	.703**	.726**	1	
7 social strategies	.563**	.518**	.583**	.600**	.621**	.616**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.11 shows that the perceptions (seven dimensions as a whole) towards EOET are significantly correlated with each of the six dimensions of the undergraduates' online learning strategies, as the values of the correlation coefficient are 0.643, 0.672, 0.661, 0.663, 0.605, and 0.563 respectively (at the 0.01 level), which are all positive and higher than 0.4. Therefore, it can be concluded that the undergraduates' online learning perceptions (seven dimensions as a whole) are significantly correlated with each of the six dimensions of their learning strategies (at the 0.01 level).

Then, I analyze the correlation between the undergraduates' online English learning strategies (six dimensions as a whole) and each of the seven dimensions of their perceptions towards EOEL, and the results are shown in Table 3.12.

Table 3.12 Correlations between the undergraduates' online English learning strategies and each dimension of their perceptions

Variables	1	2	3	4	5	6	7	8
1 learning strategies	1							
2 motivations	.489**	1						
3 computer/internet self-efficacy	.565**	.504**	1					
4 self-directed learning	.674**	.632**	.599**	1				
5 learner control	.619**	.513**	.525**	.714**	1			
6 online communication self-efficacy	.612**	.448**	.616**	.564**	.647**	1		
7 trust for online learning	.650**	.524**	.630**	.573**	.582**	.683**	1	
8 appreciation for online learning	.609**	.605**	.535**	.617**	.547**	.572**	.692**	1

**. Correlation is significant at the 0.01 level (2-tailed).

The results of Table 3.12 show that the correlation coefficients between the undergraduates' online learning strategies (six dimensions as a whole) and each of the seven dimensions of the undergraduates' perceptions are 0.489, 0.565, 0.674, 0.619, 0.612, 0.650, and 0.609 respectively (at the 0.01 level), which are all higher than 0.4. Therefore, it can be concluded that the undergraduates' online learning strategies are significantly correlated with each of the seven dimensions of their perceptions (at the 0.01 level).

Next, I make the correlation analysis between the undergraduates' English scores of the EOT semester and each of the seven dimensions of their perceptions towards online learning, and the results are shown as follows in Table 3.13:

Table 3.13 Correlations between the respondents' English scores of EOT semester and each dimension of their perceptions

Variables	1	2	3	4	5	6	7	8
1 English scores of EOT semester	1							
2 motivations	.095*	1						
3 computer/internet self-efficacy	.128**	.504**	1					
4 self-directed learning	.183**	.632**	.599**	1				
5 learner control	.122**	.513**	.525**	.714**	1			
6 online communication self-efficacy	.109**	.448**	.616**	.564**	.647**	1		
7 trust for online learning	.103*	.524**	.630**	.573**	.582**	.683**	1	
8 appreciation for online learning	.156**	.605**	.535**	.617**	.547**	.572**	.692**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

The results of Table 3.13 show that at the 0.01 level, the undergraduates' English scores of the EOT semester are positively weak correlated with five out of the seven dimensions of their perceptions towards EOET, including computer/internet self-efficacy, self-directed learning, learner control, online communication self-efficacy, and appreciation for online learning as their correlation coefficients are 0.128, 0.183, 0.122, 0.109, and 0.156 respectively, varying between 0-0.2, so the correlation coefficients are rather low. In addition, at the 0.05 level, student English scores of the EOT semester are also positively weak correlated with other two dimensions of perceptions, namely motivations and trust for online learning, with the correlation coefficients as 0.095 and 0.103, which are also very low. Thus, it can be concluded that the correlation between the undergraduates' English scores of the EOT

semester and each of the seven dimensions of their online learning perceptions are positive, yet weak.

After that, I make the correlation analysis between the undergraduates' English scores of the EOT semester and each of the six dimensions of their online learning strategies, and the results are shown as follows in Table 3.14:

Table 3.14 Correlations between the undergraduates' English scores of EOT semester and each dimension of their online learning strategies

Variables	1	2	3	4	5	6	7
1 English scores of EOT semester	1						
2 cognitive strategies	.095*	1					
3 meta-cognitive strategies	.153**	.642**	1				
4 affective strategies	.155**	.600**	.797**	1			
5 compensation strategies	.165**	.683**	.658**	.687**	1		
6 memory strategies	.163**	.586**	.705**	.703**	.726**	1	
7 social strategies	.107**	.518**	.583**	.600**	.621**	.616**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.14 shows that at the 0.01 level, the undergraduates' English scores of the EOT semester are positively weak correlated with five out of the six dimensions of their online learning strategies, namely meta-cognitive strategies, affective strategies, compensation strategies, memory strategies and social strategies, with correlation coefficients are 0.153; 0.155; 0.165; 0.163; and 0.107 respectively, varying between 0--0.2, so the correlation coefficients are rather low. Furthermore, at the 0.05 level, the correlation coefficient between students' English scores of the EOT semester and their cognitive strategies is 0.095, showing a weak positive correlation. The above results indicate that though the correlation between the undergraduates' English scores of the EOT semester and the six dimensions of their online learning strategies are positive, the coefficient values vary between 0-0.2, which is rather low. Thus, conclusions can be made that the correlation between the undergraduates' English scores of the EOT semester and each of the six dimensions of their online learning strategies are positive, yet weak. This result is similar with that of Lin's research (2019), whose study is on the relationship between students' scores of CET-4 and their usage of English learning strategies, and whose results indicate that the respondents often use L2 learning

strategies will relatively have good L2 scores.

Finally, I make the correlation analysis among cores of various English exams, and the results are as follows in Table 3.15:

Table 3.15 Correlations among the respondents' various English exam scores

Variables	1	2	3
1the respondents' English scores of EOT semester	1		
2 the respondents' scores of NCEE	.308**	1	
3 the respondents' scores of CET-4	.294**	.456**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Results of the analysis presented in Table 3.15 show that at the 0.01 level, the respondents' English scores of the EOT semester are significantly correlated with their scores of NCEE and CET-4 as the values of correlation coefficients are 0.308 and 0.294 respectively, which are all around 0.3. In addition, also at the 0.01 level, the respondents' scores of NCEE are significantly correlated with their scores of CET-4 as the Pearson correlation coefficient is 0.456, which is even higher, showing a very close correlation between them.

3.6 Challenges encountered in emergency L2 online learning

This section answers the fifth also the last research question concerning the challenges for the respondents' EOEL from the findings of qualitative research, in which the following themes, namely inadequate preparations, explorations for new learning strategies, and socio-economic factors emerged during the interviews.

3.6.1 Inadequate preparations for EOT

Due to the sudden change from face-to-face teaching to online teaching during Covid-19, the term EOT accurately describes the essence of online teaching in the first semester of the academic year 2020-2021, which in fact, different from the conventional online teaching, is actually a temporary replacement of face-to-face teaching in an urgent situation. Owing to the rapid shift of the teaching modes, the undergraduates, teachers, and online teaching infrastructure were largely unready or underprepared for the EOT.

3.6.1.1 Unready respondents and teachers for EOT

As H University has been at the forefront of CETI in the past two decades, L2 learners

of this case university in various time periods had experienced diverse types of online teaching. Though the questionnaire results indicate that over 60% of the respondents already had online learning experiences, most of them were still at a loss regarding what to do at the start of the EOT semester. Jane-S_3, a female science student having online learning experience said:

> When the new semester began, the community where my family lived was still in lockdown and all my textbooks were left in my dormitory. However, I was lucky to bring my laptop back home during the winter vocation. Though I have made preparations for the online classes in the new semester a week earlier before the new semester started, it still seemed a mess without a focus. I was lost in the sea of information related to the oncoming online teaching: teachers teaching different courses I should attend in the new semester gave constantly notices in my QQ class group, asking us to download various teaching platforms and gave passwords for attending those courses. As almost no student brought textbooks back home to spend winter holidays, our teachers provided PDF files or pictures of our textbooks, but only limited pages or units of the textbooks, which made my preparations before class unavailable sometimes. So, in the early days of the EOT, instead of preparing for new courses, I spent more time in downloading, installing various software and apps, setting various pin numbers, and trying to be familiar with their usages. (Jane-S_3)

From the above statement we see that students have to adapt to the new teaching mode in EOT, even for those having online learning experiences. Otherwise, those having no online learning experiences would encounter more difficulties. Laura-S_5, a student without online learning experiences mentioned that:

> Although our university website has a link to the homepage of XueXiTong, which is the official teaching platform of our university, but teachers still used different apps or platforms to give lectures online. As I had no experience of having online courses, nor did I have any training for attending online classes. All those added difficulties in my online English learning. In the first few weeks of EOT nationwide, due to the huge amount of visits, many Chinese

> popular teaching platforms or apps were unable to access when having classes. So, when giving lectures, teachers had to shift from the teaching platform to other popular social apps in China, namely QQ or WeChat, which made me hard to endure and impatient sometimes. One reason was for the constant shift between, or even among various teaching platforms and apps I was unfamiliar with, another reason was due to the difficulties of using those online teaching platforms and apps, as most of them were intended not for teaching. I considered that the online teaching could only last for about two or three weeks, then we would go back to the university. I never expected that the online teaching could last for a whole semester (Laura-S_5).

Laura-S_5's statement shows that students without online learning experiences encountered more difficulties compared with those once having. Concerning all the difficulties surrounding them, more of them do not come from the courses they are learning, but from related online technologies. Anyway, whether having online experiences or not, students have to adjust to the new online teaching mode and overcome diverse difficulties. For teachers, they also have challenges to cope with in EOT.

Among all three teacher interviewees, Mr. Chen-T_2, a teacher in his late 40s, and Miss Yin-T_1, a teacher in her late 30s, did not have any online teaching practice, they worried about what to do when EOT was coming. As Mrs. Li-T_3, a teacher in her late 50s, had used computers to assist her English teaching for over ten years, she was quite at ease. Considering the internet block in the first few weeks in the national online teaching semester, Mrs. Li-T_3 did not give live lectures in the beginning of the new semester, but instead gave asynchronous lectures by uploading all related learning materials, including PDF files of textbooks provided by the publishing house, pre-recorded lectures, supplemented reading materials, video clips of background information related to each unit of the textbooks to XueXiTong, the university's official teaching platform to students to learn by themselves. Then she gave live lectures several weeks later in Tecent Meeting, a popular mobile app for having conferences, similar to Zoom. For doing this, Mrs. Li-T_3 explained:

> I considered the internet traffic in the early days of national online teaching as

> no websites can endure such a huge increase in the amount of visiting. Though I have the experience of computer assisted English teaching for many years, I do not have the online teaching experience, and know which teaching platform or app is convenient for giving live lectures. So I tried various, from XueXiTong, recommended by H University, to Ding Talk, C Talk and QQ, preferred by other teachers. Finally, I chose Tencent Meeting, a Chinese version of Zoom, as it is designed for public synchronous communications, so compared with other teaching platform and mobile apps, it is better in giving synchronous lectures. Anyway, after using it to give lectures for some time, I find it still not perfect for giving lectures due to its unavailability to arrange group discussions and communications among peers during the lectures, as it is not designed for teaching. Then I begin to search for apps which can provide the above mentioned functions. But up till now, I haven't found a suitable replacement. (Mrs. Li-T_3)

Mrs. Li-T_3's statement indicates that she has found her personal way in EOET by using her computer assisted L2 teaching experience, and she is still exploring methods to carry out class activities in online circumstances. Her example not only indicates the difficulties that L2 teachers encountered in EOET, but shows inadequate preparations for teachers and teaching administration before EOT. In the beginning of EOT, Miss Yin-T_1 and Mr. Chen-T_2 prepared for giving live lectures, but in practice, they were either unable to access the teaching platform, or dropped off the Internet constantly, which made it impossible for them to continue their synchronous lectures. However, they found a solution by giving students a link to a MOOC in Xuetangx.com, one of the main Chinese MOOC platforms, and then gave live lectures several weeks later after the speeding up and capacity expanse were made by the teaching platform or computer application they chose, as well as by telecommunication companies. All three teachers mentioned that in February 2020, the beginning of EOT semester, they all considered that online teaching was just a temporary replacement that would last for several weeks. By May, they realized that EOT would last for the whole semester.

Having experienced several rounds of teaching innovation, computer assisted English teaching has been in practice at H University for over two decades, which has laid a

foundation for EOT. However, as online teaching has its instructional design principles, it is not just a simple migration of face-to-face teaching, or computer assisted teaching to online teaching. Thus, both teachers and students have a long way to go to be ready for online teaching, whether it is required for teaching innovation, for technological improvement, or unexpected emergencies.

3.6.1.2 Underprepared technology infrastructure for EOT

In the beginning of EOT, apart from lacking readiness for it by both the undergraduates and teachers, underprepared technology infrastructure is another big problem influencing the carrying out of EOT.

As far as the hardware for EOT is concerned, Lisa-S_6, a middle-scoring arts student and also one of those leaving their laptops at university dormitory, used a mobile phone to attend online lectures instead, which made her online learning hard by staring at the small phone screen for a whole semester. However, even for those with their laptops at hand, they still encountered various challenges, including the low configuration of laptops, and the inadequate speed for the broadband, which not only made students' handling files and watching videos slow, but made them even unable to access the Internet to attend lectures online, as hardware had changed from an assisting or supporting role in face-to-face teaching to a leading one in online teaching. Mrs. Li-T_3, a teacher in her late 50s said:

> I witnessed and have been the practitioner at all rounds of College English teaching innovation at H University in the past two decades, I found that EOT was totally different from CALL, and I confronted many unexpected problems. In order to achieve a better teaching result, I bought a pair of high quality headphones with a microphone, and upgraded the speed of my home-based Wifi connection from 200Mbps to 500Mbps by paying extra CNY 50 per month. Equipped like this, in the early days of EOT, I noticed that after I asked a student to answer questions in synchronous lectures, there often was a silence for some time, I considered it as whether students' offline from the live lecture, or their straying from class. However, sometime later, I knew that this period of silence between two speakers in online communication was called sound delay, which was caused by various reasons, including the slow speed

> of the technological devices, WiFi connection, and other reasons of both sides of the communication. (Mrs. Li-T_3)

Mrs. Li-T_3's statement shows that though she has well preparations for EOET, there are still various unexpected things challenged during EOET. Laura-S_5, a middle-scoring arts student stated: "If my sister and I have online classes together and our parents' use mobile devices at the same time, then the speed of home-based WiFi connection would not be able to support our live online lectures smoothly".

Concerning software, problems are concentrated around unfamiliarity with the usage of various teaching platforms and applications by both teachers and students. Questionnaire respondents mentioned that ten teaching platforms or applications (see Table 3.3) were used by their English teachers. English teachers mentioned that they should have spent time and energy to choose the most suitable teaching platform for synchronous lectures, should have been familiar with their usages, and should have made the transition from one teaching platform to another when necessary. Miss Yin-T_1 said:

> It's really a burden for me to get to know so many new items related to online teaching and teaching platforms. In my online teaching practice, it is very easy for me to have wrong operations, for instance, when lecturing, forgetting to share my computer screen with students, failing to turn on the microphone for students to answer questions, or even taking no notice to turn on the microphone for myself. The most troublesome thing is the transference from one teaching platform to another to meet the necessity of different class activities, when wrong operations happen the most…Through my observation, students also faced problems of being unfamiliar with those new teaching platforms used by English teachers as many of their reactions for the transference between various teaching platforms are rather slow. (Miss Yin-T_1)

Miss Yin-T_1's statement indicates teachers' difficulties in giving online courses in EOET. Apart from giving lectures during online classes, teachers have to be familiar to various new technologies related to EOET, hardware and software as well. Sarah-S_{11}, a female arts student expressed similar ideas, saying that she spent some

time in adjusting various English learning platforms. However, the respondents expressed different ideas. David-S_7, a male science student majoring in statistics said that learning professional courses online was much more difficult than learning English online, as statistics courses had many formulae and special codes, which would be difficult to indicate by using computer. He said that students' slow reactions in the transfer between different platforms were caused by the slow configuration of their computers or by the slow speed of WiFi.

As for the usage of hardware and software, unlike student interviewees who did not mention many of those problems, it seemed that teacher interviewees encountered more usage problems, and felt they had made fools of themselves sometimes. David-S_7, a middle-scoring science student, stated that: "Once, during the break of live lectures, all my classmates enjoyed the live broadcast of our English teacher eating an apple as the teacher forgot to turn off the computer camera". Emily-S_{10}, a high-scoring arts student, said: "One time, my English teacher gave live lectures for five minutes without turning on the microphone". For teachers, Miss Yin-T_1 expressed her ideas: "Many apps are not user friendly, and I needed more time to be accustomed to their usage". The other two teachers expressed similar ideas. Due to the increasing amount of online traffic during EOT, breakdowns of teaching platforms, software, and mobile apps became common phenomena. The problems were solved gradually after the capacities for visits to those platforms or applications were enlarged by their respective companies.

3.6.2 Students' explorations for new online learning strategies

In Chapter 1, Section 1.3, I mentioned that strategy has a small range of synonyms, including "technique", "tactic" and "skills", so different researchers may have differential understandings of the definition of LLSs. Though there is no fixed definition for online learning strategies, they should be regarded as learning techniques or skills that assist in language learning over computer networks.

Before Covid-19, learning online was limited to a few undergraduate courses. The sudden change to EOT changed not only learning forms, but students' learning strategies as well. Undergraduates have to be familiar with new online learning forms, and at the same time, explore new online learning strategies. Ben-S_9, a high-scoring

arts student, mentioned: “After having online courses for a month, I found out that online teaching was not a temporary replacement of face-to-face courses. I had to adjust to online learning by finding a suitable learning method”. Sarah-S_{11} said that “though I am not used to staring at the computer screen for a whole day for attending lectures, I try to arouse my interest in online English learning and develop a positive attitude towards it to overcome my anxiety”. David-S_7, a middle-scoring science student also expressed a similar idea: “I know that online learning is different from previous English learning, and I tried to explore my online English learning methods by using apps to help my English learning, communicate with others, and memorize English words I learned in my online lectures”.

From the interviews with questionnaire respondents, I found that all student interviewees have noticed that their English learning methods or strategies in face-to-face learning were no longer fit for online English learning. After they realized that online learning was not a temporary replacement, they all adjusted their strategies for online English learning. But when asked whether their English teachers had intentionally introduced them to some online English learning strategies, all student interviewees said no. As most of the undergraduates had learned English for about ten years, English teachers may have assumed that students had the ability to form their own learning strategies, thus, did not consider introducing English learning strategies to them. English teacher themselves may have been busy coping with the problems they encountered, and had no time or energy to help students. When asked whether they would have preferred to have learning strategy instruction, all student interviewees said yes, and gave the following explanations: strategy instructions given by teachers may save students’ time and be more targeted in their English learning.

3.6.3 Socio-economic factors in EOT

The questionnaire investigated information related to the respondents’ socio-economic status, including the educational level of their parents, occupations of their father and their annual family income. The results show that about one third (33.98%) of the respondents’ annual family incomes are lower than CNY 50,000, which is the average income in the local area according to the 2021 Henan Statistical

Bulletin (Henan Provincial Bureau of Statistics, 2022, March 12). For those students from lower income families, compared with face-to-face learning, they encountered more financial challenges in EOT as their necessary electronic learning devices, home-based WiFi connection and mobile phone data traffic all cost money, which added burden to their family expenses. Lisa-S_6, a female arts student, once said: "The internet speed at my home is too slow to support my attending online classes smoothly as my family paid less for their home-based WiFi connection". Moreover, students using mobile phone data traffic would pay more to buy data flow to attend lectures. When taking examinations at the end of the EOT semester, the financial differences among students were a significant issue. Lisa-S_6 said:

> The university required each student to prepare two electronic devices, one for answering examination questions; the other was used as a monitor for supervision during the examination. A classmate of mine lives in a remote village where all young adults leave for big cities to be migrant workers. He only has one mobile phone which can be used to attend the examination, but he is unable to borrow one being used as a monitor, as those remain at the village are whether the too young, or the too old, who do not use smart phones at all. (Lisa-S_6)

Apart from the above mentioned aspects, there are also great differences between using a computer and using a mobile phone to take an examination concerning the typing speed and the convenience. Lisa-S_6's statement indicates that instead of bringing digital parity, EOT enlarges the gap of educational equity between students of different financial status, with those coming from lower income families encountering more difficulties.

3.7 Expectations for future L2 learning mode

The study of the expectations for future L2 learning form was only done as a qualitative study. Both student and teacher interviewees were asked questions related to their expectations. When answering questions, of the twelve student interviewees, seven (John-S_2, Alice-S_4, Laura-S_5, David-S_7, Edward-S_8, Emily-S_{10} and Sarah-S_{11}) of them preferred a blended learning mode, a combination of both face-to-face learning and online learning, which is in line with the research results of Nikou (2021).

Three (Jane-S_3, Lisa-S_6 and Ben-S_9 of them were in favour of computer assisted face-to-face learning. Another student, Helen-S_1, a female high-scoring respondent of arts liked asynchronous online learning with regular face-to-face coaching, and the last one, Sherry-S_{12}, a middle-scoring arts student, had a preference for asynchronous online learning.

When exploring detailed reasons for the preference for blended learning, John-S_2, a low-scoring arts student, said: "As blended learning combines both face-to-face and online learning, it can adopt advantages, and avoid shortcomings of both of the two learning modes". And Sarah-S_{11}, a 2nd year low-scoring respondent of arts said more specifically:

> For blended learning mode, on one hand, we can use the modern technology, including mobile apps, MOOC teaching platforms, and the vast amount of online learning resources to assist our English learning. On the other hand, it has the advantages of face-to-face communication, that the interactions between the instructors and students or among the peers can be easily carried out (Sarah-S_{11}).

As for those preferring computer assisted face-to-face learning, Lisa-S_6, a 1st year middle-scoring arts student, said: "I prefer the traditional face-to-face teaching mode as I can see teachers during the class, which makes me feel at ease, as what I do during the class is follow the teacher". For the two who are in favor of asynchronous online teaching mode, Helen-S_1, a female high-scoring arts respondent stated:

> I like asynchronous online learning as there is no restriction of time and space for me to carry out my plan for learning English. However, regular face-to-face coaching is very necessary, as I not only need the guidance and help from teachers, but need communications with teachers and among my fellow students. (Helen-S_1)

Three teacher interviewees also expressed their expectations for future L2 teaching, and their concerns concentrate on teachers' roles. For instance, what will teachers do, and what are teachers' roles in the future? Though having different ideas, they reached an agreement on the necessity of teachers in teaching, and indicated that teachers'

roles could not be replaced, whether by technology or AI. However, as Mrs. Li-T_3 said: "part of teachers' works, checking and grading students' exercises and homework for example, could be replaced by technology or AI, but they cannot take over the place of teachers, as they do not have thoughts". When asked her idea for students' preference for asynchronous online teaching, she continued:

> …asynchronous online teaching without teachers' guidance is more like a kind of distance education, or even a form of correspondence education, which cannot be the main stream of higher education, but only a meaningful supplement for higher education. (Mrs. Li-T_3)

In summary, concerning students' expectation for the future L2 learning mode, over half of them (seven out of 12) preferred blended learning, a quarter of them were in favour of computer assisted face-to-face learning, only one sixth of them liked online learning in various forms. This result indicated that online learning mode was not the first choice for undergraduates at present; they still preferred to see and to communicate with their teachers and peers, which in turn, showed the great importance of teachers in students' learning.

With regard to the conclusion of this chapter, it reports results of the questionnaire survey and the findings of both the quantitative and qualitative research in this study. The conclusion I draw before I delve into the discussion is as follows: Firstly, the results show that before Covid-19, over 60% of the respondents already had online learning experience, and most of the online courses they had taken were courses for liberal education. During EOT, over 50% of the respondents used laptops, and over 85% of them used WiFi connections. The most popular online teaching platform was QQ, a popular social app in China, with computer apps being the most popular devices for the respondents to have their extracurricular English learning. Secondly, concerning the respondents' perceptions towards EOET, the respondents had high belief in their computer/internet self-efficacy and a high level of trust for online learning, but reported low level of motivation. Thirdly, as for their online learning strategies, cognitive strategies and compensation strategies were more frequently used, but social strategies were less used. Fourthly, the respondents' perceptions towards EOT were significantly correlated with their online learning strategies. However, both their

perceptions and their online learning strategies were weakly correlated with their English scores in the EOT semester. Fifthly, the variance differences showed that female respondents had higher English scores. In addition, arts students had more positive perceptions of EOET, more frequent usage of online leaning strategies, and higher English scores as well. Apart from the differences between high-scoring and low-scoring respondents, the former also had positive perceptions towards EOET and frequent usage of online learning strategies. Sixthly, themes emerged from the qualitative research indicating that both English teachers and students made no real preparations for EOET. In the process of EOET, teacher-student communications and peer interactions were hard to achieve. More technical difficulties were encountered by lower income families. Finally, results of the respondents' evaluations for online teaching, whether from the perspective of teachers or students, showed that blended teaching mode was preferred by most respondents.

Chapter 4 Discussion

This chapter first summarizes the findings of both the quantitative and qualitative studies of the research presented in the previous chapter, which are in accordance with the five research questions of this study. Then it focuses on the results of the findings, namely the respondents' computer self-efficacy, their motivation for L2 online learning; their cognitive strategies, and social strategies concerning online learning. Next, it explores teaching mode, online communication, and challenges encountered by the undergraduates during EOT. After that, it discusses limitations of technologies. Finally, it expects future L2 education drawn from the findings and previous discussion.

4.1 Summary of the findings of the study

This section summarizes findings of the undergraduates' general information related to EOEL, and answers the five research questions in this study.

4.1.1 Summary of the undergraduates' information concerning emergency L2 online learning

Being one of the 180 trial universities of the national CETI in 2004, H University, the case in this study, has long been carrying out computer assisted teaching for College English. The questionnaire of 612 undergraduates in this study surveyed information related to the respondents' English learning before and amid Covid-19 at H University.

Before the pandemic, 60.13% of the respondents had the experience of online learning in various forms. Though the number of online courses at H University was still very limited before the pandemic, the outbreak of Covid-19 in early 2020 shifted all teaching online. The questionnaire indicated the following features of online teaching:

In EOT, 85.55% of the respondents at H University used WiFi signal at home, and only 10.78% of them used mobile data to access Internet for online learning. As for the devices used by students to participate in EOEL, 55.56% of the respondents used laptops or computers, and 36.76% of them used smart phones. Moreover, one third of

the respondents' family income was lower than the average in the local area.

As for the online learning modes used by students at H University, the questionnaire showed that before the pandemic, blended learning (45.10%) and synchronous online learning (5.98%) were the most used and least used online learning modes respectively, with online learning assisted face-to-face learning (29.08%) and asynchronous online learning (19.84%) based on MOOC in between. However, during the pandemic, the synchronous online teaching mode was required by the administration department of the university, as it was regarded by the administrators to have similar effectiveness with face-to-face classes (He et al., 2021), and could not only keep students' engagement in lectures, but have real-time online interactions with the class (Hsiao, 2010; Gillis & Krull, 2020; Skylar, 2009). Contrary to the requirements of the university administration, the hybrid teaching mode was preferred by most student interviewees, which is in line with the research results of Wang et al. (2021), owing to the reason that it combines features of both the synchronous and asynchronous teaching modes (live and recorded videos), but has interactive, flexible and replayable features as well (Zapata-Cuervo et al., 2021; Wang et al., 2021).

Concerning the respondents' extracurricular English learning during EOEL, this research indicated that 63.56% of the respondents used mobile apps to learn English, and 51.96% of them had 1-2 apps, most of which (65.20%) were dictionary apps. This research result is exactly in line with the research done by Li et al. at H University in 2016, with only slight differences in the percentages, which also explains that students at H University have a tradition of using apps to assist their L2 learning, laying a good foundation for their EOEL.

4.1.2 Summary of the findings to the research questions

Research question 1 concerned the undergraduates' perceptions towards EOET. The findings of this research show that of all the seven dimensions of the undergraduates' perceptions towards EOEL, the mean value of motivation is 2.95, which is the lowest. The means of the other six dimensions are all higher than 3, with the means of the computer/internet self-efficacy and trust for online learning higher than 3.5, indicating the respondents' positive perceptions in these two dimensions.

Research question 2 related to the undergraduates' L2 online learning strategies. The

findings show that all means of the six dimensions of L2 learning strategies are higher than 3.3, indicating that all six strategies are used frequently by the respondents. Among them, cognitive strategies (M=3.71) and compensation strategies (M=3.53) are the strategies most frequently used by the respondents. This result is in line with the survey study of Wang (2003). Though the mean of social strategies (M=3.32) is the lowest among the six, its value is still rather high, showing that it is also much used.

Research question 3 dealt with the differences of perceptions and strategies in various undergraduate groups, including groups of different genders, majors and scores, on their perceptions, L2 learning strategies and their English scores amid Covid-19. The results are as follows: For different gender groups, of all the dimensions of the respondents' perceptions and learning strategies, male and female respondents have no significant difference on any dimension of their perceptions, but have significant difference on cognitive strategies ($p<0.01$), with female respondents as a whole making more frequent usage of cognitive strategies than male respondents ($M_{female}=3.78$, $M_{male}=3.57$). There were slighter differences between female respondents than male respondents ($SD_{female}=0.77$, $SD_{male}=0.91$). In general, female respondents had higher English scores and smaller score gaps between them than those of male respondents.

For science and arts students, there were significant differences ($p<0.05$ level) in perceptions not only as a whole, but in four specific dimensions of perceptions, including computer/internet self-efficacy, learner control, online communication self-efficacy, and trust for online learning, with arts students having more positive perceptions in all the four mentioned aspects. Concerning learning strategies, there were significant differences ($p<0.05$ level) in cognitive strategies, with arts students having higher mean values than science students.

For high and low-scoring students in this research, they are well-defined groups, as the English scores of these two groups had significant differences in the previous semester and during EOT ($p<0.01$). They had significant differences in perceptions and strategies as a whole ($p<0.01$), and across all dimensions of both perceptions and L2 learning strategies ($p<0.01$, or $p<0.05$), except for motivation and social strategies.

Research question 4 concerned the correlations among the undergraduates' perceptions of L2 learning and strategies towards EOT, together with their English scores. The results show that the respondents' perceptions towards EOT as a whole have significant positive correlation with each dimension of their L2 online learning strategies at the 0.01 level; and their L2 online learning strategies as a whole also have significant positive correlation with each dimension of their perceptions towards L2 EOT at the 0.01 level. However, the undergraduates' perceptions and their online learning strategies all have positive weak correlation with their English scores of the EOT semester at the 0.01 level, and at the 0.05 level respectively.

Research question 5 related to challenges encountered in emergency L2 online learning, and showed that both students and teachers were unready for EOT, and that the technology involved was not up to the standards required for EOT to take place in a coordinated and effective manner. In addition, the respondents found it difficult to adjust their face-to-face learning strategies to online learning. As the questionnaire indicated that 33.98% of the respondents' annual family incomes were lower than the average income in the local area, students from lower income families encountered more financial challenges in EOT, compared with face-to-face teaching.

In the following, I will discuss six aspects relating to the findings of this research. They are the respondents' online learning perceptions and strategies, online teaching approaches, dilemmas in online learning, disillusion of the myth of educational technology, and expectations for future L2 education, which are whether concerns of this research or important research findings need discussing in order to let L2 online teaching develop faster and better.

4.2 Respondents' online learning perceptions

As a major concern of this research, the respondents' L2 online learning perceptions of this study consist of seven dimensions, among which, the research results show that the mean of their computer self-efficacy is the second highest, and the mean of motivation of L2 online learning goes to the lowest extreme. In this section, I will discuss these two dimensions in detail.

4.2.1 Respondents' computer self-efficacy

The research results show that the respondents are digital natives as 99.51% of them

were born in the 21th century, and grew up accompanying the fast development of information technology. As a national trial university for CETI in 2004, H University had long been using technology to assist its teaching, and the research results show that before the pandemic, 60.13% of the respondents had the experience of online learning in various forms, as about 3% of the courses at H University were held online. The research done by Li et al. (2016) at H University also supported this result by indicating that almost 80% (79.92%) of the research participants used 1-2 mobile apps to assist their English learning. When exploring the reasons for installing mobile apps to help them in learning English, the respondents of my research state that English learning apps could widen their knowledge, promote their learning interest and motivation, and increase their English abilities in some particular aspects, which explains that students at H University have a tradition of using modern technology to assist their L2 learning, and lays a good foundation for the respondents' computer self-efficacy.

Moreover, the research results indicate that the mean of computer self-efficacy for online learning is 3.51, which is the second highest mean value, apart from trust for online learning (M=3.53), among all the seven dimensions concerning the respondents' online learning perceptions. As self-efficacy scales are often used to examine people's beliefs in their capabilities to fulfill various levels of learning tasks (Bandura, 1989), the respondents' higher confidence in this dimension shows that their belief in computer capability to carry out online learning is in higher level during Covid-19. This result is in line with the findings of Zapata-Cuervo et al. (2021), who did research on students' psychological perceptions about online learning outcomes. Moreover, this research also supports the notion that students with higher self-efficacy tend to have greater confidence (Wang & Lin, 2007), as the mean value of the respondents' trust for online learning in this research is the highest (M=3.53) among all the seven dimensions of the respondents' perceptions. Perhaps this is due to respondents also being aware that online learning is the only choice for them during Covid-19, so they have higher trust in their online learning. Furthermore, confidence, or trust for online learning, like motivation, is also the basis for online learning, so it explains that despite having a low level of motivation for online learning, the respondents' higher computer self-efficacy, together with the high recognition of their

trust for online learning provided the foundations for the respondents to learn English online.

4.2.2 Respondents' motivation for online learning

This research findings indicated that among seven dimensions of the undergraduates' perceptions towards L2 EOT, namely the respondents' motivations for online learning, their computer or internet self-efficacy, self-directed learning, learner control, online communication self-efficacy, trust for online learning, and their appreciation for online learning, motivation was the one with the lowest mean (M=2.95), which is in line with other research (Lee, 2021; Meşe & Sevilen, 2021; Zapata-Cuervo et al., 2021) done amid Covid-19.

In general, motivation plays an important role in learning as people often consider that motivation is highly related to learners' successful learning and desired outcomes (Zapata-Cuervo et al., 2021; Meşe & Sevilen, 2021). Research (Azevedo, 2005) also indicates that highly motivated and self-regulated students are more likely to be successful in online learning. Thus, it is widely believed that the absence or lack of motivation will cause failure of individuals even with outstanding abilities. By the same token, strong motivation will make up for important deficiencies (Boo et al., 2015) in learning. In addition, many reasons, namely, anxiety, depression, distraction of the environment, no adequate preparations, no interactions between teacher and students or among peers may all influence the respondents' motivation.

Many studies have proved that though online learning has become widespread, learners' motivation in online learning has declined (Daniel & Marquis, 1988; Anderson, 2008). The qualitative research results shown in Section 3.2.1 explore some reasons. This may be due to challenges that learners encountered in the new teaching environment. Those challenges include problems with navigation, interactivity, and time wasted by confused or undisciplined learners affecting their usefulness (Fahy, 2008, p.182). Moreover, the great degree of freedom for learners may result in some getting "lost in cyberspace" or making bad use of their time surfing interesting but irrelevant minutiae. After that, isolation and self-direction by developing models of learning, based upon cohort groups of students are also sources of reasons. Fewer interactions with teachers or among peers, and the

absence of real-time feedback (Meşe & Sevilen, 2021) may all decrease learners' level of motivation. In particular, as EOT was a sudden change from face-to-face teaching to online teaching, learners may have become more anxious and uncertain (Chen & Jang, 2010), which may not only have reduced their motivation, but caused negative impact on individuals and influenced their work (Li & Zhang, 2021; Yi et al., 2010). As a result, it is unsurprising that the mean of motivation is the lowest among all dimensions of the respondents' perceptions. This research result is in line with the research results done by Li and Zhang (2021), and Yi et al. (2010). The qualitative study of this research reported findings of the four student interviewees, namely Helen-S_1, Jane-S_3, Alice-S_4 and Laura-S_5, representing the respondents' motivations in three different constructs, together with the anxiety and fears suffered by some respondents due to the pandemic and the lockdown, which not only decreased the respondents' online learning interests and motivation, but affected their learning engagement and achievements.

The result of the respondents' low motivation in this case study aligned with those of other research (Stewart & Lowenthal, 2021; Chang et al., 2020; Lee, 2021), which reported even more symptoms, namely loneliness, stress, isolation and even mental health challenges in learners' online learning during Covid-19. In addition, other factors related to the respondents' L2 learning, including lack of adequate training for online learning, and distractions of their learning environment caused anxiety, or even panic to the respondents, which made it difficult for them to have strong motivation for L2 online learning, and definitely caused the respondents' low assessment of their own motivation.

More possibilities concerning the three constructs of L2MSS model and the sociocultural factors relating to EOT also cause the respondents' low online learning motivation. In the following, I use different theories to explore possible explanations on L2 learners' low motivation focusing on various perspectives.

Based on Dörnyei's L2MSS model, L2 learners' low motivation in EOT can be explained for the following three reasons. First, L2 learners may lack of ideal L2 self. As an ideal L2 self means a desirable proficient L2 user that a L2 learner would ideally like to be in the future, L2 learners' devoid of face-to-face communication

and interaction, as well as lack of opportunities to use L2 during the pandemic may cause them have difficulty forming or maintaining to be positive ideal L2 users, which may lead to their lack of intrinsic motivation to learn L2. Second, L2 learners' stress of ought-to L2 self may be reduced. Ought-to L2 self reflects that L2 learners are aware of the external pressures throughout their learning process. The pandemic reduced these external expectations or demands due to changes in learning environment and social life, which made learners' L2 learning under less pressure. Third, the impact of L2 learners' online learning experience may be negative. L2 online learning involves both positive and negative learning experiences for L2 learners during their learning process. However, the pandemic brought a great portion of passive learning experiences to L2 learners as they encountered many challenges in their L2 learning experience, including inadequate preparations, new learning strategies to adapt, technical problems, limited learning resources, and socio-economic problems, etc., which may all affect their learning experience and lead to a decline in their L2 learning motivation. In addition, because of the lack of face-to-face communication and interaction, L2 learners may find it difficult to have interests and a sense of accomplishment in their L2 learning, which may also affect their L2 learning motivation negatively.

Using SCT to explain the undergraduates' low motivation in EOT, the possible reasons come as follows: First, the pandemic brought tremendous changes in social and cultural environment. The lockdowns forced L2 learners to shift their face-to-face learning to online learning with lacks of interactions and communication with their teachers and peers, which not only reduced the opportunities for their L2 practice, but their motivation for L2 learning. Second, the pandemic caused a shift in L2 learners' learning mode. Though the change of the teaching approach from face-to-face teaching into online amid Covid-19 got rid of the restrictions of time and space for L2 learners' learning, it resulted in learners' feeling loneliness and lacking a sense of belonging owing to the lacking of face-to-face communication and interactions, which may reduce their learning interest and their L2 learning commitment, so as to reduce their L2 learning motivation. Third, online learning may increase L2 learners' learning stress and anxiety. In EOT, L2 learners had to adapt to new teaching approaches, adjust their

learning strategies, and deal with uncertainties and challenges, so as to experience more learning stress and anxieties, which may also reduce their learning confidence, decrease their learning interest, as well as their learning motivation.

In all, both L2MSS and SCT explore reasons for L2 learners' low motivation in EOT from diverse perspectives. In order to improve L2 learners' online learning motivation, teachers should increase L2 application scenarios, improve L2 learners' learning experience, provide them support and help so as to stimulate and maintain their L2 learning motivation.

4.3 Respondents' online learning strategies

Being another concern of this research, the LLSs I chose in this study is Oxford's taxonomy (1990). The research results indicate that among its six dimensions of strategies, the respondents used their cognitive strategies the most, and their social strategies the least. I will discuss this phenomenon in the following and try to get possible explanations.

4.3.1 Cognitive strategies

Cognitive strategies are the practice of receiving, sending, analyzing, and reasoning information, which creates a framework for input and output. The results of this study show that among all six dimensions of LLSs, cognitive strategies (M=3.71) were the most frequently used by the respondents, as mentioned in Chapter 3.3.1, indicating that the respondents have higher abilities to search, analyse, organize and summarise information in their L2 EOL. As reported by Lin's research (2019) of 435 samples in a Chinese higher institution, cognitive strategies have the most significant influence on students' L2 scores, so H University first-year students' average scores of NCEE ranking the third for about a decade among higher institutions of Henan Province assured the respondents' having higher cognitive abilities. In addition, the respondents' previous experience of learning elective courses online before the pandemic also helped them in their L2 online learning as it not only provided them online learning experience, but gave them chances to practice and to adjust, which form their L2 online learning strategies. Finally, the respondents' use of cognitive strategies may be related to their frequent usage of compensation strategies (M=3.53) as there is some correlation between them.

Based on SCT, the respondents' frequent usage of cognitive strategies can be explained for the following reasons. First, the shift from face-to-face to online teaching approach in EOT made learners rely more on cognitive strategies to compensate for the lack of social interaction and communication as in traditional classrooms, so as to maintain their learning effectiveness in the new learning environment. Moreover, constant lockdowns made learners' online learning become more independent without immediate feedback from teachers and peer interaction, which required learners to have higher self-management and self-regulation skills, so they may be more inclined to use cognitive strategies to monitor and adjust their online learning process. Next, due to the constraints of learning resources existing during the pandemic, learners may need to use more cognitive strategies to be creative with the available resources for learning. Finally, as SCT theories emphasise the importance of cognitive flexibility in language learning (Clément, 2022), students may need to be more flexible in adapting their learning strategies in the face of changing learning environments and requirements during the pandemic. Therefore, they may be more inclined to use cognitive strategies to cope with this need for flexibility in order to better adapt and cope with different learning tasks and challenges.

In summary, SCT explains that the frequent usage of cognitive strategies in learners' L2 learning in EOT resulted in a combination of various factors, such as learners' adaptation to new learning environments, the need for independent learning, innovation under resource constraints, and increased cognitive flexibility. Therefore, in L2 teaching practice, teachers should encourage L2 learners to flexibly use various cognitive strategies to improve their learning effect by providing them with necessary support and guidance.

4.3.2 Social strategies

Social strategies refer to strategies that involve asking questions, cooperating with others, and empathizing with others (Oxford, 2011a; 2017). For language learning, social strategies refer to learning a language through communication with others (1990). The results of this study indicate the following two findings concerning social strategies.

The first finding of the research is that among all six LLSs categorized by Oxford (1990), social strategies (M=3.32) are the least used by the respondents in EOEL, as mentioned in Chapter 3.3.3, which is similar to the research results of Jung-Ivannikova (2016) and White (1995) in L2 online learning and distance learning environments respectively. The low usage of social strategies in online learning results from not only the lack of interaction between teachers and students or among peers, but also the shortage of communications in the target language (Chen et al., 2021).As SCT considers language learning a communicative activity through social interaction with others (Richards & Rodgers, 2014), the respondents' low usage of social strategies can be explained from the perspective of SCT for the following aspects.

First of all, the epidemic brought huge changes, namely the suspension of school life and the reduction of social activities in L2 learners' daily life. Under this circumstance, L2 learners' interactions with the social environment was greatly restricted as they were unable to communicate with teachers and peers or participate in social activities face-to-face as they used to, which reduced the opportunities for L2 learners to use social strategies and led to a decrease in L2 learners' use of social strategies.

Secondly, the isolation and social distancing measures during the epidemic have made L2 learners more rely on online communication, lacking non-verbal information in face-to-face communication, such as facial expressions and body language, which played an important role in social strategies as they helped L2 learners in their L2 learning. Therefore, the limitations of online communication also affected L2 learners' usage of social strategies.

In addition, the uncertainty and stress brought about by the epidemic may also affect L2 learners' psychological state, leading them to be more conservative and cautious in social interaction to avoid risks in social interaction, thus reducing their usage of social strategies.

The second finding of the research is that the respondents reported no differences in using social strategies in their face-to-face learning and online learning, as mentioned in Chapter 3.3.3, which was in line with the research results of Russell and Murphy-Judy (2020) and Lee (2001). A possible explanation is that due to the sudden

change of the teaching mode from face-to-face to online teaching, the respondents need time to adjust to the new teaching mode, and to explore the necessary social strategies suitable for their new online learning form, which also explains teachers' using the same teaching mode in online teaching as they had in face-to-face teaching (Jane-S_3).

Social strategies and the learners' interactions with others have mutual effects. Many reasons, including anxiety, motivation and preparations for online learning may influence the respondents' choice and usage of social strategies. Conversely, social strategies also influence communications between teacher and students, or among peers. Thus, in choosing and using social strategies, students should consider the differences between various online learning environments, for example, the differences between synchronous and asynchronous online teaching, in order to choose the most suitable social strategies to improve their L2 online learning. In addition, they should also make suitable preparations and adjust their mood and learning motivation to increase their usage of social strategies. After that, it is necessary for students to receive training in learning strategies suitable to online environments. Teachers may introduce useful learning strategies to students during the class, or ask successful learners to introduce their learning strategies to the peers. Moreover, teachers may also arrange some interactions among peers to let students practice some certain learning strategies in a particular circumstance.

4.4 Dilemmas in L2 EOT

Apart from making research on the respondents' online learning perceptions and strategies as concerns of this study, this research also explored challenges existed in EOT for Chinese undergraduates. In the following, guided by SCT, I will discuss problems in EOT practice discovered in the research findings in detail, namely, migration of teaching approach from student-centred to teacher-centred, less online communications during class, and inadequate preparations for EOT by both teachers and students.

4.4.1 Teacher-centred vs. learner-centred teaching approach

SCT considers language learning as a communicative activity with social context as the centre, and knowledge is constructed through social interaction with others

(Richards & Rodgers, 2014). In teaching practice, SCT advocates a learner-centred teaching approach, and regards that learners should be actively involved in learning activities, and should learn through interactions with peers or teachers in practical activities (Jaramillo, 1996) to provide social circumstances for learners to scaffold knowledge, which plays a positive role in promoting individual's cognitive development in language learning.

By taking SCT as its theoretical framework, this research follows a learner-centred teaching approach, which is different from the traditional teacher-centred teaching mode. Under the guidance of the SCT approach, learners should no longer be passive vessels to be filled with knowledge, but active participants involved in learning activities they are in favor of, and just beyond their competence (Jaramillo, 1996). In learner-centred classes, teachers no longer display authority and knowledge transmitters and class controllers, but are facilitators and counselors. Learners are no longer passive knowledge receivers, but active knowledge constructors. As a result, classes should not be managed by teachers, but mainly by the learners.

Having been influenced by the philosophies of Confucius, traditional Chinese teaching has long been teacher-centred, believing that learners should be dependent on their teachers and re-produce teachers' ideas without challenging or questioning (Tran & Swierczek, 2009). A Chinese proverb says, "a teacher for a day is a father for life". As a son will never challenge his father's dignity in Chinese society, thus, in traditional Chinese teacher-centred classes, learners are expected to do what the teacher asks them to do. Though sometimes learners feel bored or tired of learning, they never doubt or question the teachers' teaching approach. Chinese students are inculcated with the belief that they have to suffer to be successful. Their role is to endure and be passive knowledge receivers. Due to growing up under the traditional teacher-centred teaching approach, Chinese L2 learners are accustomed to being passive learners, keeping silent during the class, and not taking part in language exchanges with teachers or peers. This explains why their English has been called "deaf and dumb" English, in reference to their poor English listening and speaking abilities (Ruan & James Jacob, 2009).

College English at H University, like other courses in Chinese tertiary education, also

has long been a case of teacher-centred teaching practice, though in 2004, H University focused on remoulding its English teaching practice from teacher-centred to learner-centred by taking constructivist approaches to carrying out national CETI. Since then, College English at H University was kept theoretically learner-centred, and computer assisted by using LAN, or different L2 learning platforms, designed by various presses publishing College English textbooks, though it was unable to guarantee each College English teacher carrying on this teaching mode. However, when Covid-19 broke out in early 2020, face-to-face teaching was migrated into EOT with no preparation, insufficient technological facilities and no training for either teachers or students. Naturally, the sudden change from face-to-face teaching to online, together with having no time to prepare for delivering lectures online effectively caused some English teachers at H University to return to the teacher-centred teaching mode they were accustomed to. This can also be explained as the "curse of the familiar" (Reich, 2020, p.129). One of the dilemmas for online education mentioned by Reich is that attempting to do something different will either confuse your intended audience or have them take your new approach and change it into something traditional (the convention they are familiar with).

4.4.2 Online communications

For Feenberg (2002), much of the interest of the learners in face-to-face teaching came from interactions among learners, and between learners and instructors. However, the results of this case study indicate the difficulties in online communications during the emergency L2 online teaching, including the lack of interactions between learners and instructor, and among peers, which can explain students' lack of motivation. This is not only consistent with the results of research (Stewart & Lowenthal, 2021; Li & Zhang, 2021) in online education during Covid-19, but similar to those of prior ones (Erichsen & Bolliger, 2011; Martin & Bolliger, 2018). According to Moore (1989), learner-instructor interactions were essential for instructors in online education as they run through the learners' online learning process by stimulating and maintaining their learning interests, evaluating their learning process and providing feedback. Moreover, learner-instructor interactions were highly desirable for learners as they carried out the instructors' presentations of information. Thus, learner-instructor interactions not only strengthen learners'

engagement in online learning, but influence their learning outcomes (Dixson, 2010; Gayton & McEwen, 2007).

As a required course lasting two years for all undergraduates, College English at H University, similar to other courses in Chinese tertiary education, was traditionally a case of teacher-centred teaching practice, mainly delivered through lectures by teachers, and lacking interactions between learners and instructor, or among peers. As a trial university of national CETI in 2004, H University took steps to change its English teaching practice from instructor-centred to learner-centred, and made some achievements. However, EOT saw the former teacher-centred teaching approach return as the result of the sudden change from face-to-face teaching to online teaching with insufficient preparation time and inadequate network infrastructure. In teacher-centred online College English teaching practice, teachers had a dominant position in class while giving online synchronous or asynchronous lectures, without allowing for learner-instructor interactions, including asking students questions, giving added explanations to some points, and making comments on students' presentations, as mentioned by Sherry-S_{12}, a female middle-scoring arts student interviewee, which aligned with Li and Zhang's research (2021). In addition, in some prerecorded online lectures, students had few or no interactions, but used other methods to keep in touch with their instructors. This is supported by Mrs. Li-T_3, a female teacher interviewee having online experience, who kept in contact with her students using WeChat, a popular Chinese social app, as she used an asynchronous online teaching mode in the beginning of the emergency L2 online teaching. This also correlates with the research of Stewart and Lowenthal (2021).

During EOT, instructors once again became knowledge transmitters and class controllers, and learners came to be passive knowledge receivers. This explains some respondents' loss of interest in online English courses, as expressed by both low and high-scoring interviewees, including John-S_2, Ben-S_9 and Sherry-S_{12}. Due to teachers' lack of training before giving lectures online, most of them copied what they had done in face-to-face teaching, without making adjustments to the way they delivered online lectures. Some teachers even turned off the video function when giving lectures online as they were not accustomed to on-screen interaction, without considering that their presence, along with learner-instructor interactions, was vital to students' active

involvement in online learning (Gayton & McEwen, 2007). Under these conditions, it is possible for competent teachers to reproduce a true equivalent of classroom interaction (Feenberg, 2002) by arranging class activities and discussions, and giving active feedback to students in small classes with 20 students. But on one hand, as most teachers are unfamiliar with online teaching, they cannot reach the effects of classroom interactions in their online teaching classes. On the other hand, there are no such small classes in College English teaching practice.

SCT states that language is learned through involvement in language practices within a social group, just between teacher-learner interactions or among peer interactions as they are the exchange of information and ideas for students learning the language (Moore,1989). SCT advocates learner-centred teaching practice, in which learners are no longer empty vessels to be filled with knowledge. Rather, teachers encourage learners to have meaningful and authentic interactions with each other and provide them opportunities to scaffold their knowledge through active involvement in group presentations and discussions, peer checking and peer feedback that they are interested in (Jaramillo, 1996).

Unpreparedness for online learning, temporary network disconnections and various distractions diverting learners' attention from learning, a lack of diverse activities, and the solitary and rigid endeavor of online learning (Selwyn, 2011) gradually caused learners to lose interest and motivation in online learning. Students returned to passive modes of learning, staying silent during the class, and being unwilling to take part in group activities or L2 practice between peers. Effective interactions facilitate better concentration and fewer distractions (Isaacs et al., 1995), promote engagement, and put students at ease (Cordova, 2009). Though various research results show that interactions among peers enhance learning effectiveness in online learning environments (Piccoli et al., 2001), a moderate amount should be considered, as too many interactions with peers may lead students towards off-topic interactions (Johnson et al., 2014).

4.4.3 Inadequate preparations for L2 online teaching

The research results of this study indicate many challenges related to the EOEL, and this section discusses the most crucial one: the inadequate preparation for L2 online

learning.

Though H University has been using computer technology to assist English teaching since 2004, and before the pandemic, over 60% of respondents had experienced online learning for more than one course, its teaching mode was still predominantly face-to-face, with online learning only as a limited supplement. During the shift from face-to-face teaching to online education during Covid-19, some teachers attempted to keep the same face-to-face teaching mode online (Jane-S_3), which aligns with the results of many studies (Li & Zhang, 2021; Stewart & Lowenthal, 2021). Emergency online education during the pandemic was far from being a successful digital transformation, but was rather a crisis-response migration, with insufficient preparation by teachers or students. The research results showed the absence of systematic teaching design principles in creating online courses during the pandemic, which was in line with the research results of Adedoyin and Soykan (2020), Liu et al.(2021), Cote et al.(2020), and Gillis and Krull(2020). Furthermore, the applications of learning, using, and integrating appropriate technological tools that the respondents had never used in their routine L2 learning were in practice in their L2 online learning, which was aligned with the research results of Liu et al.(2021), and Crompton et al.(2021).

Technological infrastructure was also unprepared for the demands of EOL, and numerous technological challenges resulted from the change of teaching mode, including slow internet speeds, slow performance of learning platforms due to the high-volume of visits, and insufficient capacity of the devices used by students at home, all of which influenced the quality of online learning (Gillis & Krull, 2020; Liu et al., 2021), and required students to spend time adjusting to technological problems.

4.5 Disillusions of the myth of educational technology

Accompanied with the quick development of information technology in the new millennium, the popularity of online courses, namely MOOCs and blended learning, challenged conventional knowledge and understanding about education due to its rich resources, effectiveness and restrictions from time and space. Technology enthusiasts proclaimed that the time for education revolution has come, as educational technology would overthrow traditional methods of teaching and learning, thus educational technology is like a myth, which is omnipotent. Kleiman (2000)

expressed the essence of its idea that as long as teachers had basic computer knowledge, they could use it effectively in their teaching. Moreover, education equality could also be achieved by ensuring that rich and poor schools had the same proportion of computers. For criticizing the myth of educational technology, Reich (2020) summarizes its features that technology can completely overturn the existing education system, and help learners acquire knowledge. In addition, the open and free technology will democratize education and digital parity can be achieved by expanding access to technology. The Covid-19 crisis pushed education in various levels worldwide into online, however, my research indicated significant drawbacks to the rapid uptake of technology in education, denoting that technology alone was unable to transform education, but enlarged the gap of educational equity. .

4.5.1 Technology alone being unable to transform education

Christensen et al.(2008) considered that new technologies to be a "disruptive innovation", that would eventually revolutionize education. They claimed that as traditional educational system suffered from intrinsic problems, such as teacher-centered teaching methods, curricula, unified learning approaches, and inaccessibility of quality education, thus, online teaching methods could successfully solve some of these challenges by creating tailor-made teaching adapted to students' needs in terms of learning in level, style, topics, and schedule. They predicted that by 2019, about 50% of school courses (K-12) would be delivered online, which would not only save possibly two thirds of the costs, but result in students' better learning results. Unfortunately, concerning online teaching in 2019, no K-12 education system in any country adopted online education to the extent that they predicted. Even for higher education, their prediction was inaccessible as my research results indicated that before the pandemic, though 60.10% of the respondents had the experience of online learning in various forms, only about 3% of the courses for them at H University were held online. So the percentage of online courses for all undergraduates at H University would definitely be lower than 3%, which was contrary to Christensen and colleagues' predictions, but similar to the report made by Lee and Kim (2020, as cited in Lee, 2021) that in Korea in 2019, only about 1% of college lectures were held online, and the remaining courses were all conducted in traditional face-to-face classes.

With regard to the less cost in online learning predicated by Christensen et al., my research results were not in line with Christensen's predictions. In Section 3.6.3, the results claimed that with the migration from offline to online learning worldwide, students from lower-income families encountered diverse economic problems, such as being unable to afford the internet connection, mobile phone data package, and mobile device for examination invigilation. As a result, respondents from lower income families were likely to fall behind, or face more challenges keeping up with others (Fishbane & Torner, 2020).

In the matter of online learning improving learners' performance predicated by Christensen et al., my research did not make direct study for it. As my research results indicated the respondents' lower motivation and evaluation for EOT, their inadequate preparations for EOT, and adjustment to new online learning strategies, as well as economic problems encountered by some of them, it would be hard for the respondents to improve their learning performance under such an online learning circumstance. Research done by other scholars refuted Christensen's prediction. Goolsbee and Jonathan (2006) stated that as internet facilities improved quickly, the performances of the students did not increase accordingly. Livingston (2012) stated that the present data could not provide any proof showing that technology could increase students' scholastic performance.

Reich (2020) even published the book *Failure to Disrupt: Why Technology Alone Can't Transform Education to* contradict Christensen's predictions. In this book, Reich discussed dilemmas in online learning at scale, and called the crucial one "curse of the familiar" (p.129) to explain the two-sided dilemma of using technology in teaching practice, which means that easily adopted technologies would not cause great improvements in learning, and that when novel technological environments made big changes to learning experiences, learners would find those environments confusing and transform them to resemble the original conditions (Reich, 2020).

4.5.2 Technology enlarging the gap of educational equity

Some technology evangelists held the idea that distance learning, or MOOCs would be a blessing for those who could not attend college classes (Feenberg, 2002). In addition, positive opinions related to technology were also popular, and indicated that

access to technology would disrupt inequity, democratize education and close digital divides (Reich, 2020). But those are all illusions according to Feenberg (2002), who stated that if higher education was cut loose from the traditional university and its values, the blessing would turn into a disaster. Reich (2020) used accumulated evidence to disprove these myths. He used the term “edtech Mathew Effect” (p.127) to describe the dilemma of technology being used in education, in which learners already accessing to technology were more likely to benefit and take advantage of those new free online resources, while those who were unable to access to technology would have more difficulties.

My research results also contradicted the myth of technology. For my research participants, 33.98% of their annual family incomes were lower than the average in the local area. Before Covid-19, when living on campus, the respondents from lower-income families had used free computers and free internet connections provided by the university to save the expenses of using modern technology, which is in line with the research result of Demirbilek (2014). Amid the Covid-19 outbreak, due to the closure of the university, face-to-face learning was migrated to online learning. The research results showed that more Chinese students preferred to use smartphones during EOT, owing to the popularity of mobile phones and the widespread availability of 5G mobile technologies in China. Thus, in order to keep their online learning at home during the pandemic, some of the respondents had to buy electronic devices, to pay for home-based WiFi connections, and mobile phone data packages as well. As a result, the lower-income family respondents encountered financial burdens for paying these expenses. In addition, some of them in remote areas had to endure challenges of slow speed and weak signals of the Internet, which is reported by the results of many other studies (Bhagat & Kim, 2020; Kaisara & Bwalya, 2021; Beck et al., 2020; Adedoyin & Soykan, 2020).

More serious result was reported by the research done by Beck et al. (2020) in California State University, Northridge, which showed that financial hardship, rather than online courses, caused 24% of the 185 respondents to have no intention of returning to the university in fall 2020, and 36% of the respondents said they would be extending schooling due to their current financial situation. My research result was not as serious as the research result got by Beck et al., as no respondents in my

research mentioned that they had no intention to return to the university, nor did any of them ask for the extension of tertiary learning. Anyway, for those respondents from lower-income families, online learning was not a blessing at all. Instead of bridging the chasm of opportunity separating more and less affluent students, technology only enlarged the gap of education accessibility for those students.

4.6 Expectations for future L2 education

This section intends to discuss the respondents' expectations for future L2 learning on the basis of analysing the respondents' evaluations on emergency L2 online education. In this research, Section 3.1.5, Section 3.2.4 and Section 3.6 are all related with the respondents' evaluations on emergency L2 online education, with Section 3.1.5 dealing with related questions in Part I of the questionnaire survey, Section 3.2.4 concerning related Likert scale statements in Part III of the questionnaire, also one of seven dimensions of the respondents' perceptions towards EOET, and Section 3.6 mainly for the negative responses. The questionnaire results in Section 3.1.5 show that 52.94% and 39.06% of respondents consider online learning and teaching worse or much worse than classroom learning and teaching respectively, indicating the respondents' dissatisfaction with both EOEL and EOET. These research results are supported by the Likert scale statements in Part III of the questionnaire, in which the mean for the dimension of appreciation for online learning is 3.26, ranking the third from the bottom in all the seven dimensions of the respondents' perception towards EOL. Two statements, No.69 and No.70 in this dimension also have lower means ($S_{No.70}$, M=3.17; $S_{No.69}$, M=3.19), indicating the respondents' lower recognition for emergency L2 online education. Furthermore, the results of the respondents' low evaluation on EOL in quantitative research are the same as those in qualitative research obtained from interviews with both students and teachers in Section 3.6. These research results are in line with the results of various studies (Stewart & Lowenthal, 2021; Bhagat & Kim, 2020) concerning whether emergency online learning or teaching.

Exploring reasons for the respondents' low evaluation on emergency L2 online education, they are as follows: Firstly, students had to face numerous challenges in their EOL, associated with technical barriers, teachers' insufficient preparations for

online teaching, and financing problems for those coming from lower income families. Secondly, the highly self-regulated and anonymous nature of online learning tended to cause some respondents to lose motivation and engagement in L2 learning, resulting in their minimal participation or even withdrawal from online learning (Gedera et al., 2015), indicating that online learning is not suitable for all L2 learners. Thirdly, the transition of teaching mode from face-to-face to online during the pandemic was not just a simple migration, but had to consider online pedagogy and its features before attempting to shift courses to an online setting. Fourthly, both teachers and students were unready for L2 online teaching. In addition, technological supports were even underprepared for L2 EOT. Finally, time was also needed for students to adjust to the new online teaching mode and their online learning strategies. In conclusion, it was not difficult to understand that all the above reasons caused the respondents' low evaluations on EOT.

Concerning the expectations for future L2 education, guided by SCT theory, it first should be learner-centred. Learners should be actively involved in learning activities, and learn through interactions with peers and teachers in practical activities. Second, concerning the teaching mode in the future, it should be blended teaching based, at least at this stage, as research results indicate that over half of the interviewees prefer this teaching mode. This research result is also in line with studies done by many scholars (Zapata-Cuervo et al., 2021; Nikou, 2021). The respondents' preference for blended teaching is due to this teaching mode taking advantage of both online and face-to-face teaching, in which learners benefit not only from modern technology, but from face-to-face interactions between teacher and students or among peers. Third, as for the roles of teachers and learners, though online learning might be a trend in the future, or it might return at any time when there is an emergency, teachers cannot be replaced by artificial intelligence or Chat GPT. Guided by SCT theory, teachers are facilitators and counselors, instead of knowledge transmitters and class controllers. Learners are no longer passive knowledge receivers, but active knowledge constructors. As blended teaching appears to be a trend at the present stage, teachers should arrange more online courses and design more online activities for learners to become familiar with this teaching mode, and try to combine online educational material with face-to-face teaching. Forth, for students' online learning strategies,

teachers should also consider giving them instruction in useful online learning strategies so as to help them form better online learning habits. Finally, crisis awareness should also occupy the attention of educational administrators as online education will no doubt be employed in future emergencies. Both students and teachers should undertake necessary training and familiarize themselves with online education in preparation for future crises.

In conclusion, this chapter first summarises findings presented in the previous chapter concerning the undergraduates' information relating to emergency L2 online learning and findings related to the five research questions. Then, it discusses the results of two dimensions in the respondents' perceptions towards EOEL, including their positive evaluation of computer self-efficacy, but lower motivation for online learning, and explores possible reasons for the present situation. After that, it analyses respondents' high reporting of cognitive strategies, and low reporting of social strategies. Next, it probes other findings related to teacher-centred and learner-centred teaching modes and online communication, and explores possible reasons for the results. Next, it discusses challenges encountered by the respondents and teachers during emergency L2 education. Last but not least, it examines the myth of technology revolutionising education and eliminating the education gap between rich and poor. Finally, it discusses expectations for future L2 education and indicates ways for L2 teachers and learners to improve their teaching and learning in the future.

Conclusion

This chapter summarises the study and the thesis as well. First, it presents a summary of the study to offer an overall view of the research. Then, based on the discussion chapter, it reviews the significance of this study in relation to research contents, as well as theoretical, pedagogical, and methodological aspects. After that, it analyses limitations of this study in regards to the respondents and the research methods respectively. Next, it discusses recommendations and suggestions for future online teaching and learning. Finally, it reflects on the affection of Covid-19 on me and my decisions as a researcher.

C.1 Summary of the study

This research is a case study using a sequential mixed method approach to explore Chinese undergraduates' L2 perceptions of learning and strategies during the EOT. The case is H University, a local university in central China, and the research population is 612 undergraduates selected from over 1,517 questionnaire respondents of mainly Class 2022 and 2023 at this university. The 612 research participants were chosen by using the quota sampling method, with the consideration of the ratios of 1:2 and 1:5 for male and female students, and science and arts students respectively. Then semi-structured interviews were conducted with three English teacher interviewees teaching the above mentioned respondents, which served as a method of triangulation. The 12 student interviewees, who were chosen from volunteers among 612 questionnaire respondents, were also selected according to the ratios of gender and major of the undergraduates mentioned above.

This research initially investigated the general information of the undergraduates' L2 online learning before and during EOT. The findings of this research indicated a general view of online education before and during EOT at H University concerning the undergraduates' online learning experience, online learning mode and their L2 extracurricular online learning. Since being a trial university of national CETI in 2004, H University has long been using modern technology to assist its English teaching. Before the pandemic, 60.13% of the respondents had the experience of online learning in various forms, and only about 3% of the courses at this university were held online.

During EOT, the questionnaire results revealed that 85.78% of the respondents used WiFi, while only 10.78% of them used mobile data to access the Internet. In addition, 55.55% of them used laptops or computers, and 36.76% of them used smart phones to carry out their online learning.

As for the online learning mode, blended learning (45.10%) and synchronous online learning (5.98%) were the top two popular forms before the pandemic. However, in EOT, the synchronous online mode was required by the university administration for online teaching, as it simulated traditional off-line classroom learning. However, a hybrid mode was more welcomed by student interviewees, as it combined the advantageous features of both the synchronous and asynchronous teaching modes with interaction and flexibilities.

Concerning the respondents' extracurricular English learning during EOT, this research results indicated that 63.56% of the respondents most frequently used mobile apps to learn English, among which, 51.96% of them used 1-2 apps, 41.34% of them used 3-5 apps, and most of which (65.20%) were dictionary apps.

Then the study focused on the five research questions. It conducted the research of the undergraduates' perceptions towards EOT and strategies in online learning, did variance analysis between various learner groups, including groups with different genders, majors and English scores, made correlation studies among learners' perceptions, strategies, and their scores of L2 learning, and explored challenges for the respondents' EOEL as well.

As for the respondents' perceptions of L2 learning towards EOT, this study used the notions of online learning readiness proposed by Warner et al. (1998), and expanded five-dimension online learning readiness advanced by Hung et al. (2010), including self-directed learning, motivation, computer/internet self-efficacy, learner control, and online communication self-efficacy into seven, by adding two more dimensions, the respondents' trust and appreciation for EOL. With regard to their online learning strategies, this research used Oxford's six-dimension taxonomy of LLSs proposed in 1990 as the key reference, including memory, cognitive and compensation strategies as direct strategies, and metacognitive, emotional and social strategies as indirect strategies.

The research results indicated a number of interrelated findings.

Firstly, among the seven dimensions of the undergraduates' perceptions towards EOT, the mean value of their motivation for EOT was the lowest, while the mean values for their trust for online learning and their computer or internet self-efficacy were the top two, indicating that the respondents have a lower motivation for online learning, but a higher recognition for their trust for online learning, as well as their computer or internet self-efficacy.

Secondly, students frequently used all the LLSs in Oxford's six-dimension taxonomy, among which, cognitive strategies and compensation strategies were the most frequently used, while social strategies were the least used.

Thirdly, female respondents had higher English scores and smaller variance in scores than their male counterparts. Science and arts respondents had significant differences between their cognitive strategies, perceptions as a whole, and four out of the seven dimensions in their perceptions, namely computer/internet self-efficacy, learner control, online communication self-efficacy, and trust for online learning at $p<0.05$ level. High and low-scoring students had significant differences in all dimensions of both perceptions and L2 learning strategies, except for motivations in perceptions and social strategies in learning strategies at $p<0.01$ level.

Fourthly, the respondents' perceptions towards emergency L2 online teaching had significant positive correlation with their L2 online learning strategies at the 0.01 level. However, the undergraduates' perceptions and their online learning strategies all had positive weak correlation with their English scores of EOT semester at the 0.01 level, and at the 0.05 level respectively.

Fifthly, both the respondents and teachers encountered challenges in L2 EOT as they were unready for it, and the technology involved was not up to the standards required for the EOT to take place. In addition, the respondents had to explore new online learning strategies, and for those from lower than average income families, they have to face more socio-economic factors. Dilemmas in EOT, such as migrating from student-centred to teacher-centred teaching approach and having less online communications were widespread.

Finally, the research results indicated that myth of educational technology, with the idea that technology would disrupt inequity, democratize education and close digital divides, is disillusioned. Technology alone was unable to transform education; instead, it enlarges the gap of education equity.

C.2 Significance of the study

The significance of this study lies in the research contents, research results, theoretical and pedagogical implications, together with the contributions to the research methodology.

C.2.1 Research contents

This research provides insights into the sharp change from face-to-face teaching into online teaching in tertiary education during Covid-19 by making a comprehensive study of Chinese undergraduates' L2 online learning in EOT. This research concerned the undergraduates' perceptions towards EOT and the strategies in online learning, made correlation studies among learners' perceptions, strategies, and their scores of L2 learning, did variance analysis between various learner groups, including groups with different genders, majors and English scores, and explored the challenges encountered by the respondents' in their EOEL. Most of the other empirical studies related to L2 online learning in EOT were only concerned with learners' online learning perceptions (Gillis & Krull, 2020; Grether et al., 2020; Lee, 2021) or their online learning strategies (Perea, 2021; Chen et al., 2021) respectively. Very few studies did research combining learners' online learning perceptions and strategies together, not even to make deeper studies. I haven't seen any literature concerning correlation studies on learners' online learning perceptions and strategies, or variance studies on the differences between various student groups' online learning perceptions and strategies. As a result, until now, this study is the most systematic and profound study of learners' L2 online learning perceptions and strategies in EOT, and has the widest coverage in the contents of related studies.

C.2.2 Research results

The research results of this study also make contributions. The respondents' frequent usage of cognitive and compensation strategies, as well as their low motivation and low usage of social strategies in online learning reported in this study are all

significant. The dilemmas in EOT, including inadequate preparations for both students and teachers' online learning and teaching, and the technology involved was not up to the standards required for the EOT to take place; the migration of teaching approach from student-centred to teacher-centred; and the respondents' lack of online communications during online teaching are all vital research results of this study, which will be the focus for future improvement of online teaching. Thus, they are also contributions to the literature of SLA in Covid-19. Furthermore, the research results indicate the disillusion of the myth of educational technology are significant as well, as they prove that technology alone is unable to transform education, but it enlarges the gap of education equity, which are contributions for online teaching as well.

C.2.3 Theoretical contributions

The results of this study, as summarized in the findings, provide evidence that various problems in Chinese L2 EOT are caused by the changes of its teaching practice from face-to-face to online. So, teaching approach from student-centred to teacher-centred, together with lacks of social communications or interactions between students and teachers, or among peers are also the reasons causing those changes. In a word, this research supports SCT theory that language learning should be student-centred, and learners' knowledge could only be constructed through social communications and interactions with teachers or among peers (Richards & Rodgers, 2014). In addition, it also supports criticism on the myth of educational technology as it provides enough evidence to show that technology alone is unable to transform education, instead, it enlarges the gap of educational equity.

The research may also contribute to understanding theoretical frameworks, including SCT, Dörnyei's L2MSS model (2005) and Oxford's Taxonomy (1990), which may help to explain the findings. The quantitative results, complemented by the post-performance recall interviews of the respondents, and triangulated by the teacher interviewees, further broaden the research scope, and highlight the extension of SCT, L2MSS model and Oxford's taxonomy in the peculiar time period of Covid-19. As a result, this research not only enriches the existing research achievements of those theories, but promotes the development of the empirical research of those theories.

C.2.4 Pedagogical implications

The results of this study yield pedagogical implications that may be useful for L2 teachers. Based on the research results that technology alone can't transform education, as well as the pedagogical problems revealed in the findings of this research, namely the undergraduates' low online learning motivation; the teacher-centred teaching approach contrary to student-centred, as what SCT advocated; insufficient interactions between teachers and students, or among peers; inadequate preparations for EOT and unfavourable responses to EOT from respondents, and the undergraduates' explorations for new online learning strategies, this research highlights the pedagogical implications of the transition to online teaching and points to solutions for problems that were revealed during EOT.

Guided by SCT, this research provides the following useful implications for future L2 online teaching: First, online teaching should be student-centred, so as to increase learners' motivation and interests in online learning, in which they are no longer passive knowledge receivers, but active knowledge constructors. Moreover, teachers should also encourage students to have more social interactions between teachers and learners or among peers in online teaching and learning so as to produce more communications to practice the usage of L2. Second, as the development of mobile technology, online learning, and blended learning will be a trend for future education, teachers should design more online or blended learning courses, together with curricular or extracurricular online activities to make learners familiar with those teaching approaches, and at the same time, teaching administration departments should provide enough online learning facilities for achieving the gap of educational equity. Third, as learning strategies are an operating system monitoring and regulating learners' learning activities, but beyond learners' general learning procedures, so in L2 teaching practice, teachers should provide learners with training in online learning strategies in order to let them form suitable online learning strategies: the earlier, the better.

C.2.5 Methodological contributions

Different from a case study often using qualitative research method, this case study used a sequential mixed research method, with a questionnaire of 612 respondents, followed by semi-structured interviews of 12 questionnaire respondents to combine

quantitative questionnaire and qualitative interviews together to get data. In addition, I used semi-structured post-performance recall interviews with three English teachers teaching those respondents as a triangulation to increase the accuracy of data and reliability through their observation in their teaching process, so as to do comprehensive research on the undergraduates' perceptions of L2 learning and strategies in EOT.

The quantitative study makes statistics about the respondents' general information, their perceptions towards EOT and their strategies used in EOL. In addition, it makes correlation studies among learners' perceptions, strategies, and their scores of L2 learning, as well as variance analysis between various learner groups. The above mentioned quantitative study offers explanations or reasons for its statistical findings, while the recall interviews are qualitative studies, from an interpretive perspective, present and explain the interviewees' inner thoughts on their own perceptions of L2 learning and strategies, to triangulate and complement the statistical results.

The triangulation in this study provides not only multi-dimensional, first-hand sources of the data involving the undergraduates' L2 online learning perceptions and strategies, but a practical and problem-driven approach to research (Denscombe, 2014). Moreover, it enhances the qualitative research of this case study by seeking a holistic view of the undergraduates' online learning perceptions and strategies during Covid-19, and increases the reliability of the qualitative research.

C.3 Limitations of the study

This research tries to make a comprehensive study of Chinese undergraduates' perceptions and strategies for L2 learning during EOT, and though lasting for about three years, it still has limitations in the following three aspects:

First, this research paid little attention to the external factors affecting research participants. Taking Chinese undergraduates as research objects, the current study focused on their L2 learning perceptions and strategies in EOL through using questionnaire and interviews. By using SCT as a theoretical framework, this study believes that language learning is a communicative activity, and knowledge can only be constructed through social interactions with others (Jaramillo, 1996). Thus, learning is not an isolated process only involved in students' personal factors, namely

their motivations, abilities and strategies of learning, but is highly related to many external factors, including students' communications with, help or influence from classmates and teachers, which would be crucial and influential in forming their learning habits, styles and strategies. Though vital for the functions of those external factors in students' online learning process, the current study only relied on students' self-reporting and English teachers' observations in triangulation to reflect those external factors influencing student participants' online learning, due to the limits of the research time and the length of this dissertation.

Second, this research did not provide specific solutions to problems and challenges in this study. By using mixed research methods, this research used questionnaire and interviews to explore challenges encountered by the research participants in their EOL, including inadequate preparations, students' adaption to new learning strategies, and some socio-economic factors students faced in EOT. However, due to the length of the dissertation, this research did not provide specific solutions for the undergraduates to meet those challenges, nor did it discuss or give detailed suggestions or training to help them form new L2 online learning strategies to deal with EOT, the new learning environment well.

Third, the research method needs to be improved. Due to continual lockdowns in the city where H University is located, there were five EOT periods within the past three years, with the time length varying from one month to a whole semester respectively. As far as the current research was concerned, it took the first, also the longest online learning period as the research focus, and made questionnaire and interviews one year later when research participants' memories of online learning and teaching were still fresh. As the students experienced online learning intermittently for three years, their online learning perceptions and strategies could not be the same. Thus, it would be better to make a diachronic case study of the undergraduates' online learning perceptions and strategies by choosing various time periods as focuses of the research, to see if their L2 learning perceptions and strategies have changed or improved. Through this dynamic study, the research participants and interviewees not only can express their L2 online learning perceptions and strategies without worries and nervousness, but can indicate any changes or improvement of them in order to make the research more accurate and specific.

C.4 Recommendations for future online education

Online education is not only the trend for future education, but an effective teaching mode being proved during the Covid-19 pandemic to deal with emergencies. During the post-pandemic era, online teaching should be developed into a sustainable teaching approach to satisfy various needs for future education. In this section, I will give recommendations for future online education and for teachers' designing L2 online learning experience respectively.

C.4.1 Recommendations for future online education

Based on the findings of this research, a number of recommendations for university administration, teaching staff and L2 learners on how to improve online teaching in the post-pandemic era can be achieved:

For university administration:

First, it should focus on the improvement of the online teaching platform, and make training of its usage for both teachers and students to let them make full use of it in information sharing, teacher-student communication, effective feedback, evaluation and monitoring. Second, it should provide teachers with special guidance and case demonstration to improve their online teaching abilities. Finally, it should improve teaching supervision, feedback mechanisms, and evaluation of teachers' teaching and students' learning to increase the quality of online teaching and learning.

For teachers:

Guided by SCT, teachers should first of all be aware that online teaching is learner-centred, with learners no longer being passive knowledge receivers, but active knowledge constructors. Then, teachers should improve their information technology literacy, be adapt to online teaching, and be conscious that online teaching design involves not only teaching contents, but online teaching environment and activities as well. Finally, teachers should train students necessary online learning strategies, enhance their attention for students and management of students in online classes to ensure the quality of online teaching.

For students:

First, students should increase their online learning motivation, and learn suitable online learning strategies to form good online learning habits. Second, students should cultivate independent online learning ability to solve problems and make a good class reflection, as online teaching is a continuous learning process from the generation of self-cognition to the construction and improvement of knowledge system, and then to practical application. Third, students should constantly optimize the online learning methods and strategies so as to achieve deep learning.

C.4.2 Recommendations for teachers' designing L2 online learning experiences

Based on the research results that L2 learners frequently used cognitive and compensation strategies, teachers can use this information to design the following online learning experiences for L2 learners.

First, teachers can design personalized online learning contents requiring deep thinking and analysis for L2 learners' preference for cognitive strategies; and the learning contents providing more contextual information or prompts to help those having preference for compensation strategies to better understand and use L2. Next, teachers can design various learning activities to enhance learners' interactions with peers and participation in L2 group discussions, so as to encourage learners to use cognitive strategies to solve problems, and compensatory strategies such as guessing and inference to improve their L2 proficiency. After that, teachers should provide feedback and guidance to help learners understand their strengths and weaknesses in using cognitive and compensation strategies. Through regular evaluations, students can get to know how to effectively improve their cognitive and compensation strategies in L2 learning. Finally, teachers can use modern technological tools, such as artificial intelligence assisted teaching systems, teaching platforms, etc., to support learners better utilize cognitive and compensatory strategies in online learning, so as to help learners learn L2 more effectively.

C.5 Suggestions for future study

By making a case study at a local Chinese university, this research made an empirical exploration of the undergraduates' perceptions of L2 learning and strategies in EOT, and provided practical guidance and reference for L2 researchers' with its relevant findings and conclusions. As far as the future study in the area of SLA is concerned,

they could be done in the following four aspects. First, future research could explore the undergraduates' post-pandemic online learning perceptions and strategies by using mixed research method. The quantitative study might use questionnaire to better represent the larger population, and qualitative study might use semi-structured interviews to obtain in depth information from the research participants so as to make a comparative study of the undergraduates' online learning perceptions and strategies amid and after the Covid-19 pandemic. Thus, the results of the dynamic research would be more objective, accurate and helpful to improve learners' online learning. The future research on learners' perceptions and strategies of L2 online learning could also be done in more extensive areas, for instance, students at other universities in China, or even in other countries to see the differences and similarities of learners' perceptions and strategies in L2 online learning circumstance among various higher learning institutions in different regions.

Second, future research could take training the undergraduates' L2 online learning strategies as another research focus. A mixed research method could be used to collect various data to do the research. The quantitative research might use a questionnaire to investigate the undergraduates' experience of using L2 online learning strategies, and qualitative research might use observations and semi-structured interviews to find out problems and challenges encountered by the research participants in their usage of the online learning strategies. Thus, the instructors could have an accurate view of the strategies needed by L2 learners, so as to make plans to train the undergraduates to form suitable learning strategies in order to help them learn L2 well.

Finally, different from the present study concentrating on learners' L2 online learning perceptions and strategies in EOL, the future study could focus on whether the learning perceptions and strategies have influences on learners' L2 learning performance. By using quantitative research methodology, students' English scores of both the classroom learning and online learning semesters before and amid Covid-19 should be collected to make regression analysis by using SPSS 22.0 to see whether they have significant differences or not. If having significant differences, then the correlation analysis would be made between students' English performance of the EOL semester and their online learning perceptions and strategies to see if they are significantly correlated. In making this research, the influence of learners' online

learning perceptions and strategies on their English learning scores would be more objective and credible.

C.6 Reflections on the influence of the Covid-19 pandemic

This research has lasted for about four years, accompanied by the Covid-19 pandemic from the beginning till present. In this process, the Covid-19 pandemic, a very serious international public health event not only influenced my personal life, but my professional life as a researcher. In this section, I will review reflections of the influence of the Covid-19 pandemic on me and my decisions as a researcher as well.

C.6.1 Reflections on the influence of the Covid-19 pandemic on me

Covid-19 first broke out in China in January 2020 and soon spread to the UK when I was a first year EdD student learning taught courses in the second semester. Like my research participants at a Chinese university, I experienced great changes and encountered various challenges in my learning and living. Different from them, I underwent more challenges related to emotions, loneliness, worries and fears as being an international student living in a foreign country in the first lockdown period in the UK.

Though I had blended learning experience in my MA study, I found the emergency online learning during Covid-19 difficult to adjust to, as it was a sudden shift without any preparations. I enrolled three courses in that semester, lecturers of two courses used synchronous, and the third used asynchronous online teaching approaches. I tried to adjust to the new various teaching approaches by trying to be familiar with Zoom, the new live teaching platform, solving various problems I encountered during my online learning process, and exploring new online learning strategies. I still remembered my hotel room synchronous online learning experience when I was in a two-week medical isolation in the suburb of Guangzhou, my first landing site in China from the UK, which is over 2,000 kilometers away from my hometown in May 2020. Without consideration of the 7-hour jet lag, and the poor soundproof hotel room with dim light, the synchronous online learning only lasted less than ten minutes, and the last straw stopped my online learning was the poor WiFi signal as I could not bear a teaching with no screen picture at first, then no sound, and finally no connection at all.

Unlike my research respondents, being an international student, I faced more challenges from emotions of loneliness, worries and fears. Loneliness of being restricted in a small dorm room in a foreign country without communications with teachers and peers; worries about whether to stay in the UK or to return home, whether my international flight was cancelled again or not; fears of being infected with Covid-19 and being left alone in a seven-room dorm flat, all those loneliness, worries, and fears greatly affected my living and delayed my online learning and thesis writing in some sense.

C.6.2 Reflections on the influence of the Covid-19 pandemic on my decisions as a researcher

Though the Covid-19 pandemic was a great disaster bringing death, pains and fears to human beings, it was a pushing hand for the applications of mobile technology in education by changing classroom teaching to online teaching at all levels of education overnight throughout the world. I once participated in a scientific research programme led by my teacher to investigate the undergraduates' mobile apps in their College English learning when I was a third-year university student. Since then, I became interested and sensitive to the topics related to technology enhanced language learning. After I got my MA, I served as a part-time English teacher and I also used online teaching platform to assist my teaching, and encouraged my students to use English learning apps to help them to learn English.

When Covid-19 broke out in early 2020, and online teaching took the place of face-to-face teaching, I was in the second term of my EdD study, learning the course Advanced Research Methods and Proposal for the proposal writing of my EdD thesis. I noticed that the shift of the teaching approach to online worldwide was a perfect opportunity to do related research. Thus, I planned to conduct a study on the undergraduates' perceptions and strategies towards the Covid-19 pandemic at a Chinese university. Undertaking this study at the moment of course would be very timely and it would hit the requirement of originality very neatly as we were in the grip of these great changes.

As I have already lived through the experience of my research and would be aware of all the nuances surrounding my research, which will be very valuable when writing my

thesis. Although choosing something so up to date to do the research had its challenges in literature, that's also the reason why I wrote the thesis, the impact of real life can also influence on my study. Anyway, I planned to meet those challenges and made the decision to be a researcher. .

In conclusion, online teaching during the pandemic is an emergency measure, which forced classroom teaching to shift into online teaching overnight in all levels of education worldwide. This research has conducted a case study on Chinese undergraduates' perceptions of L2 learning and strategies in emergency online teaching. It not only displayed a panorama of emergency L2 online teaching and challenges encountered by L2 learners with quantitative and qualitative data, but gave expectations and recommendations for future online education. Although further research is needed to explore this topic and the research findings, it is hoped those findings will contribute data and evidences to the field, and throw light on the importance of exploring the effects of the undergraduates' perceptions of L2 learning and strategies on L2 learners' online learning.

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Appendix

Appendix 1

Participant Information Sheet (for students)

Name of department: School of Education

Title of the study: Chinese undergraduates' perceptions of L2 learning and strategies in emergency online teaching in the times of Covid-19

Introduction

Name of the researcher: Shuangchu Li

Email: shuangchu.li@strath.ac.uk

Status: Doctor of Education student

What is the purpose of this investigation?

This study aims to find out Chinese undergraduates' perception and strategies of emergency online English learning in the semester after the outbreak of Covid-19 in China in order to find out solutions of problems appearing in this emergency online learning process, provide references to Chinese educational policy makers and practitioners, and offer basis for further research on online English learning in tertiary education.

Do you have to take part?

You will be invited to share your online English learning perception and strategies after the Covid-19 outbreak by taking part in a questionnaire and/or by being interviewed (audio-recorded). Your participation is voluntary and you are free to withdraw from the study at any point without any consequences.

What will you do in the project?

a. You will be invited to take part in a questionnaire to answer questions about your online English learning perception and strategies during Covid-19. Clear instructions will also be given to guide the respondents to complete the questions without confusion. Most of the questions are in the form of 5-point Likert scale, what you will do is to make a choice. There are still some open-ended questions giving you

opportunities to fully express your ideas. And 10 of you will continue with the following:

b. You will be interviewed by the researcher. The researcher will be in touch through email to arrange a suitable time for the interview, with the location in the conference room of the School of Foreign Languages, HEUL. The duration of the interview might be between 20 to 30 minutes. The interview will be audio-recorded.

Why have you been invited to take part?

The participants are second year undergraduate English learners at H University learning English online by using different strategies and having different perception during Covid-19. This could be really helpful for them to take part in the research as second year students should have been accustomed to their university study, and formed their English learning strategies.

What are the potential risks to you in taking part?

There will be no potential risk during the online questionnaire and interviews. Because the questionnaire is an online one with the participants staying at their own place. For the interviews, they will be conducted in safe environment and that confidentiality is maintained in case they work from a public place (e.g. a café).

What happens to the information in the project?

Information in the project will be named using a pseudonym, participant will have a code name in the research project. The recording of the responses of the participants will be kept safely on Strathcloud. The orthographic transcriptions and the researcher's notes will also be saved on Strathcloud. All the data will be removed and destroyed after August 2023.

Please, read the attached Privacy Notice for Participants in Research Projects attached to this PIS.

The University of Strathclyde is registered with the Information Commissioner's Office who implements the Data Protection Act 1998. All personal data on participants will be processed in accordance with the provisions of the Data Protection Act 1998.

Thank you for reading this information – please ask any questions if you are unsure about what is written here.

What happens next?

Should you be happy to participate, please answer to the email sent and you will be asked to sign a consent form. The results will be used for the purposes of my dissertation. Upon request, you will obtain a synopsis of the results after I have completed the study.

Researcher contact details:

Name of the researcher: Shuangchu Li

Contact email: shuangchu.li@strath.ac.uk

Chief Investigator details:

Name: Dario Luis Banegas

Status: Lecturer

Department: School of Education

E-mail: Dario.banegas@strath.ac.uk

This investigation was granted ethical approval by the University of Strathclyde, School of Education Ethics Committee. If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

School of Education Ethics Committee
University of Strathclyde
Lord Hope Building
141 St James Road
Glasgow G4 0LT
Email: hass-edu-ethics@strath.ac.uk

Appendix 2

Participant Information Sheet (for teachers)

Name of department: School of Education

Title of the study: Chinese undergraduates' perceptions of L2 learning and strategies in emergency online teaching in the times of Covid-19

Introduction

Name of the researcher: Shuangchu Li

Email: shuangchu.li@strath.ac.uk

Status: Doctor of Education student

What is the purpose of this investigation?

This study aims to find out Chinese undergraduates' perception and strategies of emergency online English learning in last semester after the outbreak of Covid-19 in China in order to find out solutions of problems appearing in this emergency online learning process, provide references to Chinese educational policy makers and practitioners, and offer basis for further research on online English learning in tertiary education.

Do you have to take part?

You will be invited to share your students' online English learning experience as triangulation for the study of undergraduates' online English learning perceptions and strategies after the Covid-19 outbreak by being interviewed (audio-recorded). Your participation is voluntary and you are free to withdraw from the study at any point without any consequences.

What will you do in the project?

You will be interviewed by the researcher. The researcher will be in touch through

email to arrange a suitable time for the interview, with the location in the conference room of the School of Foreign Languages, H University. The duration of the interview might be between 30 to 40 minutes. The interview will be audio-recorded.

Why have you been invited to take part?

Because you are an experienced English teacher with 10+ years teaching experience.

What are the potential risks to you in taking part?

There will be no potential risk during the interviews because the interviews will be conducted in Room 739, Teaching and Research Building, a safe environment at H University, and that confidentiality is maintained without known by the third parties. When in a strict lockdown, the contingency plan is to use Zoom to conduct the interviews.

What happens to the information in the project?

All the information you provide during the questionnaire (and interview) will be safely stored (Strathcloud) and destroyed after August 2023. Your identity will be always protected through pseudonyms. Information in the project will be named using a pseudonym, participant will have a code name in the research project.

Please, read the attached Privacy Notice for Participants in Research Projects attached to this PIS.

The University of Strathclyde is registered with the Information Commissioner's Office who implements the Data Protection Act 1998. All personal data on participants will be processed in accordance with the provisions of the Data Protection Act 1998.

Thank you for reading this information – please ask any questions if you are unsure about what is written here.

What happens next?

Should you be happy to participate, please answer to the email sent and you will be

asked to sign a consent form. The results will be used for the purposes of my dissertation. Upon request, I am more than happy to share my dissertation with you.

Researcher contact details:

Name of the researcher: Shuangchu Li

Contact email: shuangchu.li@strath.ac.uk

Chief Investigator details:

Name: Dario Luis Banegas

Status: Lecturer

Department: School of Education

E-mail: Dario.banegas@strath.ac.uk

This investigation was granted ethical approval by the University of Strathclyde, School of Education Ethics Committee. If you have any questions/concerns, during or after the investigation, or wish to contact an independent person to whom any questions may be directed or further information may be sought from, please contact:

School of Education Ethics Committee

University of Strathclyde

Lord Hope Building

141 St James Road

Glasgow G4 0LT

Email: hass-edu-ethics@strath.ac.uk

Appendix 3

Questionnaire for Undergraduates' Emergency Online English Learning during Covid-19

Dear students at H University:

My name is Shuangchu Li and I am an EdD student in the School of Education at the University of Stratyclyde under the supervision of Dr. Dario Luis Banegas. This questionnaire is designed for the fulfillment of my EdD dissertation, entitled "Chinese Undergraduates' Perceptions of L2 Learning and Strategies in Emergency Online Teaching: A Case Study in a Central China University in Times of Covid-19". Specially, it is focusing on your emergency online English learning perception and strategies in facing the Covid-19, which may provide references to Chinese English teachers' teaching innovation, educational policy makers and practitioners, and offer basis for further research on online English teaching in tertiary education. The questionnaire has four parts, which should take no longer than 10 minutes to complete.

This questionnaire has been improved on the basis of the pilot survey, which some students have participated. Thank you very much.

All the answers you provide will be treated confidentially. All information obtained will be used for research purposes only. Participation is entirely voluntary and you can choose to withdraw at any time without negative consequences.

Thanks you very much for your help to the pilot survey and this questionnaire!

Please feel free to contact me on 0086-13027617371 or: shuangchu.li@strath.ac.uk in regards to any queries you may have, or my supervisor: dario.banegas@strath.ac.uk.

Part I: Basic Personal Information of the Participants

Directions: Participants are required to fill in the following blanks with your personal information

1. Gender:

a. male

b. female

2. Grade:

a. first year student

b. second year student

c. third year student

d. fourth year student

3. Hometown of the participants

a. Henan local residents

b. Non local residents

4. Age:

a. 16 or below

b.17-18

c.19-20

d.21-22

e.23-24

f.25 or above

5. Your age to learn English:

a. 5 or below

b. 6-8

c. 9-12

d. 13-15

e. above 15

6. Major:

a. economy

b. management

c. science and technology

d. arts

e. law

7. The education level of your father

a. doctor

b. master

c. bachelor

d. high school graduate

e. junior middle school graduates

f. lower than junior middle school

8. The educational level of your mother

a. doctor

b. master

c. bachelor

d. high school graduate

e. junior middle school graduates

f. lower than junior middle school

9. The profession of your father:

10. The annual income of your family

a. CNY 0—29,999

b. CNY 30,000--49,999

c. CNY 50,000—99,999

d. CNY 100,000--14,999

e. CNY 150,000--19,999

f. CNY 200,000 or above

11. Your scores of Gaokao (National Entrance Examination for Universities):

12. Your scores for College English Test Band 4 (CET-4, if you have taken):

13. Your scores for College English Test Band 6 (CET-6, if you have taken):

14. Your scores for Test for English Majors Band 4 (TEM-4, if you have taken):

15. Your College English Scores of last semester (or scores of comprehensive English/comprehensive Business English for English majors or for Business English majors):

16. Your College English Scores of this semester (or scores of comprehensive English/comprehensive Business English for English majors or for Business English majors):

17. If you are interested in the following interviews, please leave your QQ number/ or your email address:

Part II: Status of the Participants' Emergency Online English Learning during Covid-19

Directions: Participants are required to make a choice from the following questions or statements.

18. Do you have the online learning experience?
    a. yes
    b. no
19. If yes, what kind of courses do you have the online learning experience (multiply choice)?
    a. courses for general education
    b. courses for professional education
20. If yes, in how many courses do you experience online learning?
    a. 0
    b. one
    c. two
    d. three or above
21. The general situation of your online learning experience:
    a. limited to learn video courses provided by an e-learning platform
    b. Not limited to the courses of an e-learning platform, teachers also ask students to learn online following their instructions
    c. face-to-face teaching, supplemented by students' online learning
    d. students' online learning, supplemented by face-to-face teaching
22. How do you access to the Internet during the emergency online English learning?
    a. by using self-owned Wifi signal
    b, be a Wifi squatter to get free Wifi signals from others
    c. by using mobile phone data traffic
    d. others:
23. Which device do you use most frequently in your emergency online English learning?
    a. laptop
    b. desktop
    c. smart phone

d. tablet

e. others:

24. Which online platform/ or APP have been used by your English teacher to offer you emergency online English classes (multiple choice)?

a. QQ

b. WeChat

c. Zoom

d. Tencent Meeting

e. XueXiTong

f. DingTalk

g. xuetangx.com

h. RainClassroom

i. Icourse

j. other:

25. Which online platform/ or APP does your English teacher use most frequently to offer you emergency online English classes (single choice)?

a. QQ

b. WeChat

c. Zoom

d. Tencent Meeting

e. XueXiTong

f. DingTalk

g. xuetangx.com

h. RainClassroom

i. Icourse

j. other:

26. How do you know the operation of the platform mostly used by your English teachers?

a. grope for knowing the usage by myself

b. search for the usage of the platform in the search engine

c. through reading the user guide shared by English teachers

d. asking for peers

27. What is your judgement on the platform used most frequently by your English teachers?
    a. very unsuitable
    b. unsuitable
    c. acceptable
    d. hard to accept
    e. unable to accept
28. How does your English teacher give emergency online English courses?
    a. live sessions given by the English teacher according to the class timetable
    b. students watching pre-recorded videos by the English teacher plus his/her lecturing and coaching according to the timetable
    c. students watching videos in online resources made by other English teachers without their own English teacher's coaching according to the timetable
    d. students watching videos in online resources made by other English teachers together plus their own teacher's coaching according to the timetable
    e. self-learning of videos, micro-lectures and other learning resources uploaded by the English teacher, plus his/her regular coaching according to the timetable
    f. if the teaching method of your English teacher is not mentioned, briefly describe your English teacher's teaching method during the emergency online English learning:
29. Which online teaching method do you prefer?
    a. live sessions given by the English teacher according to the class timetable
    b. students watching pre-recorded videos by the English teacher plus his/her lecturing and coaching according to the timetable
    c. students watching videos in an online teaching platform made by other English teachers without their own teacher's coaching according to the timetable
    d. students watching videos in online resources made by other English teachers together plus their own teacher's coaching according to the timetable
    e. self-learning of videos, micro-lectures and other learning resources uploaded by the English teacher, plus his/her regular coaching according to the timetable
    f. if the teaching method of your English teacher is not mentioned, briefly describe your English teacher's teaching method during the emergency online English

learning:

30. How do you contact and seek help from your English teachers in your online English learning?

a. sending emails

b. sending messages in English learning WeChat class group

c. sending messages in English learning QQ class group

d. sending private letter to English teacher through WeChat or QQ

e. by telephone

f. others:

31. Apart from having online English classes, what are the method that you use most frequently to learn English after class?

a. reading English books

b. using English learning apps

c. watching English videos

d. listening to radio programmes

e. others:

32. How many English learning apps installed in your mobile phone to assist your English learning?

a. 0

b. 1-2

c. 3-5

d. over 5

33. How many English learning apps that you use more than once every week?

The number is:

a. 0

b. 1-2

c. 3-5

d. over 5

34. What kind of English learning apps that you most frequently use?

a. apps for English reading

b. apps for English listening

c. apps for English speaking

d. apps for English writing

e. apps for English dictionaries

f. others:

35. What is the average time for you to use all the electronic products (including smartphone, laptop, desktop, and tablet, etc.) to learn English online apart from the time of the timetable every day?

a. 0 hour

b. within half an hour

c. half an hour -- 1 hour

d. 1hour --2 hours

e. over two hours

36. How do you evaluate your online technological abilities?

a. much worse / not confident

b. worse /a bit confident

c. general / confident

d. better / more confident

e. much better / the most confident

37. How do you evaluate your English teachers' technological abilities for giving online English classes?

a. much worse / not confident

b. worse /a bit confident

c. general / confident

d. better / more confident

e. much better / the most confident

38. Concerning the aspect of students' English learning, how do you evaluate online English learning compared to classroom learning?

a. much worse than classroom teaching

b. worse than classroom teaching

c. the same as classroom teaching

d. better than classroom teaching

e. much better than classroom teaching

39. Concerning the aspect of teacher's online teaching, how do you evaluate online

English teaching compared to classroom teaching?

a. much worse than classroom teaching

b. worse than classroom teaching

c. the same as classroom teaching

d. better than classroom teaching

e. much better than classroom teaching

40. What do you do when you encounter some technical problems during your online English learning?

a. searching the methods online to solve problems by myself

b. trying to solve the problems by oneself

c. asking peers or teachers for help

d. leaving it over there

41. How do you communicate and collaborate with your peers during online English learning?

a. no cooperation with peers

b. through social apps like WeChat or QQ

c. sending emails

d. making phone calls

e. others:

42. Does the emergency online English learning influence your computer skills?

a. having much negative influence

b. a bit negative influence

c. no influence

d. improved in some sense

e. improved greatly

Part III: Participants' Online English Learning Perceptions

Directions: All the following questions use 5-point Likert scale with responses ranging from 1-5 signifying strongly disagree, disagree, neutral, agree and strongly agree respectively. Participants are required to make a choice among the five scales.

43. I enjoy learning English online.

1 2 3 4 5

44. I feel that learning English online is more motivating.

1 2 3 4 5

45. I can concentrate on my online English learning.

1 2 3 4 5

46. I can easily access the Internet resources when needed for my English studies.

1 2 3 4 5

47. I am confident in mastering usages of online learning software.

1 2 3 4 5

48. I am confident in using the Internet to search and gather information for online English learning.

1 2 3 4 5

49. I am confident in having the abilities to master online learning software.

1 2 3 4 5

50. I have improved my computer and network abilities in online English learning.

1 2 3 4 5

51. I can carry out my online English learning plans.

1 2 3 4 5

52. I have high expectations for my online English learning.

1 2 3 4 5

53. I am able to manage my online study time effectively during Covid-19.

1 2 3 4 5

54. I can direct my own online English learning during Covid-19.

1 2 3 4 5

55. I am confident in my ability in online English learning.

1 2 3 4 5

56. I can direct my online English learning progress.

1 2 3 4 5

57. I am not distracted by other online activities when learning online.

1 2 3 4 5

58. I repeated the online instructional materials on the basis of my needs.

1 2 3 4 5

59. I feel confident in using online tools to effectively communicate with others.

1 2 3 4 5

60. I am willing to express my ideas and feelings online.

1 2 3 4 5

61. I am willing to actively communicate with my classmates and instructors online.

1 2 3 4 5

62. I seek help online from instructor and classmates when facing learning problems.

1 2 3 4 5

63. The Covid-19 shifted English teaching from face-to-face into online, the emergency online English teaching team during Covid-19 is trustworthy.

1 2 3 4 5

64. I think the online teaching methods used by English teachers during Covid-19 are trustworthy.

1 2 3 4 5

65. I think the online English learning groups during Covid-19 are trustworthy.

1 2 3 4 5

66. I think online English learning during Covid-19 is trustworthy.

1 2 3 4 5

67. In the long run, online English learning is trustworthy.

1 2 3 4 5

68. Compared with traditional classroom teaching, the online English teaching has more methods and colorful contents.

1 2 3 4 5

69. Compared with traditional classroom teaching, the online English teaching can provide a better learning experience.

1 2 3 4 5

70. Students can learn much from online English learning than that from traditional classroom teaching.

1 2 3 4 5

71. Though having more advantages, online teaching at universities as a whole is not mature.

1 2 3 4 5

72. At present, online teaching cannot replace the traditional classroom teaching, but it is a useful supplement.

1 2 3 4 5

73. In the long run, online learning will not completely replace classroom teaching.

1 2 3 4 5

Part IV: Participants' Online English Learning Strategies

Directions: All the following statements use 5-point Likert scales with responses ranging from 1-5 signifying strongly disagree, disagree, neutral, agree and strongly agree respectively. Participants are required to make a choice among the five scales.

74. I can concentrate my attention to online English learning.

1 2 3 4 5

75. I can intentionally install some English learning apps to help my English learning.

1 2 3 4 5

76. I can use search engines to search for online English resources.

1 2 3 4 5

77. I manage to complete the assignments by teachers in my online English learning without feeling unduly stressed.

1 2 3 4 5

78. I have my own online English learning plans and objectives.

1 2 3 4 5

79. I have my own frequently used English learning APPs and use them to learn English.

1 2 3 4 5

80. Through a term's online English learning, I can notice my progress and weakness in English learning.

1 2 3 4 5

81. I try to improve the online English learning methods initiatively.

1 2 3 4 5

82. I try to arouse my interest in online English learning.

1 2 3 4 5

83. I try gradually to develop a positive attitude towards online English learning.

1 2 3 4 5

84. I can gradually build up my confidence in online English learning.

1 2 3 4 5

85. I try to overcome my anxiety in my online English learning.

1 2 3 4 5

86. I positively try to use new English learning Apps introduced by peers or teachers.

1 2 3 4 5

87. When I communicate with others online, I can use internet emoticons to enrich the contents of what I would like to express.

1 2 3 4 5

88. When enjoying English videos online, I can guess the meaning of words or sentences through the pictures and plots.

1 2 3 4 5

89. When finding useful English learning materials online, but unable to finish, I can download and save them first.

1 2 3 4 5

90. I use more than one Apps to help memorize English words and contents learned in English class.

1 2 3 4 5

91. When learning new knowledge in online English learning, I will associate it with what I have learned.

1 2 3 4 5

92. I can actively organize and summarize the English knowledge I have learned.

1 2 3 4 5

93. I often review my English knowledge to deepen my memory.

1 2 3 4 5

94. I often use social apps, including WeChat, QQ to share English learning materials, including English songs, films and videos with peers.

1 2 3 4 5

95. I will spend some time to check or read the English learning materials in social apps.

1 2 3 4 5

96. When I have difficulty with online English learning, I try to seek help from English teachers or peers.

    1 2 3 4 5

97. I can use English to take part in some online activities, including handing in English exercises, taking part in group activities and expressing opinions.

    1 2 3 4 5

Appendix 4

Interview Questions (for students)

1. After entering into the university, did you use computer applications to assist your English learning before Covid-19? If yes, what were your perceptions for using them? How did you use them? What were your learning strategies and purposes?

2. How did you know those computer applications? Please compare those you commonly used ones. Did you reach your purposes for using them?

3. Did you have the online learning experience before Covid-19? Please describe the situation at that time? How did the

4. What were your perceptions for online English learning during Covid-19? What are your attitudes towards the online learning?

5. What learning strategies did you use to assist your online English learning?

6. How did the teachers teach English online during Covid-19? What online computer applications or teaching platforms did they use to carry out their teaching?

7. How did you know the usage of those computer applications used during Covid-19? Did you have any training? What technical help did your teacher give you in your emergency online English learning?

8. What challenges or frustrations have you encountered in your emergency online English learning?

9. How do you evaluate your online emergency English learning?

10. Can you recall any moments that you felt frustrated and successful during your online English learning?

11. What are your suggestions for the improvement of online English learning in the future?

12. For you, what should be an ideal way for teacher’s online English teaching in the future?

Appendix 5

Interview Questions (for teachers)

1. Through your observation, how did your students use computer applications to assist their English learning before Covid-19?
2. Did you use online computer applications before Covid-19? Did you have any technological training?
3. Could you briefly introduce your emergency online English teaching during Covid-19?
4. How did your students learn English online during Covid-19?
5. What were the online computer applications that you used in your English teaching during Covid-19?
6. How did you know the usage of those emergency computer applications? Did you have any training?
7. Among the computer applications you used in your emergency online English teaching, which one or ones did you prefer, why?
8. What were your students' attitudes towards emergency online English learning?
9. What challenges or frustrations have your students encountered in their emergency online English learning?
10. How did you evaluate students' online emergency English learning?
11. What are your suggestions for the improvement of students' online English learning in the future?
12. For you, what should be an ideal way for your online English teaching in the future?

Appendix 6

Consent Form for participants of case study

Name of department:	School of Education

Title of the study:	Chinese undergraduates' perceptions of L2 learning and strategies in emergency online teaching in the times of Covid-19

- I confirm that I have read and understood the participant information sheet for the above project and the researcher has answered any queries to my satisfaction.
- I understand that my participation is voluntary and that I am free to withdraw from the project at any time, up to the point of completion, without having to give a reason and without any consequences. If I exercise my right to withdraw and I don't want my data to be used, any data which have been collected from me will be destroyed.
- I understand that I can withdraw from the study any personal data (i.e. data which identify me personally) at any time up until the data is subject to analysis.
- I understand that anonymised data (i.e. data which do not identify me personally) will only be used for the completion of the researcher's EdD degree.
- I understand that any information recorded in the investigation will remain confidential and no information that identifies me will be made publicly available.
- I consent to being a participant in the project
- I consent to engaging in an online questionnaire and / or an interview (audio-recorded) as part of the project.

By participating in this investigation, I understand that I will take part in an online questionnaire and /or one (and possibly a follow-up) 20-30 minutes' face-to-face,

semi-structured interview with the researcher. In case of a strict lockdown, the contingency plan is to use Zoom to conduct the interviews. Dates and times of the interviews will be arranged with the researcher to suit both parties.

Print Name:_____

Signature of Participant:_____ **Date:**_____

Appendix 7

Invitation Letter (for students)

8 Oct. 2020

Dear students at H University:

My name is Shuangchu Li and I am an EdD student in the School of Education at the University of Stratyclyde under the supervision of Dr. Dario Luis Banegas. I am writing to invite you to participate in a research in the form of questionnaire and / or an interview.

My EdD dissertation is entitled “Chinese Undergraduates’ Perceptions of L2 Learning and Strategies in Emergency Online Teaching: A Case Study in a Central China University in Times of Covid-19”. Specially, it is focusing on your emergency online English learning perception and strategies in facing the Covid-19 in last semester, when online English learning changed from an assisted role to a leading one in your English learning in order to provide references to Chinese educational policy makers and practitioners, and offer basis for further research on online English learning in tertiary education. You are invited to take part in this research as you are second year students who have been accustomed to your university study, and formed your English learning strategies.

You will be invited to take part in an online questionnaire to answer questions about your online English learning perception and strategies during Covid-19. The questionnaire should take about 15 minutes to complete. And 10 of you may be invited for an interview with me. I will be in touch through email to arrange a suitable time and place for the interview. The duration of the interview might be between 30 to 40 minutes. The interview will be audio-recorded.

The information you supply by means of the questionnaire and interview will be treated as confidential and kept in the Strathcloud for at least three years form the completion of the project after which it will be destroyed. To protect your anonymity, all data will be pseudo-anonymised. Access to the questionnaire and interview data is restricted to

myself. Completion of the questionnaire is voluntary. If you decide that you no longer want to be involved in this study you are free to withdraw at any time without adverse consequences.

Please feel free to contact me at: shuangchu.li@strath.ac.uk, in regards to any queries you may have, or my supervisor: dario.banegas@strath.ac.uk.

Yours sincerely
Shuangchu Li

Appendix 8

Invitation Letter (for English teachers)

8 Oct. 2020

Dear teachers at H Universities:

I am Shuangchu Li, an EdD student in the School of Education at the University of Stratyclyde under the supervision of Dr. Dario Luis Banegas. I am writing to invite you to participate in a research in the form of an interview.

My EdD dissertation is entitled “Chinese Undergraduates’ Perceptions of L2 Learning and Strategies in Emergency Online Teaching: A Case Study in a Central China University in Times of Covid-19”. Specially, it is focusing on undergraduates’ emergency online English learning perception and strategies in facing Covid-19 in last semester, when online English learning changed from an assisted role to a leading one in students’ English learning in order to provide references to Chinese educational policy makers and practitioners, and offer basis for further research on online English learning in tertiary education. You are invited to take part in this research as you are English teachers of some of the second-year students who have been my participants of the research.

You will be invited to take part in an interview with me. I will be in touch through email to arrange a suitable time and place for the interview. The duration of the interview might be between 30 to 40 minutes. The interview will be audio-recorded.

The information you supply by means of the interview will be treated as confidential and kept in the Strathcloud for at least three years form the completion of the project after which it will be destroyed. To protect your anonymity, all data will be pseudo-anonymised. Access to the interview data is restricted to myself. Completion of the questionnaire is voluntary. If you decide that you no longer want to be involved in this study you are free to withdraw at any time without adverse consequences.

Please feel free to contact me at: shuangchu.li@strath.ac.uk in regards to any queries you may have, or my supervisor: dario.banegas@strath.ac.uk.

Yours sincerely
Shuangchu Li