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Self-Regulated Learning for Chinese, Adult Language Learners: An Intervention Study in a
Blended Learning Environment

by

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Abstract

Blended learning is a well-established learning design providing much needed accessibility to learning resources and improved pedagogy through technological means. The flipped classroom model is one approach that can help promote engagement through the prioritization of learner-led discussions and collaborative work in the classroom while extending access to language learning practice outside of class time (Bergman & Sams, 2012; Forsey et al., 2013; Johnson & Marsh, 2016). Implicit within the design, however, is the introduction of non-linear access to information which often requires learners to assume more responsibility for their learning process, deploying self-regulated learning strategies to achieve their objectives (Perez-Alvarez et al., 2018).

My dissertation explores the increased need for self-regulated learning experienced by Chinese, adult English language learners for achieving success in a blended, flipped learning environment. As a design-based research study, my focus was on the overarching objective of the development of an intervention. This objective was addressed in three, iterative stages of research involving the analysis of the context, and the design, development, and subsequent evaluation of prototypes. This process led to the creation of some initial design principles that were used to guide the development of a digital app that was deployed to a small group of participants. During the implementation and evaluation of the app-based intervention, an additional research objective relating to achievement goal orientation was adopted to explore the types of goals that language learners with high persistence were likely to pursue. Multiple, qualitative data sources were used to address the research questions including document analysis, focus groups, interviews, and field observations.

Findings that emerged from the study contributed to the refinement of design principles and provided insight for subsequent development of the intervention. Findings suggested that personalized instructor feedback fulfilled an important emotional function for learners in this context. Enabling a dialogical feedback process between participants and the instructor helped engage learners in more thoughtful self-assessment using external feedback including data visualizations. This process contributed to the development of trust in the source of the feedback, which was more likely to lead to a change in behaviour. Additional insights concerning achievement goals were derived from the interviews, suggesting benefits of multiple different achievement goal profiles could be found. These findings lend further support to the value of using qualitative methods for investigating learner goal-orientations.

This study included a small group of learners who demonstrated high persistence. It was recommended that future research involve a larger sample of learners to explore variations in response to the intervention to improve the effectiveness of the design and implementation.

Preface

This thesis is original, unpublished, independent work by the author, William Dekker. The study reported in Chapters 4 and 5 were covered by Ethics Certificate number REB19-0086, issued by the University of Calgary Conjoint Health Ethics Board for the project “Supporting Self-Regulated Learning in Adult Language Study: Developing Student-Facing Analytics from Learning Activity in Technology-Enhanced Learning Environments” on June 27, 2019.

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Chapter 1: Introduction

Attempting to learn a new language as an adult is a challenging task, one that many choose to undertake in the context of a language school due to the absence of readily available language resources. Globally, The British Council estimated a decade ago that there were 1.2 billion people learning English as either a second or foreign language (Knagg, 2013) while recent estimates list China as the largest English-speaking country with 400 million learners and the value of the language training market at 12.3 billion USD (British Council China, n.d.). One of the main reasons for this staggering value is the now ubiquitous need for English across most professions, as EF Education First (EF, 2019) argued in its annual *English Proficiency Index* report. The increasing demand for language training in China has resulted in rapid growth, with a fragmented market including many overseas and local providers. Some estimate the total number of private language schools at around 50, 000 (Muslimin, 2017). The competition to attract new students has led to experimentation with various learning designs aimed at increasing flexibility for adult learners who have tried and failed to fit a traditional school-based course into their busy lives. Online education companies have been appearing in many variations, hoping to capitalize on the increasing acceptance of digital and mobile learning by a more tech-savvy generation of adult learners. An additional constraint that can be overcome online is the ability to reach a highly diverse population that is spread across such a large country.

To address the challenges of the adult language learning market in China, the language training organization where I am currently employed and have chosen to situate my study has introduced an innovative learning design. The basis for the learning design is the desire to provide flexibility to adult learners, which is seen as a key constraint to the success of the course

offering. The institution had previously offered more traditional courses to Chinese consumers that were limited to physical centres with a fixed cohort. However, these courses proved unpopular as most learners found it difficult to maintain a regular schedule. The new blended model was first implemented in Shanghai and Beijing in 2006, and later expanded to all cities where the institution is now operating.

The course design at its core is flexible to enable busy adult learners to best incorporate language learning into their schedules. In response to this requirement, learning pathways were designed to be customizable along various axis including sequencing, pacing, and selection. Learners can vary their study schedule between attending live, in-person group lessons and online one-to-one lessons with a teacher. Additionally, learners do not join courses in regular class cohorts, which allows them to progress at their own pace. Instead, they purchase a subscription to study at the institution which they can activate and use when they wish. They may elect to attend a lesson on Monday at 7pm one week, for example, and choose a completely different day/time the following week. They may also choose to miss a week due to a busy period of work, etc. There is additional flexibility to select the mode of delivery (e.g., online, or offline) and lesson topic.

While the many ways of customizing the course provided by the institution make it easier for learners to engage with language practice, to be successful the learning design does require a significant amount of independence. Learners, for example, are largely expected to complete their study planning process with minimal assistance. Additionally, because of the extensive opportunities for customization within the course, learners will regularly encounter new classmates and instructors in their lessons. Due to the flexible study schedules, instructors and learners tend not to develop strong social relationships that might otherwise be found in a more

traditional learning environment. Instructors are also limited in their ability to provide relevant, targeted guidance to learners over time to help assist with their study planning. Feedback provided is also concentrated around the achievements and behaviours observed during the individual lessons and other supervised sessions.

While the learning design of the institution does include substantial flexibility, one important design constraint centres around the synchronous lessons provided using a flipped learning model. In a flipped classroom, the design starts with answering the question “what is the best use of my face-to-face class time?” (Bergmann, 2012). In the language training organization where I have situated my study, the answer to that question was to prioritize an interactive, task-based approach where learners participate in meaningful language use completing activities that mirror the authentic applications of language, they are likely to encounter in their daily lives (Ellis, 2003; Nunan, 2004; Skehan, 2003).

Flipped learning designs are generally defined as including two kinds of activities: (1) computer-assisted, out-of-class instruction; and (2) interactive, in-class group learning activities (Bishop & Verleger, 2013). Students access learning content before class, then spend time with peers in class deepening their understanding of the content (Baker, 2000; Mazur et al., 2015). In a language learning context, the function of the technology is to support the presentation and practice of new language outside of class time, extending the access to language learning beyond the limitation of the classroom. This approach can help promote engagement through learner-led discussions, collaborative work, and problem solving in the classroom where learners are gathered. Learner involvement in the class, where the traditional presentation and practice of core language and content happens online, can provide opportunities for real-world interactions around topics of their own interest during face-to-face classroom time.

The potential benefits of the flipped classroom model are many, as acknowledged in multiple reports (Bergman & Sams, 2012; Forsey et al., 2013; Johnson & Marsh, 2016). However, implicit within the introduction of non-linear access to information, is an expectation that learners will assume more responsibility for their learning process, deploying self-regulated learning (SRL) strategies to achieve their objectives (Bol & Garner, 2011; Perez-Alvarez et al., 2018). Previous research focused on adult learners has demonstrated that they are often willing to take more responsibility for their learning and have the capacity to plan their study time accordingly (Lin & Wang, 2018). Influenced by prior academic and life experiences, more mature learners have also been found to use learning strategies that are aimed at deeper, comprehension-focused approaches to learning in higher education or more formal learning contexts (Donaldson & Graham, 1999; Justice & Dornan, 2001).

Turning to more informal learning, the importance of SRL in online learning environments has been demonstrated in recent research (Adam et al., 2017). Adult learners who are better able to self-regulate their learning, for example, are more likely to succeed in completing their course (Kizilcec et al., 2017; Siadaty et al., 2012). According to Bernt and Bugbee (1993) however, despite their increased capacity for SRL, adult learners involved in less structured learning “often fail to monitor their progress and comprehension of course material, resulting in less-than-optimal use of limited time and effort” (p. 100). This is especially relevant in the context of this research where the learning design includes flexible learner cohorts, minimal guidance from an instructor during the course, and flexibility of schedules over time. In response, it has been recommended that courses designed for adult learners should seek to cultivate SRL skills within the context of the learning design (Lin & Wang, 2018).

Designing an Intervention to Support Self-Regulated Language Learning

While fulfilling the role of the researcher in this study, I brought significant experience as a practitioner having worked in the field of English language learning in Asia for more than twenty years. Teaching and researching language learning in China has enabled me to develop a deeper understanding of the challenges that adult learners encounter, in addition to the great joy experienced when people from different cultures are able to make a connection despite their differences.

Throughout my journey in educational research, I have adopted an approach that I believe is best described as rooted in pragmatism where the researcher is guided by questions that lead to the selection of methods that best suit their needs (Teddlie & Tashakkori, 2011). This belief has evolved over my professional career, beginning with my early classroom research to the problem-solving orientation I maintain today. As an applied social researcher, I have practiced developing proposals and solutions that have impacted large groups of people, using the nature of the phenomena being investigated to ground my decisions. I would argue this was how my orientation in pragmatism has evolved, in line with the how pragmatists “place emphasis on the importance of research questions, the values of experiences, and practical consequences, action, and understanding of real-world phenomena” (Creswell & Clark, 2018, p. 527). The mixed-methodological tools available to me in selecting design-based research methodology meant that I was able to place the emphasis on my research questions while prioritizing the value of experiences and practical consequences. I believe this paradigmatic orientation and selection of methodologies has enabled me to address the concerns and opportunities presented in my local context and in my research.

I have been employed in the institution where I conducted the study for more than ten years, with roles and responsibilities in learning design for blended and online learning environments. In this capacity, I work as part of a multi-functional design team that includes people with expertise across many fields. These fields can largely be grouped into systems design, user design, and learning design. The output from this team is generally in the form of digital learning tools which could be applied to any one of several learning contexts including self-study or classroom use, online or in brick-and-mortar schools, or on multiple devices such as personal computers, mobile phones or tablets.

The rationale for this study was born out of the desire to extend our work to explore solutions for supporting self-regulation in the context of adult language learning in blended and online learning environments. Developing tools to support self-regulated language learning has become a priority in response to both a preliminary review of the literature and our in-company research.

While this study was designed specifically to address my professional context, blended and online language learning solutions are being deployed widely across many learning environments (Grgurovic, 2017; Whittaker, 2013). As these programs proliferate, providing access to learning resources that were previously inaccessible, they also introduce new learning interactions requiring learners to take greater responsibility for managing their learning. From my experience, which is also consistent with the literature, in the absence of support many students struggle to self-regulate their learning (Adam et al., 2017; Kizilcec et al., 2017; McLaughlin et al., 2013; Sun et al., 2016).

Conceptualizing Self-Regulated Learning

Understanding how students are active agents in the learning process is facilitated through the guiding framework provided by the field of SRL. Although there are some divergent theoretical perspectives, there seems to be general consensus regarding the underlying assumptions and an operational definition (Zimmerman, 2008a). Self-regulated learning is generally conceived as a process related to the regulation and monitoring of cognition, behaviour, and motivation (Winne, 2005; Zimmerman, 2006). The importance of goal setting has been emphasized as have other related processes including adopting strategies to achieve goals, managing resources and time, extending effort, responding to feedback, and producing products (Boekaerts & Corno, 2005). In the process model employed in this research Zimmerman (1989, 2000) depicted these processes occurring across three cyclical phases of forethought, performance, and self-reflection.

While research has identified self-regulation as an important factor for success in the language training organization, there remains inadequate support for the deployment of learners' SRL strategies. Research on SRL in language learning has led to the prioritization of training and supporting the development of the highly integrated processes of goal setting and self-assessment. These design priorities are evidenced by the parallel development of language learning portfolios first in Europe as the English Language Portfolio followed by Linguafolio in the United States. Both interventions have been successfully implemented and widely reviewed across various language learning classrooms (see Moeller et al., 2012; Scharer, 2008; Ziegler, 2014; Ziegler & Moeller, 2012). One key consideration, however, is the importance of the role of the instructor in helping to facilitate both the introduction and on-going use of the portfolio. Instructors are expected to help learners derive personal goals from the Can-Do statements, for

example, a critical step in being able to monitor and assess the progress of their learning (Little et al., 2011; Moeller et al., 2012). However, given the local constraints of the learning design in the language training institution where this study was conducted, any intervention would have required more flexibility than could have been accommodated for by the portfolio design considerations.

A technological solution seems to be the best option to be able to provide support for SRL due to the nature of the learning design and the scale required by the institution. Recent research in online learning has also found self-regulation strategies such as goal setting and strategic planning together with time management as having influence on performance and the fulfillment of goals (Kizilcec et al., 2017; Lee et al., 2019; Perez-Alvarez et al., 2018). In these blended learning environments, learning analytics offers the potential to provide useful feedback to learners, a key element in supporting successful self-regulation (Buter & Winne, 1995; Hattie & Timperley, 2007). Learning analytics is described as “the use of intelligent data, learner-produced data, and analysis models to discover information and social connections, and to predict and advise on learning” (Siemens, 2010, para. 2). Designed and used effectively, data can be presented back to learners in feedback interventions to help increase their awareness, reflection, and ability to self-regulate (Matcha et al., 2019; Teasley, 2017). These data can also be usefully leveraged by an institution to augment the instructor’s ability to provide personalized feedback at scale (Pardo et al., 2017).

Methodological Choices

The literature includes many examples of interventions designed for supporting SRL in online contexts (see Perez-Alvarez, et al., 2022 for a recent review). Although tools have been developed to support learners’ SRL, research has pointed out that the evaluation of existing tools

has generally been limited, focusing on usability and usefulness (Bodily et al., 2017; Jivet et al., 2018; Schwendimann et al., 2017). Matcha and colleagues (2019) in their review of learning analytics-based interventions also indicated that designs did not appear to be based on learning theory, nor did they offer suitable support for metacognition. Another observation concerns the absence of detailed descriptions of the interventions related to how SRL strategies are supported through interaction with the tool (Perez-Alvarez et al., 2018). The impact of the various tools on the SRL strategies they support has not been well addressed, which presents a research opportunity to identify and review key characteristics and further the development of design principles.

Connecting intervention designs with the features and related models of SRL is critical for tracking and evaluating the impact of interactions with the tool on learner self-regulation. Establishing the association between tool functionalities and the process of SRL they support is central to the design process (Perez-Alvarez et al., 2022) and thus well suited to a design-focused methodology. Design-based research (DBR) combines “research, design, and practice into one process, resulting in usable products that are supported by a theoretical framework” (Bowler & Large, 2008, p. 39). Choosing DBR and employing an iterative design process was important for testing different functionalities and the selection and development of features within the complexity of a real-world setting. It also served as an opportunity to address the calls for further research of SRL processes in understudied learning contexts, such as adult language learning (Usher & Schunk, 2018). The absence of naturalistic research was a common limitation observed in the literature where many designs were prototyped in controlled, experimental settings but never evaluated within the actual learning environment (Perez-Alvarez et al., 2022). In this study, data were also captured and used to develop, and evaluate preliminary design

principles through each cycle of development, and to assist with further refinement of the intervention design in the specific context within which the tool would later be implemented.

The process of iteration in the research that is inherent in DBR (Wang & Hannafin, 2005) provided sufficient flexibility to be able to adapt to an issue that emerged as part of the response to the Covid19 pandemic. In addition to supporting the SRL strategies of task goal setting, self-assessment and time management, self-motivation beliefs, was added to the conceptual framework. Investigating the reasons for engaging in learning or achievement goal orientations was adopted as an analytical framework to explore and develop a model that could later be employed as part of the future evaluation of the impact of the tool. Important work has been done on promoting the adoption of learning focused achievement goals in educational environments through design and intervention (Ames, 1992; Elliot & Hulleman, 2017; Urdan, 2010) and future work on the intervention will seek to extend this research. This phase of implementation would take place outside of the study reported on in this document.

Including the reasons why an individual chooses to pursue learning enables the integration of achievement motivation literature into models of SRL because it is concerned with “the what, why and how individuals are motivated to achieve in different settings” (Pintrich, 2000a, p. 473). Proactive, self-regulated learners achieve success by setting task goals and taking action towards achievement of their target (Zimmerman, 2008b). The purpose or reasons for pursuing different goals, however, have been found to foster more or less adaptive behaviour in achievement situations.

While a substantial body of research on achievement goals has been developed over the past 30 years, there are still many open questions concerning the value, measurement and even conceptualization of achievement goals (Urdan & Kaplan, 2020). The assortment of goal

orientations that most accurately embody the learners' purpose for studying appears to remain unclear and has led some to call for further research where learners "were asked to describe their goals in their own words" (Brophy, 2005, p. 170). Previous research on achievement goals has been conducted using closed-response, self-report surveys where goals have been defined in advance and investigated using psychometric techniques (Kaplan & Maehr, 2007). Qualitative research, however, has revealed that learners describe their goals using a wide variety of patterns and frequencies, which may be omitted in the completion of a survey (Dowson & McInerney, 2001, 2003). In addition, much of the research has been conducted in either K-12 or university settings (Lee & Bong, 2019). The present study employed a combination of qualitative methods of data collection including observation and interviews to facilitate a deeper investigation of the reasons the adult participants gave for pursuing English studies.

Purpose and Research Questions

This study addressed the increased need for self-regulated language learning experienced by adult Chinese learners for achieving success in a blended learning environment. As a design-based research study, my focus is on the overarching objective of the development of an invention guided by the following research question:

What are the characteristics of an intervention for promoting self-regulated learning which will support Chinese adult language learners in a non-linear, blended learning environment at scale?

This question was addressed in three, iterative stages of research involving the analysis of the context, and the design, development, and subsequent evaluation of prototypes. In stage 1 of the research, two questions were used to guide the initial phase of analysis and exploration:

How was self-regulated learning in the institution supported at the beginning of the research period?

What were the data and technological opportunities and constraints?

Stage 2 of the research was largely centred around the design and construction of the intervention, using the initial design principles that were generated from the earlier research phase. For this phase, the question used to shape the research activity was:

How can Chinese adult learners be assisted with self-regulated language learning in the institution at scale given the data and technological opportunities and constraints?

The output from stage 2 led to the creation and development of a digital app, that was deployed to a small group of participants in stage 3 of the research. Worth noting is the research design was modified in response to an opportunity that emerged following the Covid 19 pandemic and focused on the experience of a small set of learners who demonstrated high persistence. During the implementation and evaluation of the app, two research questions were used to frame the inquiry:

What is characteristic of the goals Chinese, adult language learners with high persistence are likely to pursue in achievement situations?

How effective, from the participants' perspective, is the intervention in supporting self-regulated language learning for Chinese, adult language learners?

Definitions and Terminology

Achievement goal orientations. Achievement goal orientations represent the reasons or the purpose that would lead an individual to attempt a task and relates to the research on achievement motivation (Dweck & Legget, 1988; Elliot & Dweck, 1988; Pintrich, 2000a).

Adult language learners. Adult language learners refers to learners studying language who are 18 years of age, or older. In this research context, the adult learners are Chinese and studying English as a foreign language. They are predominantly between the ages of 24 and 35 years old and finished formal schooling, which in most cases would include a 4-year university education.

Blended learning environment. Blended learning environments are broadly defined as a combination of traditional face-to-face instruction with computer-assisted instruction (Bonk & Graham, 2012). It was developed from the strengths of both in-person and distance learning, combining both types in the teaching and learning process (Garrison & Vaughan, 2008). Finding the most effective combination of the two modes is dependent on the individual learning subjects, contexts and learning objectives (Neumeier, 2005). While blended learning is highly context dependant and thus a universal, perfect ‘blend’ does not appear to exist, it is generally accepted that an online portion of the course replaces some of the face-to-face contact time (Johnson & Marsh, 2016).

Can-Do statements. Can-Do statements are “user oriented” (Alderson, 1991, p. 74) statements presented as learning indicators designed for both language teachers and learners to use to identify what they can do with language (Moeller & Yu, 2015). They are designed to assist with learner self-assessment, both to determine their existent communication proficiency level and to identify a target level of language proficiency (North, 2010). To facilitate different functions, Can-Do statements are often divided into multiple levels according to their use in developing long-term, mid-term, and specific outcomes for lessons (NCSSFL, 2014).

Communicative proficiency. Communicative proficiency or *communicative competence* is defined as encompassing three competencies including linguistic competence, sociolinguistic

competence, and pragmatic competence (Council of Europe, 2001). In this study, it refers to one's ability to demonstrate language skill in relation to the Council of Europe's (2001) scales and descriptors, or Can-Do statements.

Feedback. Feedback includes several elements: information provided by various sources regarding outcomes and the cognitive processes that lead to those outcomes, together with the process through which learners make sense of this information and use it to improve their learning and strategy use (Butler & Winne, 1995; Hattie & Timperley, 2007; Carless & Boud, 2018).

Flipped classroom. Flipped classroom designs or *flipped learning* is defined as including two kinds of activities: (1) computer-assisted, out-of-class instruction; and (2) interactive, in-class group learning activities (Bishop & Verleger, 2013). Students engage in learning content before class, then spend time in class deepening their understanding of the content (Baker, 2000).

Learning analytics. The field of learning analytics focuses on the collection, analysis, and reporting of data about learners and their environments (Siemens & Gasevic, 2012).

Learning analytic dashboards (LAD). Learning analytics dashboards are defined as “a single display that aggregate different indicators about learner(s), learning process(es) and/or learning context(s) into one or multiple visualization” (Schwendimann et al., 2016, p. 8).

Learning management system (LMS). A learning management system is a software application that automates the administration, tracking, reporting, and delivery of courses, digital materials, and training programs (Ellis, 2009). A proprietary LMS is used by the language training organization where this study is conducted for hosting and delivering the digital course content and facilitating communication between the adult learners and instructors.

Linguistic proficiency. In this study, linguistic proficiency or *linguistic competence* refers to the level of mastery one possesses regarding the features of language, “the words they know, the structures they can deploy, and the sounds they can articulate” (Little, 2001, p. 56).

Self-assessment. Self-assessment is “a process of formative assessment during which students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses, and revise accordingly” (Andrade & Du, 2007, p. 160).

Self-regulated learning (SRL). It has been described as an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided, and constrained by their goals and the contextual features in the environment (Zimmerman, 1989). These self-regulatory activities can mediate the relationships between individuals and the context, and their overall achievement (Pintrich, 2000a). The importance of goal setting has been emphasized as have other related processes including adopting strategies to achieve goals, managing resources and time, extending effort, responding to feedback, and producing products (Boekaerts & Corno, 2005).

Task-goals. Task-goals represent the specific outcome that one is attempting to accomplish while completing a task (Locke & Latham, 1990, 2002).

Organization of the Dissertation

The dissertation is structured as follows. The first chapter presents the background, context, and rationale for the research in addition to the research questions and the methodological approach. The second chapter provides a review of the literature, organized in five themes to address the key topics of this dissertation. These include flipped learning designs, the social cognitive model of SRL, achievement goal theory, interventions designed to support

self-regulated language learning, and using learning analytics to scale personalized feedback. I use the review of the literature to frame the focus of the dissertation on the development of an intervention to support self-regulated language learning and discuss the conceptual framework that informed the study. I also present an analytical framework that was used to extend the research. The third chapter describes my research design, beginning with an introduction to the conceptual framework followed by an overview of design-based research and the alignment of this methodological choice with my conceptual framework and the qualitative focus of the study. A description of the research setting, and participants is included, in addition to the methods of collecting and analyzing data, ethical considerations, issues of trustworthiness, and limitations and delimitations. The fourth chapter addresses the first two stages of the research design including the initial conceptualization and refinement of design principles that were used to develop the intervention. A detailed description of the design and rationale for the intervention is provided. The fifth chapter includes the findings that emerged from the data analysis that proceeded the implementation of the intervention in stage 3 of the research. The analysis included a preliminary evaluation of the intervention in addition to an investigation of achievement goals that was facilitated by applying the analytical framework. Chapter six presents a discussion of the findings that emerged from stage 3 of the research. The final chapter begins with a review of the research, implications and recommendations, limitations, and directions for future research. I have chosen to conclude the chapter with a personal reflection.

Chapter 2: Literature Review

The flipped classroom is an example of a blended learning solution that has emerged recently as a proposed model amongst educators since it can embody best practice principles for teaching, learning, and technology integration (Johnson & Marsh, 2016). The non-linear access to information introduces a new challenge, however, which if not properly accommodated for in the learning design, can result in students not being prepared for in-class activity (McLaughlin et al., 2013; Sun et al., 2016). It has been suggested that supporting self-regulated learning (SRL) is a priority for helping to ensure learners are successful in navigating the flexibility afforded by this learning design.

Self-regulated learning was selected to form the theoretical basis for this study as opposed to the related field of inquiry known as self-directed learning. While both deal with similar concepts, addressing issues of responsibility and control, self-directed learning is generally conceived of as a broader construct (Pilling-Cormick & Garrison, 2007; Saks & Leijen, 2014). SRL is a more micro-level concept that concerns the processes that take place within task-execution (Jossberger et al., 2010). Further illustrating this macro-micro relationship, Li (2019) emphasizes the importance of using SRL strategies in self-directed learning contexts and the need for educators to help learners increase their SRL awareness. An additional distinction can be made regarding the degree to which the learner is responsible for defining the learning task. In SRL, the learning task can be generated by an instructor whereas in the context of self-directed learning, the learning task is always defined by the learner (Loyens, et al., 2008). In the flipped classroom design used in the context of this research, SRL provides a more appropriate model on the basis of these characteristics as the learner's degree of control is directed towards

the selection of personal learning strategies and engaging in SRL-related activity within the execution of task sequences.

Research on self-regulated language learning and the design of interventions to support learner autonomy has been a priority for the Council of Europe since the introduction of the Common European Framework of Reference (CEFR) and European Language Portfolio (ELP) (Little, et al. 2011). The design of the ELP and its three components in addition to the use of Can-Do statements to support goal setting and self-assessment, has been widely successful in promoting SRL in classroom settings (Scharer, 2008). In addition, the field of learning analytics offers a potential scalable solution by providing data as feedback to learners about their study activity, a critical component for learner engagement (O’Flaherty & Phillips, 2015). These data can then be interpreted and used to inform subsequent actions, providing learners with insight into their learning process in support of self-regulation. To inform the development of an intervention designed to support self-regulated language learning at scale and the basis of this study, a critical review of the literature related to the research problem is presented in this chapter.

Reasons why some learners do not regulate their learning effectively are complex and multidimensional. In acknowledgement of this point, this literature review seeks to examine the body of knowledge related to several conceptual areas, which have been organized under five broad categories: *blended language learning and the flipped classroom*; *self-regulated learning*; *achievement goal theory*; *fostering self-regulated learning*; and *feedback and learning analytics*. The review of each category was shaped by the following questions:

- What examples exist of flipped language learning designs and how has support for SRL been explored in these learning contexts?

- What are the key elements of the social cognitive model of SRL that can be used to guide the development of an intervention?
- How does achievement goal theory address motivation for language learning and how can this be usefully integrated with a broader theory of SRL?
- What insights can be derived from earlier intervention designs that have addressed SRL in language learning contexts that can be used to develop initial design principles?
- What insights have been produced from research using learning analytics to help scale interventions to support SRL?

The initial section of the review is intended to frame the research problem by exploring the affordances and constraints of blended learning designs. The section that follows introduces the theoretical background of SRL and the model used for the proposal. The purpose of the subsequent section is to complement the theoretical foundation of the study with the addition of an analytical framework. The remaining two sections provide the basis for the design of the proposed intervention by way of operationalizing the processes of SRL and providing initial design principles used to support it.

The search process employed in conducting this review began with retrieving literature associated with understanding the research problem. Articles from peer-reviewed journals in the fields of language learning and technology were the primary source, in addition to recent edited volumes on blended language learning published after 2010. The initial strategy was limited to the field of language learning and later broadened to include other educational disciplines to capture research into flipped classroom designs. As such, the strategy was highly iterative to allow for themes to emerge while investigating potential directions for the design of interventions. Both educational psychology and later learning analytics became fields of interest,

in general and in the domain of language learning with technology. Literature primarily located within the context of adult education was prioritized due to the nature of the research context but research in K-12 contexts was not formally excluded. The databases consulted were Google Scholar and Linguistics and Language Behaviour Abstracts.

Blended Language Learning and the Flipped Classroom

A blended learning program can be designed using effective learning and teaching approaches if it is built on a solid understanding of what constitutes best practice in language learning and teaching in general (McCarthy, 2016). However, the ways in which technology can best be incorporated to achieve an effective blended learning design for language instruction is still a matter of debate (Albiladi & Alshareef, 2019; Grgurovic, 2017; Johnson & Marsh, 2016; Li, 2022). While it seems clear that no single perfect blend exists, experts also caution against simply mixing information technologies with face-to-face learning as this is not sufficient to exploit the potential of blended learning (Marsh, 2012). Lamping (2004) has suggested that blended learning designs are grounded on the concept of flexibility, which must also be context dependant. The focus, then, is not to choose the right, or the most innovative option but “to create a learning environment that works as a whole” (Neumeier, 2005, p. 164).

While earlier research was predominantly focused on describing models and logistics of their implementation, in his comprehensive review of blended language learning research Grgurovic (2017) noted that later studies increasingly began investigating different elements of blended learning designs. For instance, Albiladi and Alshareef (2019) found that blended learning could be effectively applied to assist with the development of both language skills and motivation. However, Whittaker (2013) was less optimistic about the available research with an emphasis on blended learning effectiveness claiming that while tertiary institutions often listed

improved pedagogy as a reason for adopting blended learning, there was little evidence to support this claim. Marsh and Johnson (2016) echoed Whittaker's earlier call for the need for more research into developing appropriate models of blended language learning, and as a solution propose a model termed the flipped classroom.

An Emerging Model: The Flipped Classroom

One mode of blended learning that has received attention in the literature is that of the flipped classroom (Bergmann & Sams, 2012). Interest in flipping the classroom has developed in part due to high profile exposure in publications such as the New York Times (Fitzpatrick, 2012) and Science (Mazur 2009). To support its prevalence, however, Johnson and Marsh (2016) added that there has been wide recognition amongst educators that this model can embody best practice principles for teaching, learning and the integration of technology. While approaches to flipping the classroom vary in practice, reasons for the adoption of flipped classroom models include the following:

It enables teachers to take individual students' needs into consideration (Bergmann & Sams, 2012).

It is considered as effective for engaging students in active learning (Forsey et al., 2013).

It provides opportunities for the additional practice time necessary for language learning (Johnson & Marsh, 2016).

Flipped classroom designs are generally defined as including two kinds of activities: computer-assisted, out-of-class instruction; and interactive, in-class group learning activities (Bishop & Verleger, 2013). Students engage in learning content before class, then spend time in class deepening their understanding of the content (Baker, 2000). The Flipped Learning Network has expanded on this definition with a set of design principles comprising of the four

pillars of F-L-I-P as a generic guide, namely *flexible environment*, *learning culture*, *intentional content*, and *professional educator* (Hamdan et al., 2013). This model is comprehensive and although it has yet to be firmly established in a language learning context, Hung (2017) found that it was useful to develop her flipped language learning study. What follows is a brief discussion drawing on recent research in this field to illustrate the four F-L-I-P principles.

One of the defining features of flipped classrooms is the affordance of flexible learning environments, which is included as the first pillar in the flipped learning model. This feature also helps to address a common issue associated with a desire to optimize often limited classroom time and ensure it is used efficiently. As an approach to learning design, Johnson and Marsh (2016) described in their work in a university English teaching context as one where the teachers started with the question: How would I like to make best use of time in class?

In response to this question, language presentation and practice were allocated to online content to prepare for communicative activities and group interaction in the classroom (Johnson & Marsh, 2016). The online content was designed specifically to allow for complete flexibility and includes the presentation of language through video and audio, and practice of language through automated feedback (McCarten & Sandiford, 2016). This description also acknowledges the fourth principle recognizing teachers and the important role they play in designing the learning experience and making instructional decisions.

While summarizing the results, the researchers also noted another advantage of flipped classrooms: Active student engagement is encouraged through relevant task design. This concerns the second pillar associated with the transfer of responsibility from teacher to learners, resulting in a more student-centred learning culture. Student ownership of the learning process, and a felt responsibility for how their knowledge is applied in a flipped classroom, can lead to

lively peer-to-peer dialogue and the freedom to explore issues and questions beyond the set scope of the sequence of the course content (Johnson & Marsh, 2016). Access to digital materials can also help the classroom to becoming more participatory when students have choice in what they learn and how they interact using online resources (Jacobsen et al., 2013).

Supporting learner independence was also noted as a design consideration in the development of the online learning materials used in a flipped classroom context (McCarten & Sandiford, 2016).

While flipped classroom designs have been found to offer several advantages in both language learning contexts and beyond, as an instructional approach, it does not appear to suit all learners (Russell, 2013). Flipped classroom curriculums may fail to achieve the expected outcomes if they lack what O’Flaherty and Phillips (2015) referred to as pedagogical integrity. From their review of 28 studies of flipped classroom designs in higher education, they identified key elements that when absent from pre-class learning, can lead to lower levels of student engagement, listing interactivity, formative feedback, and a coherent link to in-class activities. Flipped classroom designs can benefit from considering that students may struggle with the challenges of learning independently, including management of time and motivation to fully participate in pre-class activities, and therefore not commit to the level of involvement in the learning process that effectively complements the intended design (Lai & Hwang, 2016; Mason et al., 2013; Wang & Qi, 2018). It has been noted that this might be especially difficult for Chinese learners when most have experienced predominantly teacher-centred classrooms where everything has been arranged for them (Yu, 2015). In these circumstances, students are unlikely to contribute productively during the subsequent classroom learning tasks (Mason et al., 2013).

Previous research on effective learning designs have attempted to accommodate for better independent learning support in various ways. For instance, Mazur and colleagues (2015),

drawing on Friesen's (2009) Teaching Effectiveness Framework, emphasized the importance of designing work to be done outside the classroom that is worth students' time and attention. They attempted this using inquiry-based design, in addition to using tasks that required learners to organize and demonstrate factual knowledge and fostered meaningful conversation that was personally relevant to learners. To directly support the self-regulation of learning, Lai and Hwang (2016) introduced a system to promote planning, monitoring and self-evaluation as part of their pedagogical model. Students were guided by teachers in these activities to better ensure they were completed. Hsieh and colleagues (2017) also approached the mobile-based flipped language learning design by taking care to avoid introducing barriers to learning completion by including the out-of-class learning activity in the mobile communication app LINE. The authors indicated they selected this app due to its popularity with the target students, in addition to the data security provided. Previous research has indicated that mobile-based activities had not been completed when assigned to a proprietary platform that was not generally used outside of learning activity (Ma, 2017).

In summary, while there appears to be no one-size-fits-all design for blended language learning, it has been suggested that, as a starting point, it needs to reflect best practices in language learning. The flipped classroom model, with its many supporters in general education, has started to appear in the language learning literature. Several advantages have been identified for electing to employ a flipped classroom design including flexibility in learning, authenticity in content and the ability to create student-centred learning environments. One issue that has been identified with flipped classroom designs is the resulting increase in independence for planning and self-management introduced. Though this requirement can negatively impact learning, it has been suggested that providing support for the development of SRL skills is one way to address

the challenge. Suggestions identified in the literature include: (1) ensure relevance of learning content to the learners, (2) design learning tools for convenience and ease-of-use, and (3) incorporate scaffolding for SRL skill development directly in the course design.

Self-Regulated Learning

An additional area of interest with respect to addressing the challenge of independent learning concerns self-regulation and the use of effective learning strategies (Jovanovic et al., 2017). An important and challenging aspect of flipped classrooms affecting student success is the higher level of learner autonomy associated with a flipped classroom design (Kim et al., 2014). This model of active learning requires students to be self-regulated learners to undertake and complete preparatory activities (Lai & Hwang, 2016; Mason et al., 2013; Sletten, 2017).

Nonlinear access to information individualizes the learning experience but also introduces new cognitive and metacognitive demands. Students need to determine how much time to spend in different representations of information (Azevedo, 2014). Taking control of the sequencing and pacing of learning activity requires students to monitor comprehension and use repair strategies when comprehension breaks down (Moos, 2014; Winne & Nesbit, 2009). Further to this, learners must also be careful to monitor emerging understanding to benefit fully from this type of learning environment. However, many students have underdeveloped self-regulation skills and need support and scaffolding to manage their learning in less familiar and more intensive settings that often characterize flipped classroom designs (Jovanovic et al., 2017).

Theoretical Basis for Self-Regulated Learning

Many self-regulation theories attempt to model how cognitive, motivational, and contextual factors influence language learning (Oxford, 2017) and the learning process in general (Pintrich, 2000a; Winne & Hadwin, 1998; Zimmerman, 2001). It has been described as an

active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided, and constrained by their goals and the contextual features in the environment (Zimmerman, 1989). These self-regulatory activities can mediate the relationships between individuals and the context, and their overall achievement (Pintrich, 2000a). The importance of goal setting has been emphasized as have other related processes including adopting strategies to achieve goals, managing resources and time, extending effort, responding to feedback, and producing products (Boekaerts & Corno, 2005).

Social Cognitive Model of Self-Regulated Learning

While various theories have been proposed to describe SRL, one of the most influential models comes from Zimmerman's (1989, 2000) research based on social cognitive models of SRL. In accordance with Bandura's (1986) triadic formulation used to describe the reciprocal relationship between person, behaviour, and the environment at the heart of social cognitive theory, Zimmerman proposed a triadic interaction between these components. The personal components include observation and adjustment of cognitive and affective states, the behavioural component concerns performance, while the environmental component refers to the adjustment of environmental conditions.

Research on the dynamic nature of SRL continued with Zimmerman (2000) later introducing the process model of SRL. In this model, Zimmerman depicts SRL as a process that is "cyclically adapted towards the attainment of personal goals" (p. 14). The process model includes three cyclical phases labelled as forethought, performance, and self-reflection (see *Figure 1*). Forethought phase processes include task analysis and self-motivational beliefs and are thought to precede learning or performance. Performance phase processes are those that

occur during learning such as self-control and self-observation. The self-reflection phase consists of self-judgement and self-reaction, processes that follow once learning efforts have concluded (Zimmerman, 2000). Key constructs from the process model are discussed, below.

Forethought Phase

In this initial phase of the model, individuals analyze the tasks that lay ahead and motivate themselves to take action by what they believe about themselves and their situation. Task analysis involves considering what will be required for success, breaking down complex tasks into constituent components, and then deciding on the relevant strategies to employ to achieve success. Several motivational tools are summoned during this phase including beliefs about one's own efficacy to carry out planned activities, and assessments of individual interest and expectations for success. Learners may also set out task-specific goals to help them marshal the attention and energy for the performance phase. Importantly, goals can also affect whether learners persist and how effectively they plan (Locke & Latham, 2019). The reason that learners pursue certain goals also has implications for how they manage performance (Pintrich, 2000a). Goals are a key motivational feature of the process model of SRL because they improve SRL functions in subsequent phases (Zimmerman, 2008b) and thus have been adopted as a central focus for research in this study. As such their nature and impact on learning are discussed further in the sections that follow.

Performance Phase

During this phase, self-regulation involves the monitoring of thoughts and behaviours, and the selection or modification of strategies. Self-monitoring is concerned with the observation of thoughts and actions and being prepared to make adjustment as required by changes to the task or the environment (Usher & Schunk, 2018). Successful performance also

often involves the deployment of strategies. In the context of language learning, several taxonomies have been developed for the purpose of strategy classification (e.g., O'Malley & Chamot, 1990; Oxford, 1990; Wenden, 1998). Though beyond the scope of the present study, research conducted with successful language learners has identified a wide range of strategies including vocabulary learning strategies, cognitive strategies, and social strategies (Rose, 2012).

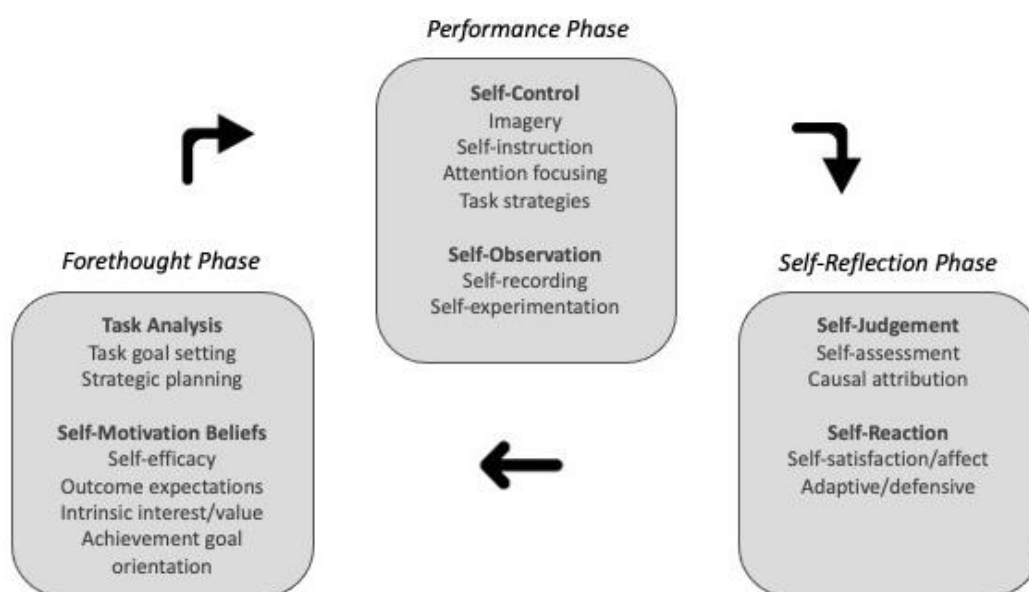


Figure 1. Process model of self-regulation (Zimmerman, 2000).

Self-Reflection Phase

Upon completion of performance, self-regulated learners will assess and react to their own behaviours. In the self-reflection phase, learners will review the outcomes of their efforts and perceived causes, or attributions. They will also attempt to judge the effectiveness of the strategies they have used relative to the goals that were established earlier during forethought. This is an important characteristic of proactive, self-regulated learners (Zimmerman, 2008b). In contrast, more reactive learners, in the absence of self-referenced standards, may rely more on social comparison to evaluate their performance. Research in the field of language learning has

led to the development of Can-Do statements as both proficiency targets and as a means for situating current ability (Council of Europe, 2001). Together with goal setting, facilitating self-assessment was selected as a key process for targeted intervention in this study.

This process model helps to illustrate the structure of self-regulation processes and their relation to academic achievement and motivational beliefs. It assumes, for instance, a significant correlation between variables with a specific phase of self-regulation. In the forethought phase, for example, task analysis variables including goal setting and strategic planning are thought to be highly correlated with self-motivation beliefs such as self-efficacy and goal orientation. Additionally, SRL processes are thought to impact learning across phases, where feedback from an earlier phase might result in adjustments to subsequent efforts in a cyclical manner.

Conducting Cross-Cultural Self-Regulated Learning Research

Although the theoretical construct of SRL is well established and has received extensive treatment in various publications, the universal, cross-cultural applicability of the current SRL models and research instruments has been challenged (Sun & Wang, 2020; Tong et al., 2020; Wang & Bai, 2017). Self-regulated learning encompasses a body of theories and perspectives while the construct of SRL is multifaceted and may take different forms across cultural contexts and populations (Panadero, 2017). Recent studies conducted in China have attempted to address this concern through the application of the social cognitive model of SRL (Zimmerman, 2000) with context specific modifications. Zhao and colleagues (2014), for example, developed a standardized SRL scale for the quantitative study to measure the SRL ability of Chinese adult distance learners based on social cognitive theory. They administered their survey to a large sample size of 2738 undergraduate learners completing a distance program at one university in northern China and conducted data analysis on four dimensions of SRL. They suggested that

their findings related to gender differences were explained by factors related to the context of Chinese distance education and the culture of learning. Tong and colleagues (2020) also generated an instrument to measure SRL using social cognitive theory, in a Chinese educational context with 611 college students from two Chinese universities. Based on the popular MSLQ (Pintrich et al., 1991), they developed a version for Chinese adult learners (MSLQ-CAL) with 52 items that “best reflect the learning characteristics of Chinese college students” (p. 432). The revised multi-factor structure included adaptations in two motivational constructs (value and expectancy) and one learning strategy construct (resource management).

Similarly, in the context of language learning, Teng and Zhang (2016) sought to validate a questionnaire for measuring writing strategies. They indicated that while the theoretical model for the survey was based on the social cognitive model of SRL, they involved participants in focus groups for item generation. In their research with 790 undergraduates from six universities in north-eastern China, they concluded that there was support for the applicability of SRL theory to language education. Two other recent studies (Sun & Wang, 2020; Wang & Bai, 2017) addressed the validation of instruments to measure SRL strategy use in secondary schools in China. Both referenced an earlier study (Wang et al., 2014) indicating the survey had been generated based on a social cognitive framework of SRL with Chinese participants. Of relevance, Wang and Bai (2017), through their investigation with 265 secondary school students observed that Chinese students lacked strategies in the forethought phase (goal setting and planning).

Discussing applicability of SRL theory to different cultural contexts, McInerney (2008, 2011) posited that SRL should be related to positive learning outcomes regardless of cultural background. King and McInerney (2014) extended this thinking by providing a framework for

guiding the exploration of psychological process across cultures, proposing that more research attempt to take a more integrated approach using a combination of etic and emic perspectives. A study is considered etic if it focuses on the similarities of psychological processes across cultures and applies Western models to non-Western contexts, while an emic approach takes a more bottom-up approach (King & McInerney, 2014; McInerney & King, 2018). The adoption of an integrated etic and emic approach presents the opportunity to challenge existing models and acknowledges the potential for the emergence of culturally specific phenomena.

One example of SRL research conducted in China provides a model for this study where they have included theorizing based on etic views but have generated cultural-specific insights by creating an emic platform for data generation. Lau (2012) conducted a mixed methods study, utilizing classroom observations and student interviews together with a self-reported questionnaire, to investigate the relationship between teachers' instructional practices and students' SRL behaviour in Chinese language classes. Qualitative methods were selected "because they capture the dynamic and transactional processes of self-regulation in contexts and are suitable for examining specific cultural groups" (p. 429). The study included 1121 grade ten students from six secondary schools from across Hong Kong. During the interviews, Lau discovered a preference from both teachers and students for instructional techniques that were consistent with SRL principles apart from the role of teacher control. Student autonomy was less favoured by both teachers and students.

In summary, SRL has been thoroughly researched in the field of educational psychology and is the source of the theoretical model adopted for this proposal. The process model (Zimmerman, 2000), based on social cognitive theory, proposes that self-regulation occurs in cycles through three phases: forethought, performance, and self-reflection. This widely used

framework has been proposed as the basis for the research design where a combined etic and emic approach has been adopted to guide the inquiry and development of the intervention for use in China. This study was conducted with a view to contributing to SRL research in the field of language learning, and the cultural implications for Chinese, adult learners.

Achievement Goal Theory

The act of establishing, monitoring, and evaluating the achievement of goals is central to the concept of SRL. In the process model, goal setting is included in the forethought phase within the processes of task analysis and self-motivation (Zimmerman, 2000). Two general classes of goals have been discussed, namely target, or task-specific goals, and goal orientations (Pintrich, 2000a). The distinction between these two classes of goals is that target or task-specific goals represent the specific outcome that one is attempting to accomplish while completing a task (Locke & Latham, 1990, 2002) whereas achievement goal orientations represent the reasons or the purpose that would lead an individual to attempt a task and relate to the research on achievement motivation (Ames, 1992; Ames & Archer, 1988; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Grant & Dweck, 2003; Pintrich, 2000a, 2000b). Including the reasons why an individual chooses to pursue a task enables the integration of achievement motivation literature into models of SRL because it is concerned with “the what, why and how individuals are motivated to achieve in different settings” (Pintrich, 2000a, p. 473). This forms a general theory of the task that can influence many of the different processes of self-regulation (Meece, 1994). If an individual is motivated to develop skills in a particular achievement context they should orient their goal setting, monitoring, and self-reflection towards making progress in this regard (Dweck & Leggett, 1988).

Models of Achievement Goal Orientation

The first generation of the achievement goal models, commonly referred to as dichotomous, distinguished between two different orientations or reasons for learning (Ames, 1992; Dweck & Leggett, 1988; Maehr & Midgley, 1991; Nicholls, 1984). Such models distinguished between learning (mastery, task) goals and performance (ability, ego) goals, using different labels for categories that were conceptually similar. Learning goal-oriented learners focused their effort on the development of new skills, improving their level of competence or achieving mastery based on set of self-referenced standards. Learners who pursued performance goals, in contrast, strived to demonstrate their ability and validate their competence. Early research with young children routinely found a positive effect associated with learning goal adoption, while maladaptive behaviours became associated with performance goal adoption (Dweck & Leggett, 1988; Elliott & Dweck, 1988).

As achievement goal research continued the results consistently demonstrated the benefits of holding learning goals. The effects of performance goals, however, became increasingly inconsistent as they started to positively predict academic achievement and better intrinsic motivation (Elliot & Harackiewicz, 1994). This led to the development of a trichotomous model of achievement goal orientation with the incorporation of the approach-avoidance distinction (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Performance approach goals are held by learners who engage in achievement behaviours with a desire to outperform other learners and demonstrate their competence, whereas those with performance avoidance goals do so to avoid poor performance and hide their relative incompetence.

Further iteration on models of achievement goals resulted in the development of a second model that divided the field, where the pursuit of goals was redefined and narrowed to the aim of engaging in competence relevant behaviour, abandoning the original broader concept of the underlying purpose or reason (Dweck & Leggett, 1988; Elliott & Dweck, 1988). This new *standards model* included a 2 x 2 achievement goal framework, where learning goals were also divided into approach and avoidance goals (Elliott & McGregor, 2001; Elliot & Murayama, 2008; Elliot & Thrash, 2001). Achievement goals in this framework were categorized according to the definition or standard of competence applied (self/task or other) and the valence of competence (approach or avoidance). Elliot and colleagues (2011) later introduced a further distinction between self (intrapersonal) and task (absolute) standards expanding the model into a 3x2 matrix.

An additional conceptualization of the achievement goal framework that was important for this study was proposed by Grant and Dweck (2003) consisting of four achievement goals: learning, outcome, ability, and normative. Learning goals were defined by the desire to develop competence, retaining the essence of the original concept (Dweck & Leggett, 1988). Outcome goals refer to the desire to obtain positive outcomes and, in this way, overlap with the notion of extrinsic goals (Wolters et al., 1996). Ability goals represent the desire to validate one's ability, which again, was consistent with the initial distinction made between learning and performance goals in the original dichotomous model. Normative goals account for the desire to outperform others and resembles the performance approach goal definition used in the standards model where the performance standard is defined in comparison to others (Elliott & McGregor, 2001; Elliot & Murayama, 2008; Elliot & Thrash, 2001).

Contextualizing Achievement Goal Research

As described above and in the literature (e.g. Hulleman et al., 2010; Senko & Dawson, 2017; Urdan & Kaplan, 2020), the best way to accurately represent student psychology as achievement goal orientations remains an open question. To address this issue, Brophy (2005) called for research that examined what individuals in achievement situations reported when they were “asked to describe their goals in their own words” (p. 170). Lee and Bong (2016) chose to respond to this call by administering open-ended surveys to 239 Korean middle school students. The responses were collected, then coded and organized to evaluate the fit with several pre-existing frameworks, where they found Grant and Dweck’s (2003) model accounted for the most responses. Elsewhere, Dowson and McInerney (2001, 2003) have argued that quantitative investigations of students’ goals risk misrepresenting the complexity of their motivation. Such an approach to investigating achievement motivation artificially limits the range of goals included and involves the use of self-report surveys which have been used to generate most of the studies in achievement goal theory (Urdan & Kaplan, 2020). In their approach to investigating achievement goals in context, Dowson and McInerney (2001, 2003) instead used conversational, semi-structured interviews. The interviews began with very general questions such as “what’s it’s like to be motivated in school?” (p. 6). Inductive content analysis on the conversation data was used to generate categories that could be further explored in more structured interviews to test specific hypotheses.

While no specific a priori decisions were made concerning which achievement goal model to employ, of particular interest to this study was the inclusion of the *outcome* goal category in Grant and Dweck’s (2003) model which was believed to be an important consideration for the context of this research. They hypothesized that this goal category would

best fit into a performance framework but later indicated that the definition was “fuzzy.” Pulkka and Niemivirta (2015) also included an extrinsic goal category, which they categorized as a learning goal, thus creating two types of learning goals in their framework (intrinsic and extrinsic). Pintrich (2000a) likened this extrinsic orientation to extrinsic motivation as discussed in self-determination theory (Ryan & Deci, 2000, 2020). In the context of language learning, this orientation bears resemblance to instrumental orientation, or studying language to gain something such as money or a better job, both of which can be powerful instrumental motivators (Dornyei, 1990; Gardner & MacIntyre, 1991). Dornyei (1998) also found instrumental or pragmatic dimensions to be important constituents of motivation, which he classified as extrinsic.

In motivational research in China, in a predominantly collectivist context, it has been suggested that participation in a learning task is often compelled by pragmatic goals such as receiving good grades, entering elite universities, finding a job or being promoted (Guo & Shi, 2016; Lucenta, 2011; Wang & Lu, 2016). Results from a survey of 567 adult English learners in Taiwan seemed to concur with these previous findings as getting a higher paying job, obtaining a raise, and being able to change jobs easily were all found to be strong motivators for learning English (Chen et al., 2005). The authors coined the term the *Chinese Imperative* indicating that it was the combined cultural influence and the local educational emphasis on exams that resulted in the Chinese learners’ subscription to these motivational priorities. Chen and colleagues (2005) concluded that: “Instrumental motivation can effectively motivate language learners, especially when they value the return on investment” (p. 612). Adding further weight to this argument, Tong and colleagues (2020) also noticed the absence of intrinsic goal orientation in their survey of motivational strategies for learning in Chinese undergraduates. These results

contrasted with earlier studies with other Western counterparts. They, too posited that this was explained by the goals of learning in a test-driven education system which values social conformity and reinforcement.

Learning and Performance Achievement Goals

While testing achievement goal theory, most studies have been conducted using a predetermined set of achievement goals and focused on correlating learners' self-reported goals with achievement or other learning-related outcomes (Hulleman et al., 2010; Senko et al., 2011; Urdan & Kaplan, 2020). Both learning and performance-related goals appear most frequently in the literature. The findings for learning goals have been consistent and generally positively associated with a wide array of benefits including positive emotions and interest, effective self-regulation, increased cooperativeness, and extensive learning strategy use (Harackiewicz et al., 2000; Pekrun et al., 2006; Wolters, 2004). One important omission from this list, however, is academic achievement. Surprisingly, learners who adopt learning goals seldom perform better in achievement situations than those who do not pursue those goals (Hulleman et al., 2010).

In the context of language learning, many positive benefits have been observed from the adoption of learning goals. Lou and Noels (2016, 2017) surveyed 150 university-level students studying in second or foreign language courses in a Canadian university and indirectly found that learners who pursued learning goals achieved greater mastery and conveyed a stronger intention to continue with language learning beyond their course. He (2005) investigated the effects of achievement goals on the use of writing strategies in an English as a second language classroom with 38 Taiwanese English-major, college students. Participants were initially divided into two groups according to their goal orientation profile using responses to a goal scale. Further research was conducted on each group using think aloud protocols to evaluate the patterns of

strategy use. Evidence suggested that those who displayed a learning goal orientation exhibited more extensive strategy use and improved quality of writing. Other studies have also identified the positive effects of learning goals including reduced anxiety, and higher achievement (Koul et al., 2009; Jahedizadeh et al., 2016; Tercanlioglu, 2004). It was noted that various instruments were used to measure the achievement goal orientation, including Jahedizadeh's et al. (2016) Patterns of Adaptive Learning Scale (PALS: Midgley et al., 1998), and Tercanlioglu's (2004) adaptation of the Goal Orientation Scale (Skaalvik, 1997). Notably, while researchers made use of different instruments, they each reported similar positive adaptive behaviours associated with the adoption of learning goals.

In contrast to learning goals, the findings associated with performance-related goals in the language learning literature have been predominantly negative including fear of failure, fear of negative evaluation, and increased anxiety. Koul and colleagues (2009) for example, examined Thai college students' motivational goals for learning English through a self-report survey of 1387 participants and found performance goal profiles correlated significantly with higher foreign language anxiety. In Iran, Ghavam and colleagues (2011) used the Achievement Goal Questionnaire (Elliot & McGregor, 2001) to measure the achievement goal orientations of 103 university students majoring in English studies. The researchers combined this survey with a questionnaire to evaluate the frequency of metacognitive reading strategy use. Their findings revealed a negative relationship between the use of reading strategies and both performance approach and avoidance orientations. In Tercanlioglu's (2004) study of achievement goal orientations and English language achievement with 135 students in pre-service English teacher education program in Turkey, from the self-report survey data, she found no significant

correlation between either performance (ego) approach or avoidance orientations and TOEFL test results.

Although the findings from language learning studies were consistent, achievement goal theory has not been widely applied in the context of foreign language education (Lee & Bong, 2019). Of additional relevance, only one of the studies included a large sample size (Koul et al., 2009) and they indicated that one of the limitations of their research was the inability to distinguish between performance approach and avoidance goals, which they attributed to linguistic complexity. In the broader achievement goal literature, the results have been mixed. Performance avoidance goals have generally resulted in more maladaptive behaviour such as negative emotions, poor use of learning strategies, and often low achievement and interest (Elliot & Church, 1997; Midgley & Urdan, 2001; Wolters, 2004). Research on performance approach goals, however, has resulted in much less consistency including both adaptive (e.g., effort, persistence, high performance) and maladaptive (e.g., less self-regulation, procrastination, low intrinsic motivation) process and outcomes (Brophy, 2005; Hulleman et al., 2010; Midgley et al., 2001; Payne et al., 2007).

One reason posited to explain the lack of consistency has been the conceptual challenge posed by the differing definitions of performance goals and the instruments used to measure them (Senko et al., 2011). Performance goals as competence demonstration have been supported by some theorists, including Dweck (Dweck & Leggett, 1988) as being core to the concept (Grant & Dweck, 2003; Kaplan & Maehr, 2007). Others have argued that striving to outperform others was the critical feature of performance goals and question whether competence demonstration should be a feature (Elliot & Thrash, 2001). Still others have pointed to the use of social comparison by both learning and performance approach-oriented learners, undermining

the normative definition for performance goals. Butler (2000) for example, suggested that social benchmarking could equally reflect a learning orientation should the learner use the information to identify areas for improvement or for accurate self-assessment.

The proposal that the inconsistent results that have been observed was in part due to the measurement of different concepts seems to have merit, and it has been suggested, may yield different effects (Grant & Dweck, 2003; Hulleman et al., 2010, Senko & Dawson, 2017; Senko et al., 2011). Those in favour of the combined *multiple goals approach* have relied on a conceptual framework that defines achievement goals narrowly as *the aims of achievement behaviour* (Elliot & McGregor, 2001; Elliot & Murayama, 2008; Elliot & Thrash, 2001). Most have also adopted the normative definition of performance approach goals which excludes the objectives that involve self-worth and self-presentation (Urduan & Kaplan, 2020) as well as the intention behind the social comparison (Butler, 2000). As a result, while the debate concerns the positive potential of performance approach goals, many in both parties seem to be referring to different constructs.

Arising from the conflicting findings described above and the resulting debate about the desirability of pursuing performance approach goals has led to a proposal that the most adaptive achievement orientation could include a combination of learning and performance approach achievement goals (Harackiewicz et al., 2002; Pintrich, 2000b). This assertion assumed that performance goals provided some benefits more reliably than learning goals. The proposal has proven somewhat controversial (Midgley et al., 2001) due to the debate surrounding the conceptualization of achievement goals though others have seen it as an interesting avenue for future research (Senko et al., 2011). Evidence supporting the benefits of a multiple goals approach has been reported from research in a Chinese context (Lau & Lee, 2008a; 2008b). In a

survey of 925 Grade 8 students from six schools in Hong Kong, they found both learning (mastery) and performance approach goals to be positively related to strategy use. Moreover, students with high motivation for both types of goals were found to be more adaptive in learning than their counterparts pursuing only learning goals. The instruments used in this study to measure achievement goals, however, were derived from the Motivation and Strategy Use Survey (Greene et al., 2004) which includes both definitions (demonstrate competence, be superior to others) of performance approach goals. As a result, though the study does provide further evidence of the benefits of pursuing multiple goals, it does not help to provide clarity regarding the matter under debate.

In summary, achievement goal theory provides the basis for the analytical framework used to derive further insights from the data collected in the present study. Using an inductive approach to generate a model in context can help to contribute to the effort to clarify and conceptualize achievement goals. Understanding the goal-oriented motivation of the learners is important for ensuring that their efforts at SRL are indeed adaptive and help them achieve learning success. Though this framework has not yet been widely applied in context of language learning, it appears to have strong potential for developing a better understanding of the reasons that learners pursue English language learning in this context (Lee & Bong, 2019).

Fostering Self-Regulated Learning

It is widely believed that all learners attempt to self-regulate to some degree, but differ in their methods (Winne, 1997). In his work on SRL, Zimmerman (2000, 2008b) differentiated between proactive and reactive approaches. From the perspective of the process model, a proactive self-regulating learner is more effective because “they engage in high quality forethought” (Zimmerman, 2008b, p. 279) which then improves the following self-regulatory

functions that are thought to occur in subsequent phases. Reactive learners, in contrast, rely more heavily on the processes that take place during the self-reflection phase to improve their performance. They display low quality goal setting processes, for example and as a result, their ability to respond adaptively to personal feedback is limited. Equally, self-assessment is a key strategy employed by proactive learners who review the outcomes of their learning and compare these to their goals as standards (Zimmerman, 2008b). It is for these reasons that I have chosen to prioritize task goal setting, together with self-assessment, as strategies to investigate in the context of the design of the intervention. An additional priority selected for research in the context of supporting SRL in digital learning, is time management, a behavioural aspect of strategic planning. During the forethought phase of SRL, students make decisions and form intentions about how they will allocate their effort to completing their work (Pintrich, 2000b). Several studies have demonstrated the importance of time management strategies in relation to online course completion and achievement (Cha & Park, 2019; Gelan et al., 2018; Kizilcec et al., 2017).

Forethought: Task Goal Setting

Task goal setting is a key form of task analysis in the process model of SRL and is critical for differentiating between more and less successful attempts at self-regulation (Zimmerman, 2000, 2008b). Proactive learners set goals that are more specific, proximal, and challenging (Locke & Latham, 1990, 2002, 2013, 2019). Task goal setting directs learners' attention towards goal-relevant activities, fosters a higher energy expenditure as goals become more challenging and encourages persistence as more challenging goals require more time on task (Dornyei, 2001). The benefits of setting proximal or subgoals are also well established, as they help to present a task in shorter smaller chunks making it appear more achievable,

increasing the learner's confidence and helping to sustain longer-term commitment (Dornyei, 2020). They can also function as a standard with which performance can be evaluated, helping to make progress in language learning more visible and supporting persistence (Mercer & Dornyei, 2020).

Effective task goal setting in language learning contexts has commonly been facilitated through the development of proficiency scales or checklists that are known as Can-Do statements. As a key feature of the European language portfolio (ELP) and Linguafolio, these “user oriented” (Alderson, 1991, p. 74) statements are presented as learning indicators designed for both language teachers and learners to use in a classroom setting to identify what they can do with language (Moeller & Yu, 2015). Self-regulation and the design of interventions to foster and support learner autonomy in the field of language learning has been a priority for the Council of Europe since the introduction of the Common European Framework of Reference (CEFR) and the ELP (Little et al., 2011). Both the ELP and Linguafolio have been validated in several rounds of large-scale, school-based research. The ELP's pilot project, for example, lasted from 1998 to 2000 and involved more than 30000 students from 16 different countries (Scharer, 2008). In his report, Sharer (2000) found 70% of the learners agreed that the ELP helped them to assess their own competence. Similarly, Ziegler (2014) concluded from his mixed methods study with 575 students and 19 teachers in Germany that the ELP supported the development of self-regulated and autonomous learners. Studies conducted by Moeller et al., (2012) and Ziegler and Moeller (2012) have also found that Linguafolio “can serve as effective tool for promoting self-regulation in learners through structured goal setting” (Moeller et al., 2012, p167).

Can-Do statements are SMART goals in that they are *specific, measurable, achievable, relevant, and time-bound* (Doran, 1981). They are designed to assist with learner self-

assessment, both to determine their existent communication proficiency level and to identify a target level of language proficiency (North, 2010). To facilitate different functions, Can-Do statements are divided into three levels for use in developing long-term, mid-term, and specific outcomes for lessons (NCSSFL, 2014). Statements can also be personalized to reflect the specific needs of the individuals, which can then be demonstrated through the provision of communicative language tasks, for example. Through the process of determining what they need to do to complete the task, learners are working towards the creation of action plans to fill the gap in their knowledge (Moeller & Yu, 2015).

An additional consideration for the design of the intervention was how to personalize the Can-Do statements to reflect specific needs. In both the ELP and Linguafolio, this process is heavily scaffolded by teachers to ensure the goals set are attainable and SMART (Little et al., 2011; Moeller et al., 2012). During the pilot phase of the ELP, however, it was reported that teachers often struggled with this process as they found it difficult to relate the general terms in which the Can-Do statements were authored to the specific requirements of their learners (Little & Perclova, 2001). This issue was further explored by Ziegler and Moeller (2012) in response to an earlier Linguafolio study that did not find a statistically significant relationship between instructor and student goal writing. They posited that more variability in scaffolding the goal writing process was required, as opposed to requiring instructors to stick with the original process which was highly scripted. Their proposed solution was to provide learners with communicative goals from the course to select from, which they could prioritize and then personalize as their own. The example given was to go to a restaurant and demonstrate “ordering food” in the target language.

Forethought: Time Management

One aspect of strategic planning, a process closely related to goal setting, is time management. In the context of learning, time management involves making schedules for studying and allocating time for different activities. Students make decisions and form intentions about how they will allocate their effort to completing their work during the forethought phase of SRL (Pintrich, 2000a). From the perspective of SRL, these are behavioural aspects of strategic planning. In a typical flipped learning context, for example, students need to ensure they complete the pre-task activities prior to in-class learning sessions so they can be prepared to participate in the more discussion-based interactions with peers and instructors (Johnson & Marsh, 2016). The need for careful management and prioritization is even more pronounced in learning environments with non-linear access to information. As in many massive open online course scenarios, for example, the heavy requirement for both goal setting and strategic management often results in disengagement and attrition (Kizilcec et al., 2017).

Several studies have demonstrated the importance of time management strategies in relation to online course completion and achievement. Il-Hyun et al. (2015) for example, used log data from a learning management system to investigate adult learner's time management strategies to better understand the high rate of incompleteness in online courses. They concluded that the regularity of the login intervals was a strong indicator of adult learners' achievement. Gelan et al. (2018) reviewed similar metrics in the context of a French language course that employed a flipped classroom learning design. They found evidence suggesting that course achievement was connected to strategic management and active preparation for in-class activities. Similar results were reported in a study on self-regulation in MOOCs where strategic planning predicted attainment of personal course goals (Kizilcec et al., 2017).

Self-Reflection: Self-Assessment

The process of learner self-assessment in the literature has frequently been referred to using several terms including, self-reflection and self-evaluation, almost interchangeably. In this context, self-assessment is defined as “a process of formative assessment during which students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses, and revise accordingly” (Andrade & Du, 2007, p. 160). It can be seen as a process whereby learners collect information about their performance to see how it matches their goals.

The role of self-assessment in supporting the SRL process has also been widely discussed in the literature. In the process model of SRL (Zimmerman, 2000), learners’ task goal setting during the earlier forethought phase also effects the later process of self-reflection. Proactive learners self-assess by “comparing their self-monitored outcomes to their forethought phase goals as a standard” (Zimmerman, 2008b, p. 284). Due to the absence or lack of clarity concerning task goals set by reactive learners, in contrast, they either fail to assess or rely on social comparisons to judge their effectiveness. Self-assessment has also been described as key component of SRL, with the potential to scaffold other components, including task goal setting, planning, and self-reaction (Andrade & Du, 2007). To be effective, it has been argued, self-assessment must be criterion-referenced, and transparent to learners (Wiggins, 1998). Additionally, to achieve better alignment between instructors and learners, some researchers have recommended co-development as a strategy for the creation of assessment criteria (Dochy & McDowell, 1997; Ziegler & Moeller, 2012).

Investigating the relationship between task goal setting and self-assessment has equally been an important topic of research in the field of language learning. Self-assessment along with task goal setting has been identified as a core pedagogical feature of language learning portfolios, for example (Little, 2009). Can-Do statements are used to set proficiency targets, and later evaluated through an evidence-based approach where learners collect evidence for inclusion in their portfolio. This practice is key to facilitating self-assessment and the development of autonomy (Little & Perclova, 2001).

While self-assessment is reported as central to the European Language Portfolio, it has also been perceived as the most problematic aspect (Little & Perclova, 2001). Several reasons for this observation have been proposed. In practice, self-assessment does not generally figure into mainstream educational traditions in China and may lead to some initial friction and resistance (Lam, 2013). Research conducted in English teaching classrooms in a Chinese context suggest that both self and peer assessment may be undervalued in practice, by teachers (Wu et al., 2021). In a recent meta-analysis of SRL research published in China, however, it was determined that the process of self-assessment, in relative terms, was an effective predictor of personal goal achievement (Li et al., 2018).

There is also a general concern of a more fundamental nature that language learners may not have the necessary skills or knowledge to conduct effective self-assessment. At the level of communicative proficiency, in the context of a language learning portfolio this can be supported by the checklist of Can-Do statements and descriptors, and by requiring learners to demonstrate evidence of ability (Little, 2009). At the level of linguistic proficiency, however, this is likely to be more challenging as argued by Kohonen (2004) who has written about the “paradoxical nature

of the task of self-assessment as the learner should possess the same degree of linguistic knowledge, we are asking them to assess” (p. 39).

Ziegler and Moeller (2012) reported success in overcoming this student obstacle to self-assessment. In their study, teachers were provided with micro-chapter exercises to help facilitate the macro goals of Linguafolio aimed at improving metacognition. They introduced pre and post assessment of lesson objectives framed as student confidence ratings, which were aimed at helping students to internalize the communicative goals of the course and see positive change in their confidence levels. Elsewhere, Dam (1995) has recommended structuring learner-led, self-assessment in classroom practice using the following questions: 1. What am I learning? 2. Why am I learning it? 3. How am I learning it? 4. How successful is my learning? 5. What am I going to do next? Interestingly, this model of questioning aligns well with Hattie’s (2008) recommendations for the information to be included in effective feedback.

In summary, addressing the distinction between proactive and reactive SRL behaviours and the importance of supporting the processes in the forethought phase, specifically *task goal setting* and *time management* in this research context has been highlighted as a priority. Additionally, the phase of self-reflection or the process of *self-assessment* has been selected as warranting attention in the intervention, owing to the interdependence of the processes, both of which make use of Can-Do statements. Successful self-regulated language learning can be facilitated through the introduction of an intervention such as a language learning portfolio though this design has required significant instructor involvement. Doing this at scale required in this research context, however, will require further investigation. Exploring and addressing the challenge of scale is the topic to be addressed in the following section.

Feedback and Learning Analytics

Successful self-regulation involves a combination of cognitive and metacognitive skills, and motivation and these can be improved through the provision of feedback (Butler & Winnie, 1995; Hattie & Timperley, 2007). More research is needed, however, to determine how various forms of feedback can impact the self-regulatory cycle (Usher & Schunk, 2018). Many definitions of feedback have been proposed but essential elements include information provided by various sources regarding outcomes and the cognitive processes that lead to those outcomes, together with the process through which learners make sense of this information and use it to improve their learning and strategy use (Butler & Winne, 1995; Carless & Boud, 2018; Hattie & Timperley, 2007). From the perspective of social cognitive theory, teachers' feedback constitutes an environmental variable that influences other personal and behavioural elements (Schunk, 2003; Schunk & Zimmerman, 1997). External, environmental feedback is critical to task goal effects, for example, because it enables people to track progress so that effort and strategy can be adjusted to attain the goal (Locke & Latham, 2019). Environmental feedback may "confirm, add to, or conflict with the learner's interpretations of the task and the path of learning" (Butler & Winne, 1995, p. 248). Bose & Rengel (2009) found that learners who demonstrated more proactive, SRL behaviour tended to respond positively to external feedback and increased their efforts to achieve their goals.

Hattie and Timperley (2007) have provided the most influential model of feedback to date, which was later extended by Hattie (2008). In their model of feedback, the goal is to reduce the discrepancy between student's current understanding and the desired learning goal. Using this model at four levels, Hattie and Timperley contended that feedback at the process and self-regulation levels are the most effective strategies for promoting deep learning and task

mastery. Task-level feedback is only effective as a supplement to others while feedback at the level of self is the least effective. These conclusions are significant for the proposed study as the two least effective forms of feedback are those that are most prominent in the specified learning context where this research was undertaken. Task level feedback is provided regularly in the form of correction or praise, using various forms of both explicit and implicit techniques. What is missing currently is the feedback that promotes deep learning, at the process and self-regulation levels.

Feedback is one of the most powerful elements influencing student learning and as such, the quality of the learning experience is deeply impacted by the relevance of the feedback the student receives (Pardo, Jovanovic et al., 2017). Despite this knowledge, students may be dissatisfied with the quality of the feedback (Ferguson, 2011; Sinclair & Cleland, 2007). For feedback to be effective, it needs to be timely, personalized to students' progress and targeted at developing students' SRL capacity (Hattie & Timperley, 2007). In response to the proposed effective models of feedback, Boud and Molloy (2013) have argued that these expectations are at times based on unrealistic assumptions about learners and their educational settings. Often due to resource constraints, an institution's ability to deliver non-evaluative, supportive, timely and specific feedback for each student at the scale required is impractical.

Digital Learning

In the context of a language course for Chinese adults that incorporates a significant digital element the field of learning analytics may offer some options for addressing the concerns raised above. Data can be captured from learner interactions in the digital ecosystem providing valuable information about various aspects of the learning experience. Log data, saved as an unstructured data set, contains user information within these digital systems captured from

interactions within the courseware, the digital classroom, and the learning management system. Because the log data detects all interactions within the digital environment, it can be used to represent how the learning process occurs. As a result, the potential for the ability to observe how learners engage in the learning environment is comprehensive. To harness this potential, the field of learning analytics focuses on the collection, analysis, and reporting of data about learners and their environments (Siemens & Gasevic, 2012). In this way, learning analytics could potentially be used to address the challenges of providing effective, personalized feedback at scale in the context of the organization in which this research was conducted.

Learning Analytics Dashboards

Dashboards have emerged as one of the first direct applications of learning analytics (Arnold, 2010; Duval, 2011), but early designs were aimed at academic professionals, advisors, and instructors, who are expected to have the necessary training to understand and interpret these displays and be prepared to make well-informed decisions using the information conveyed. However, increasingly the intended users are students (Wise, 2014). Schwendimann and colleagues (2016) define learning analytics dashboards (LAD) as “a single display that aggregates different indicators about learner(s), learning process(es) and/or learning context(s) into one or multiple visualization” (p. 8). When designed and used effectively, they can be considered as feedback interventions to increase learner awareness, reflection, and ability to self-regulate (Matcha et al., 2019; Teasley, 2017).

Learning Analytics Dashboard Design

Learning analytics dashboards are often made up of a collection of indicators relating to tasks, attributes and/or contexts of learners. The dashboards are commonly embedded within a learning management system or other digital learning tool. Most early designs for learners were

simply repurposed from dashboards created for administrators or instructors and have been slower to evolve as a result (Corrin, 2018). Many tools took a ‘one-size-fits-all’ approach, for example, and were not necessarily created for the intended purpose of supporting learners directly (Teasley, 2017). More recent designs have been challenging this status quo, however, providing learners with customizable options and widgets to empower them to view the information they find most useful (Jivet et al., 2021).

It remains a complex task to design effective learner-facing analytics, as can be seen from recent efforts to categorize the features and functionality (Bodily & Verbert, 2017). In total they examined 93 tools and identified 68 unique types. They attributed the difficulty in discovering patterns in types of tools to the highly context-dependent nature of their designs. This approach was further emphasized in another recent review suggesting the emphasis for design should be on supporting students to accomplish set tasks in the most effective way (Match et al., 2019).

Sense Making

Learning analytics dashboards (LADs) are an intervention that functions as a form of feedback that aims to equip learners to take control of their learning (Nicol & Macfarlane-Dick, 2006). The implication is that learners have agency and play an important role in translating the information provided in LADs into action. One interpretation of the results from the previous study is that the feedback provided did not offer enough actionable information to help learners to optimize their study process.

Besides the resulting inaction, an additional risk of selecting the wrong indicators is that learners might be misled by the simplicity of visualizations that reduce the complexity of a learning process to the number of times they log into a learning management system or use

specific resources (Yu & Zhao, 2015). In many language-learning contexts, including the institution where the study took place, the digital learning components where trace data can be collected represent a small portion of the overall learning experience. It is important to avoid suggesting that a learner judge their performance with a “single piece of the puzzle” (Greller & Drachler, 2012, p. 52). The design of the intervention plays an additional role in helping learners understand the landscape of the learning environment and the scope of which the data presented helps to describe.

Frames of Reference

Another important element to consider for the design of a learning analytics intervention is the frame of reference included. A reference frame is the comparison point to which students orient when they review the visualizations in an LAD (Wise, 2014). Student-facing LADs typically contain indicators drawing on social (comparison with peers), self (prior activity) and course achievement (activity goals) reference frames (Jivet et al., 2017; Wise, 2014). The social category can be considered as an external reference while self and course achievement make use of an inward facing lens (Lim et al., 2019). A similar type of classification has been employed in the achievement goal literature, where select frames of reference denote either a learning goal (internal frame) or performance goal (external frame) (Elliot et al., 2011).

There are few studies examining the effect of using external frames of reference (i.e., social comparison) in LADs. Jivet et al. (2018) noted very mixed findings on student motivation. Perez-Alvarez et al. (2018) however, noted that social comparison had positive effect on learners in both massive, open, online course environments as well as other online courses, with the effect being reflected in the time management and commitment of the learners. Aguilar (2018) used the achievement goal framework to review the responses to LAD visualizations in 60 at-risk

college students for evidence of learning or performance goals. Based on the results, he identified that graphics which were more self-focused tended to elicit learning goal-related responses while visualizations that were comparative or social, elicited a performance response. The risk of promoting a performance goal orientation is that it could lead to a surface approach to learning (Biggs, 2012).

Task Goal Setting and Self-Assessment

Supporting task goal setting and self-assessment for self-regulation is a priority for the design of the intended intervention, which has also been addressed in earlier LADs. For example, Santos and colleagues (2012, 2013) presented a task goal-oriented dashboard which allowed students to keep track of learning goals achieved. The intention of the design of the customizable dashboard was to enable learners to reflect on their own activity and compare it with peers. Time spent with different tools within the digital learning environment was displayed in dashboard visualizations. Through the first round of their case study, the authors concluded that while the students considered the dashboard useful, they were not motivated to use it. The main value appeared to be from the opportunity to compare with other peers.

Enabling the function of capturing task goals has been highlighted as a promising direction for LADs, though with a view to capturing the standards of the learner (Matcha et al., 2019). This can be enabled by preparing open text fields for learners to create their own personal goals (Jivet et al., 2021). Task goal setting can provide a personalized context for sense-making and interpretation of the analytics provided (Wise, 2014). As described above, learners often face different challenges preparing their own task goals, though this can be scaffolded in various ways. Making this process a structured part of the learning activity is one way to help guide learners to consider how they might make use of the analytics to help them evaluate their

progress (Lai & Huang, 2016; Wise, 2014). Designing the process as a dialogue between instructors and learners has been explored in previous research, with a view to improving comprehensibility and alignment (Dochy & McDowell, 1997; Ziegler & Moeller, 2012).

Matcha et al. (2019) also recommend that goal functionality be complemented with instrumentality to collect data related to the standards on which the learners are expected to evaluate their products and process. These data could be used as feedback to enhance student's self-assessment or inform the selection of study tactics and strategies. Feedback that helps learners understand the link between their performance and the cognitive activities they engage in while learning should be particularly effective for students who adopt learning goals (Butler & Winne, 1995). Research suggests that students with a learning goal orientation will study more strategically (Ames & Archer, 1988; Pintrich & De Groot, 1990). In this way, the LAD design could integrate well alongside the objectives of the language learning portfolio, albeit in a digital capacity where further insight about the learning process could be drawn from the learning trace data.

Time Management

While the evidence of the importance of strategic planning for successful self-regulation seems strong, providing access to these data through an LAD seems to have minimal impact on learning outcomes (Lim et al., 2019). Park and Jo (2015) tested their initial design for an LAD which included visualizations of trace data collected from different time management-related interactions with a learning management system. The selection was based on earlier studies conducted that had demonstrated these were meaningful variables for predicting learning achievement. Despite the strength of these variables, they found the LAD did not significantly impact learning achievement.

Personalized Feedback

The discussion so far regarding the potential of learning analytics as a valuable source of feedback has been limited to the use of LADs as student-facing visualizations of learning trace data. The research on LADs, however, seems to suggest they have had minimal impact on learning (Bodily & Verbert, 2017). Data literacy may be a factor when it comes to accurately judging the data visualizations. Some researchers have also questioned the expectation that learners should possess the ability to make meaning of these data in a way that can help them to identify appropriate and effective actions (Clow, 2013; Corrin & de Barba, 2014, 2015; Teasley, 2017). Others have called for additional focus to be placed on the development of interventions that provide more support for learners with the transformation of data into actionable insights (Gasevic et al., 2015; Wise, 2014). Recent work on an intervention design that combines LADs with elaborated, customized instructor feedback facilitated by data insights has attempted to respond to these suggestions and is described, below.

One of the biggest barriers to the delivery of effective, personalized feedback at scale, as outlined above, is institutional resource constraints (Boud & Molloy, 2013). Pardo, Jovanovic and colleagues (2017) have been exploring one way of overcoming this challenge by leveraging the availability of data sets combined with the affordances of technology to augment human intelligence. Specifically, in a flipped learning design of a first-year engineering course, learners were provided access to real-time feedback on their level of engagement with the pre-lesson activities using an LAD (Khan & Pardo, 2016). By reviewing the dashboard, learners could monitor engagement with video resources, their results from answering formative test questions, and their performance on summative assessment tasks. Previous research has demonstrated the connection between time management and learning achievement (Gelan et al., 2018; Il-Hyun et

al., 2015). An external frame of reference was also included to enable a level of social comparison.

In addition to the real-time feedback available in the LAD, learners were also provided with personalized feedback on a weekly basis (Jovanovic et al., 2019). The feedback, described as Personalized Learning Support Actions (PLSAs), was generated based on an analysis of the learner engagement and performance of the pre-class tasks assigned for that week. Instructors were able to prepare comments aimed at the learning process and self-regulation levels (Hattie & Timperley, 2007) by reviewing different types of learner interactions with different learning resources. The key assumption was that instructors would be able to draw on the level of interaction to modulate the comment, resulting in a much stronger connection to the actual learner behaviour making it more useful.

From the research using this learning analytics intervention, it would appear that the developers have had some success in improving learning results. During the initial implementation, Pardo, Jovanovic and colleagues (2017) reported that the personalized comments were positively associated with both learner satisfaction with the feedback and the mid-term exam. A later study also explored the impact to strategy use and found the instructor feedback or PLSAs had helped to influence the frequency of positive strategy usage (Lim, Dawson et al., 2021). In their mixed method study, Lim and colleagues also found the theme of reflection was quite prevalent in the interview data collected. They interpreted this finding as evidence of the existence of feedback loops where learners are guided through self-assessment towards identifying gaps in their current and desired performance, supported in developing their capacity for evaluative judgement, and given the opportunity to take action in closing the gap (Carless, 2019).

In summary, the literature includes multiple studies lending support to the notion that feedback is a critical component of learning, including supporting learner autonomy and self-regulation. The application of learning analytics may provide a solution to help overcome issues associated with providing supportive, timely feedback at scale. Much attention has been directed at exploring ways in which data representing learner activity can be visualized for learners to help them with the process of decision-making. Another promising development lends support to the use of data to enhance feedback from instructors, helping to ensure it is timely, helpful, and relevant. The literature suggests that the combination of data visualization and data-enhanced instructor feedback could lead to the best results.

Synthesis of the Literature Review

This literature review provided a discussion of the five major areas of this study: flipped classroom learning designs, SRL, achievement goal theory, fostering SRL and, feedback and learning analytics. Flipped classroom learning has recently emerged as a popular blended learning option that can accommodate important principles of language teaching and learning. This feature of the learning design combined with the additional flexibility provided in the course offered by the institution has introduced challenges associated with learner independence and resulted in learners finding it difficult to self-regulate.

The conceptual framework developed for this study includes multiple layers that were used to guide the conceptualization, design, and development of the intervention (see Figure 2), which was the primary focus of this design-based research. Foundational to the study was the process model of SRL, which draws from social cognitive theory (Zimmerman, 1989, 2000). Each phase in the process has been extended to include different processes that occur during self-regulation, and those targeted by the intervention were highlighted in the diagram. The

forethought and *self-reflection* phases are supported by the inclusion of Can-Do statements, which are thought to be employed during both *task goal setting* and *self-assessment*. Additional support for *self-reflection* is provided by the introduction of *external feedback* consisting of both *instructor feedback* and *analytics* drawn from data in the learning management system. External feedback is reviewed and interpreted by the learners helping to support the generation of internal feedback (Butler & Winne, 1995). Attending to the design and development of these features of the intervention constitutes the core of the study as it went through three initial rounds of investigation.

Conceptual Framework

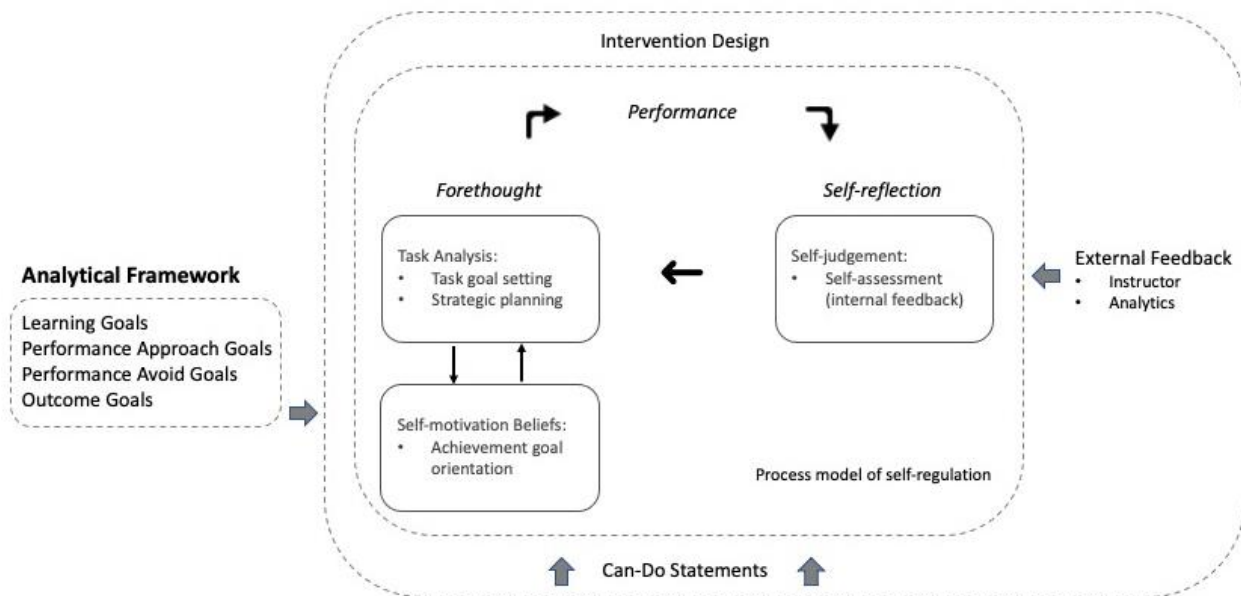


Figure 2. Conceptual and analytical framework of the design-based research study.

In addition to the development of the intervention, the study adopted a second objective which was to explore the characteristics of the goals that Chinese, adult language learners with high persistence during the Covid 19 restrictions pursue in achievement situations. This second objective was developed in response to an opportunity that presented itself with respect to the

participants in the study. In the process model of self-regulation, the variables in each phase are theorized to be closely integrated and thus studying *self-motivation beliefs* could potentially provide useful insight into the impact of the intervention on goal orientations (Zimmerman, 2000). In this study, *achievement goal orientations* were adopted as an analytical framework by extending *self-motivational beliefs* from the *forethought* phase. The framework used in this study was developed contextually (Dowson & McInerney, 2001, 2003) through an inductive process of analyzing the participants' reasons for learning English identified in the data. The resulting framework was an extension of the trichotomous model of achievement goals, which includes learning and performance goals (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Performance focused orientations are further analyzed into performance approach and performance avoid achievement goals. Outcome goals were included as a fourth category (Gardner & MacIntyre, 1991; Grant & Dweck, 2003; Pulka & Niemivirta, 2015).

To improve the existing support for self-regulation provided by the institution, the broader goals of this study include the development of an intervention that can be implemented in the learning training organization and made available at scale. The current study included the early iteration of this design process. Two areas of interest have been examined to help address this challenge and form the principles of design. Language learning portfolios offer a successful classroom-based use case for the development of helpful task goals and promoting reflective self-assessment. The field of learning analytics includes options for providing feedback to learners at scale, to help guide them in their study. Some potential barriers to analytics implementation were identified, primarily concerning data reliability and interpretation.

Throughout this literature review it has been noted that more research has been called for in all five areas proposed in this study. As such, this research has the potential to contribute

towards our understanding of the theory and practice of interventions designed to support self-regulated learning for adult language learners in blended, flipped classroom environments.

Chapter 3: Methodology

This chapter provides an introduction and rationale for the selection of the research design and methodological procedures, including the positioning of the researcher, employed in this study. It is organized around the following sections including setting, participants, and procedures for data collection, analysis, and synthesis. The chapter concludes with considerations of data trustworthiness, ethics and limitations and delimitations of the study.

This study was conceived of as a design-based research (DBR) project to explore how an intervention can be used to scale support for student self-regulation in blended, language-learning environments which require substantial learner autonomy. It was hoped that supporting more informed decision-making by adult learners would lead to improved learning results.

Design-based research is described as a genre of research that seeks to solve complex educational problems through the iterative development of solutions (McKenney & Reeves, 2012, 2019). At the same time, the pursuit and discovery of new knowledge that can be used to inform the work of others is a priority. Together, these two goals are considered the defining characteristics of design-based research.

Design-Based Research Methodology

The approach chosen for this research was heavily influenced by the methodology of design. Design-based research as a methodology emphasizes local, real-world practice as it must “be recognized and integrated as part of the theoretical claims if the claims are to have real-world explanatory value” (Barab, 2014, p. 152). This methodology contrasts with experimental studies which would take place outside the context of real-world practice. Digital learning environments such as the context for this study are described as complex systems with multiple variables where it is too “difficult to study any one aspect independently from the whole operating system”

(Brown, 1992, p. 143). Design-based research allows for research to be conducted in these complex (i.e., messy) settings creating the potential for practical design solutions in practice (Barab & Squire, 2004; Design-Based Research Collective, 2003; Shavelson et al., 2003). By extension, “being situated in a real educational context provides a sense of validity to the research” (Anderson & Shattuck, 2012, p, 16).

While providing the benefit of being able to study complex learning environments, DBR emphasizes the improvement of local education practices which often involves the introduction of a new practice or tool “designed and systematically changed by the researcher” (Barab, 2014, p. 151). Design-based research empowers systematic improvements as it “involves disruptive, innovative design solutions and/or interventions in practice” (Jacobsen, 2014, para. 20). The designed solution and the ability to positively impact the local context becomes one of the most important features of the quality and results of the research project (Anderson & Shattuck, 2012). The creation begins with an assessment of the local context, is informed by relevant literature and practice from other contexts and is designed specifically to overcome some problem or create an improvement in local practice.

Crucially a priority for DBR studies is also to integrate “the development of solutions to practical problems in learning environments with the identification of reusable design principles” (Herrington et al., 2007). The combination of micro and macro (McKenney & Reeves, 2012, 2019) is one of the signature features of DBR methodology. This priority reflects the ultimate intention of this study, which was to develop an intervention to support self-regulated language learning in the local context while also addressing the initial output of preliminary design principles.

The selection of DBR as the methodology of choice for this research was in part due to the researcher's pragmatic emphasis on both designing for local implementation and theory development (Barab, 2014). The epistemological and ontological rationale is addressed in further detail in Chapter 1. A comprehensive definition of DBR is provided by Wang and Hannafin (2005) who described it as a "systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p.7). All aspects of this definition were reflected in the research design carried out in the language training institution in China, where the study was situated.

Iteration in research is another core characteristic of DBR (McKenney & Reeves, 2012, 2019). This allows for explanatory frameworks from previously conducted designs "that specify expectations that become the focus of investigation during the next cycle of inquiry" (Cobb et al., 2003, p. 10). Using this iterative cycle, DBR draws from a variety of methods including surveys, evaluations, case studies, interviews, inquiry methods and comparative analyses (Richey et al., 2003). By utilizing "a combination of methods, data from multiple sources increase the objectivity, validity, and applicability of the ongoing research" (Wang & Hannafin, 2005, p. 10). This study collected data from multiple sources through several phases of research, including survey, interviews, focus groups, and observations captured in field notes which can be applied to subsequent and on-going iterative developments of the intervention.

The process of iteration in research also allows for flexibility of the process to adapt to emerging issues during the study (Wang & Hannafin, 2005). In this research, the plan was modified several times first to accommodate for attrition within the original study sample, and

then to be able to benefit from additional support that enabled an improved technological design for the app intervention to be created and later implemented. Further changes were also made in response to the challenges due to Covid19. All changes were documented and reported in Chapter 4.

Another relevant feature of DBR is the collaboration required between researcher and practitioner in the selection and creation of an intervention (Anderson & Shattuck, 2012; McKenney & Reeves, 2012, 2019). This collaborative element is essential to ensure the intervention is well designed to meet local needs and incorporate the perspective of those stakeholders whom the intervention is meant to support. Both instructors and learners who were new to language learning at the institution were heavily involved during the initial research phase as they were the intended users of the intervention. Instructors and learners were helpful in providing insights related to the benefits and general usability of the design.

It has been noted that local involvement and collaboration with staff in an institution can lead to better buy-in or support for the proposed change, and ultimately improve the chances of the sustainability of the intervention (Coburn, 2003). Involving teachers as collaborators in the research and development of the intervention can help them to develop a deeper understanding of the pedagogical principles of the reform, potentially improving the success of both scalability and sustainability. Furthermore, this collaboration with the teacher can contribute in an on-going, generative way to professional development and further intervention refinement (Clarke & Dede, 2009). This was evidenced by the extended work conducted by the two instructors who supported this study, who went on to develop and promote further training for supporting the development of SRL in the classroom, within the wider institution.

An important criticism of DBR studies has revolved around the generalizability of study output. Indeed, this feature is the standard for experimental and correlational approaches to research. At the same time, it is the value that DBR brings to be able to impact local practice that makes it useful (McKenney & Reeves, 2012, 2019). Because DBR is conducted in the complexity of real-world settings, it is uniquely situated, provides ecological validity (Barab & Squire, 2004) and is best suited to addressing the needs of the intended users. The local impact is of relevance to my research context as the setting involves busy adult learners who will need to see evidence of the benefits of engaging with the intervention if it is to have any chance of achieving large scale implementation.

An additional yet related criticism of DBR from researchers has been in relation to the replicability of the study (Barab & Squire, 2004). However, Barab and Squire's (2004) response to this is that it was not the goal of DBR to achieve replicability but to "lay open and problematize the completed design and resultant implementation in a way that provides insight into the local dynamics" (p. 8). They further emphasized the importance of communicating findings in such a way that others can recontextualize the study by imagining it taking place in their own situation (Barab, 2014). Connected to this issue was that of achieving scalability, another challenge encountered by DBR studies and of importance for the ambition of this project. Conveying the rich contextual information alongside the analysis of the inner workings is key for enabling the transformation of "the local story into an argument that has generalizable value to others who care about the underlying lessons" (Barab, 2014, p.162).

Of a more practical nature, a common issue that is generally reported with DBR studies and impacted this research, concerns both the time required for completion, and the nature of working in naturalistic settings. Design-based research studies can often lead to having to deal

with large amounts of data (Anderson & Shattuck, 2012), it was also the case for this study due to the inclusion of multiple stages of research and the changes in the research design in response to the global pandemic. The main issue encountered in this study, however, can be more accurately characterized as the sustainability of the collaborators and the participants, often a feature of DBR (Design-Based Research Collective, 2003). This challenge was encountered during the two phases of the research where the attrition of the study participants was observed and significantly impacted the study.

Research Design Overview

The research problem addressed in this study was the perceived need to support self-regulated language learning in a digital learning environment at scale. Promising work on promoting SRL in a language learning context has evolved from research on language portfolios but has so far been limited to predominantly classroom use (Little et al., 2011; Little, 2012; Ziegler, 2014; Ziegler & Moeller, 2012). More research is needed to adapt the design priorities of the portfolio, including task goal setting and self-assessment, to the digital learning environment of the institution where the research is situated. A research approach that employed an iterative, non-linear process, much like the practice of design was selected for this purpose (Ross et al., 2008).

Design-based research evolves through multiple iterations, building on the development and insight gleaned from the process of reflection and refinement. McKenney and Reeves (2012, 2019) introduced a model for conducting DBR with three phases of investigation, which was adopted for the purposes of this study. Although this stage of the research is positioned as part of a larger project that would extend beyond the scope of this dissertation, it still included multiple iterations within a full DBR macro cycle as illustrated in Figure 3. The research design

of this study was completed in three stages that included one initial micro cycle (*stage 1*), followed by three meso-cycles, each containing two micro cycles. Two meso-cycles were completed in *stage 2* while one additional meso-cycle was conducted to complete *stage 3*. *Stage 2* included two components as part of the design of the intervention while the scope of *stage 3* was narrowed to include only one. Each stage also involved different groups of participants.

Stage 1	Stage 2	Stage 3
<p>Micro cycle</p> <p>Analysis and Exploration</p> <p>My experience in the organization and own teaching practice</p> <p>Document Review</p> <p>Review of institutional policies and practice</p> <p>Review of technical and data infrastructure in the organization</p>	<p>Meso cycle 1</p> <p>Design and Construction</p> <p>Conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • A review of the literature • Document review <p>Evaluation and Reflection</p> <p>Concept Sketches</p> <p>Demographic survey 2 Focus groups of 4 participants each Field notes</p>	<p>Meso cycle 2</p> <p>Design and Construction</p> <p>Re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>Evaluation and Reflection</p> <p>Storyboarding</p> <p>2 Focus groups of 2 participants each Field notes Behaviour logs Instructor feedback</p>
		<p>Meso cycle 3</p> <p>Design and Implementation</p> <p>Further re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>App design and development</p> <p>Evaluation and Reflection</p> <p>App Implementation</p> <p>Demographic survey 5 student interviews Field notes Behaviour logs Instructor feedback</p> <p>New Prototype To be developed</p>
<p>RQ1:How was self-regulated language learning in the institution supported at the beginning of the research period?</p> <p>RQ2: What were the data and technological opportunities and constraints?</p>	<p>RQ3: How can Chinese adult learners be assisted with self-regulated language learning in the institution at scale given the data and technological opportunities and constraints?</p>	<p>RQ4: What is characteristic of the goals Chinese, adult language learners with high persistence are likely to pursue in achievement situations?</p> <p>RQ5: How effective, from the participants' perspective, is the intervention in supporting self-regulated language learning for Chinese, adult learners?</p>
<p>RQ: What are the characteristics of an intervention for promoting self-regulated language learning which will support Chinese adult learners in a non-linear, blended learning environment at scale?</p>		

Covid-19 related modifications

Figure 3. Implementation of the design and development of an app-based intervention in a macro-cycle of the design-based research process. Figure adapted from Dowse and Howie (2013) illustrating 3 stages of design-based research.

The study was designed to culminate in *stage 3* which would have included a larger-scale implementation of the intervention to evaluate the potential and effectiveness of the design to address the research problem. Unfortunately, the original research design had to be modified as a result of the Covid-19 pandemic and the impact to the organization in which the research was being conducted. The larger-scale deployment was abandoned in favour of continuing with a small-scale formative evaluation together with some of the original participants.

The specific research actions were deployed in cycles and included Analysis and Exploration, Design and Construction, and Evaluation and Reflection. Details of the research schedule can be found in Table 1. Note the pause after December 2019 was due to site closures in response to the Covid-19 pandemic. Both the Analysis and Exploration phase, and the Evaluation and Reflection phase feature data collection. The Design and Construction phase, however, was unique in that it served a generative function. It was informed by the other two cycles but did not involve any empirical testing. Each of the micro cycles were completed based on the area of focus and stage of the research, culminating in data that were collected from the meso-cycle. All of the data collected were then analyzed and applied in the subsequent meso-cycle to inform the design of the next iteration of the intervention.

Stage	Phase	Duration (Days)	Duration									
			Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Sep-20	Oct-20	Nov-20	
1	Analyze & Explore	21	✓									
	Design & Construct	5		✓								
	Evaluate & Reflect	7		✓								
2	Design & Construct	5			✓							
	Evaluate & Reflect	8			✓							
	Design & Implement	25				✓	✓	✓				
3	Evaluate & Reflect	55								✓	✓	✓

Table 1. Stages, phase, and timeline of the design-based research process.

Analysis and Exploration Phase

The initial phase of the study was intended to focus on developing a clear understanding of the problem at hand. This phase of analysis and exploration took place as a micro cycle at the

beginning of the research and included local site visits, a review of relevant institutional documents, policies, and data infrastructure, together with a critical review of the literature. The analysis of earlier attempts at introducing interventions to support self-regulated language learning led to the development of initial design propositions. These were later refined through iteration following a systematic analysis of key contextual factors.

While examining the relevant features of the institution, I attempted to adopt a reductionist stance in addition to a systems perspective to develop a full picture of the problem. I began the process by reflecting on the challenges that had been addressed while developing the learning design and the tools provided in the environment looking for evidence of root causes.

As a long-term employee in a leadership role in the language institution, I was guided by my experience when selecting and interpreting contextual information, while also seeking additional input from key colleagues. Taking a holistic view was also important for identifying and anticipating how components in the system would interact. This process was used to help identify important constraints that were adopted in the design of the intervention. I also took the opportunity to identify some key stakeholders who might threaten or support the change initiative I hoped to introduce into the environment. My efforts towards influencing colleagues responsible for software engineering paid off, for example, when I was able to secure support for integration of my intervention with the back-end data services of the LMS used in the institution. All observations and findings from this stage were documented as part of the analysis and exploration of local context in Chapter 4 and used to support *stage 2* of the research design (McKenney & Reeves, 2012, 2019).

Design and Construction Phases

The design and construction phases of the research were dedicated to further investigation of the research problem through the development of prototypes of an intervention. Each of these phases received inputs from both the analysis and exploration phase, and the evaluation and reflection phases according to the sequence of the process.

The initial proposition that was carried through *stage 2* of the research included two components: (1) Learner training sessions, and (2) An app to support goal setting, feedback, and self-assessment. During the design of the training sessions, I worked with two instructors to research and create a training syllabus that included five sessions aimed at promoting the use of course components to assist with self-regulation. Each session was delivered twice and reviewed, leading to updates and improvements made to subsequent lessons in response to observations of the participants. Ideas and reflections were documented as field notes and shared within the group. The training objective was later removed from the research but provided the context for which participants who contributed to the app prototype reviews in *stage 2* were involved.

The design of the app became the main focus of the research effort, which went through two rounds of prototyping using concept sketches and storyboarding techniques (Martin & Hanington, 2012). The first round of the design review employed scenarios to help participants explore the future use of the app using concept sketches. To complete *stage 2*, a second round of design review was conducted with a low-fidelity prototype of the app including data visualizations based on the participants' individual study record. This process is described in detail in Chapter 4.

After the most desirable and feasible options were identified, the skeleton design was developed into a detailed specification and used to create a fully functional app in *stage 3* of the research. The app was deployed to the server provided by the institution and a new group of participants were given access to their personal account on their mobile devices. The findings that emerged during this stage of the research are presented in Chapter 5 and discussed further in Chapter 6.

Evaluation and Reflection Phases

Following each round of design and construction of the intervention, empirical testing took place to evaluate and improve the design, in addition to developing insights that could be used to inform the external scientific community (McKenney & Reeves, 2012, 2019).

McKenney and Reeves (2012, 2019) recommend that evaluation start early in the process, and follow a series of alpha, beta, and gamma tests with a different focus in each round. Through this systematic evaluation process, it is expected that the researcher would be able to have a better sense of how the intervention would actually function, and effects it would yield.

Feedback on the initial design proposition was collected during *stage 2* through two rounds of evaluation and reflection using the design sketches and paper prototypes outlined above, guided by the conceptual framework of the study. The results from each of these phases were used to help inform the design and construction of subsequent phases. In *stage 3* following the implementation of the app, further evaluation was conducted with a new set of participants. An additional layer of reflection was added using the analytical framework described in Chapter 2.

Research Setting and Participants

A purposeful sampling strategy was employed as part of this DBR study to select two participant-instructors to support *stage 2* of the research. Because of the highly collaborative nature of the research, I decided to limit the selection of instructors to two experienced individuals who would be able to contribute to and execute the training plans. The instructors also needed to have sufficient flexibility in their timetables to enable them to commit to the time required for the research.

The language training organization employs approximately 500 instructors in China, 50% of which are foreign staff, and the other half are Chinese instructors of English. Foreign instructors are employed from various English-speaking countries, in line with the Chinese regulations for employment of foreigners. They are also required to have a minimum of a university degree in any subject, and a certificate in English language teaching, commonly referred to as Teaching English as a Foreign Language (TEFL). Chinese teachers of English have the same requirements, with the additional requirement of English at an International English Language Testing Services (IELTS) band 7 (British Council, n. d.). Most of the instructors employed in China are relatively new to the profession, with less than five-years of experience.

Stages 2 and *3* of the research also included adult language learners from the institution as participants. The context of the research was a blended, adult, English language training provider that focused predominantly on the English language training market in China but offers language courses in learning centres located around multiple, non-English speaking countries. Over 60 centres have been established in 10 cities around China with approximately seventy-thousand students. The language training organization has been operating in China since 2006.

The blended learning course was created to train adult, Chinese learners in English, starting from Beginner and continuing through to Advanced proficiency levels.

The courses were designed to cater to learners of 18 years and above, but primarily attracts adults aged 23-35 years and mostly female (73%). In terms of level distribution, the vast majority are studying course material from the A1 (38%) and A2 (26%) proficiency levels. The remaining levels are as follows: B1 (19%), B2 (13%), C1 (4%) (Council of Europe, 2001). Additional information collected by the institution includes reasons for learning English. A recent survey of adult learners studying in the revealed there were three primary reasons given: to improve career opportunities (83%), to travel overseas (31%), to enjoy English language media and recreation (19%). Understanding more about these needs and goal orientations was an important part of the research to understand how proactive SRL might be fostered and positioned as a supportive exercise worth their time and effort.

Site

The research took place at different sites according to different phases of the research design. In *Stage 2*, the research was conducted at one of the language training centres owned and operated by the institution in Shanghai, China. All the learner training sessions were held in the same classroom for the duration of *stage 2*. *Stage 3* of the research was conducted in two additional language training centres owned and operated by the institution, also located in Shanghai, China.

Participants

To support *stage 2* of the research, I approached two instructors, one foreign and one Chinese, who were employed at different centres to ensure they did not have access to the learners participating in the research. In a DBR project, participants are seen as collaborators

(Wang & Hannafin, 2005). For this reason, I selected more experienced instructors as they played a critical role in helping to develop and deliver the learner training sessions. In addition to having more than five years of experience working in the institution, both held advanced teaching qualifications and were considered leaders in their respective training centres.

In *stage 2*, 35 adult, Chinese learners studying at the training centre where the research was conducted responded to a recruitment poster inviting them to join learner training sessions (convenience sampling). Twenty-seven of the 35 participants attended two or more of the five training sessions over 10 weeks. Although there was a desire to recruit participants to achieve maximum variety to best represent the greater population within the institution, interest was limited. This was partially influenced by the time and days that could be arranged based on the schedule of the instructors, who could not be available during popular study times. Participants all completed a demographic survey, which can be found in Appendix A. Eight of the participants later contributed to focus group discussions.

Stage 3 of the research began with recruitment for a new set of 50 participants distributed across four training centres in Shanghai. This stage of the research was interrupted by the outbreak of the Covid19 pandemic, however. Following a 9-month delay, the study was re-started with a subset of eleven of the participants who were recruited before the pandemic, five of whom participated in interviews. Each of the participants completed a demographic survey (Appendix A). Each participant from this stage was asked to provide a pseudonym for use during the research and for reporting results.

Data Collection Methods

The information required to address the research questions included a combination of contextual, theoretical, and demographic data collected through multiple phases of the research

design. Demographic information was gathered from both samples of learner participants from an initial survey while contextual information concerning the learning design of the course, data infrastructure and relevant institutional practices was collected from an extensive review of documents and policies. Theoretical information, including intervention design for supporting self-regulated language learning and methods for using learning analytics to scale personalized feedback, were critical for making design decisions and the interpretation of emergent data.

It is recommended that DBR studies generally include multiple, qualitative, relevant data sources including document analysis, interviews, and field observations (Barab, 2014). This study made use of several primary data sources to guide the design and evaluation of the proposed intervention through three stages of research. Additional secondary sources of data were used to support reflection and design development. A summary of data sources is provided in Table 2.

Data Type	Stage 1	Stage 2		Stage 3
	Micro cycle	Meso cycle 1	Meso cycle 2	Meso cycle 3
Document Review	✓			
Demographic Survey		✓		✓
Focus Groups		✓	✓	
Field Notes		✓	✓	✓
Interviews				✓
Behaviour Logs			✓	✓
Instructor Feedback			✓	✓

Table 2. Inventory of data sources collected during the study.

Primary Data Sources

Document Review

Data for the initial analysis and exploration micro cycle in *stage 1* was collected from the context of the language training organization through document review and conversations with colleagues. Bloomberg and Volpe (2016) suggested this should include anything that can provide knowledge about the history, vision, objectives, and products and services of the organization. As I am employed in a leadership role in the institution, I also possess direct knowledge and first-hand experience of many of the operating policies and history of the organization. This access, while convenient, is a double-edged sword and I took steps to minimize the impact of my own perspective on interpretation by seeking corroboration from other senior managers. This will be addressed further in the section on trustworthiness.

Demographic Survey

In *stage 2* and *stage 3* of the study, a survey method was used to collect relevant demographic information from participants, including duration of study, level of English proficiency, level of education, previous English learning experience, age, and employment. Included in the survey were questions associated with understanding learners' beliefs and learning preferences with respect to using the course materials and learning tools provided (see Appendix A). Importantly for the secondary research objective noted above, reasons for learning English were also captured. The survey was translated into Chinese. In *stage 2*, 35 participants completed the survey while in *stage 3*, there were 11 responses. The survey design was cross-sectional in that data were collected from participants at only one point in time (Creswell, 2015).

Focus Groups

Focus groups are group discussions that were facilitated with assistance from a Chinese translator and conducted in Chinese. Participants are usually selected because of a shared social experience (Liamputtong, 2011), which in this study applied to being relatively new to studying in the language training organization. Semi-structured questions were used to explore the use of the prototype of the app in both design phases conducted in *stage 2* and collect feedback on the visualization samples, as well as the data provided. I used the focus group protocol to collect field notes during the sessions while the sessions were also recorded and later transcribed and translated from Chinese to English (See Appendix B). Learners were asked to evaluate the usefulness of different types of interactions and data as well as the level of ease of use and understanding when using the app. Additionally, learners were prompted to come up with possible actions and to explain their rationale to evaluate their understanding of the information presented in the app. Note that in the first meso-cycle, two focus groups were conducted with four participants each, where the analytics data presented in the app was generic. This helped to focus the evaluation of the app on the visualization, interactions available and options for study actions (Martinez-Maldonado et al., 2015). Personalized, ‘real’ data was used in the subsequent phases and evaluation.

During the second meso-cycle, two focus groups were conducted with two participants each, where questions referred to improvements made from the previous round of evaluation. Additionally, we explored the degree of conformity between the learners’ perceived learning activity and the data. The purpose was to address a concern associated with the trustworthiness of the data, that has been previously identified as an issue that might impact learners’ willingness to consult or act upon analytics feedback (Park & Jo, 2015). Again, they were asked to describe

possible actions they might take as a result of this feedback as a means of assessing the usefulness of the data and interactions included in the intervention.

Observations and Field Notes

Observations are useful when attempting to collect firsthand, open-ended information in natural settings (Creswell, 2015). Observations provide an opportunity for the researcher to study actual behaviour and record information as it occurs, which I found invaluable for understanding how learners made sense of the visualizations of data. In my experience, adult students are not always forthright in indicating when they are struggling to understand, and observations are a good way of studying individuals when they are not able nor prepared to verbalize their thoughts (Creswell, 2015).

During *stage 2* of the research, observation data was collected from the learner training sessions in addition to the design review sessions where learners were both guided in the interpretation of the feedback and encouraged to explore options for acting on it. Observations were focused on recording student behaviour in response to the app as an additional source of input for exploring the interpretation and sense-making process. I collected data as a non-participant observer using an observation protocol that had been developed following the design recommendation in Creswell (2015) (see Appendix C).

Field notes were also collected in *stage 3* of the research following the implementation of the app, during the bi-weekly coaching meta dialogues. These sessions provided me with an opportunity to interact directly with each of the participants and observe how the app was being used to scaffold self-regulated language learning behaviour. Notes were taken on what I saw and heard directly, as well as ideas and questions that arose during the sessions, all of which were used for further reflection and analysis (Arthur & Nazroo, 2003).

Interviews

Interviews are considered a key research method to this study as they provide an opportunity to interact directly with participants to generate “rich, thick descriptions” from the different accounts (Brinkmann & Kvale, 2015). As such, they were an important tool in this study in the evaluation of *stage 3* for attempting to understand how participants ascribed value to the various features of the intervention and the resulting impact on their learning behaviour. I conducted and recorded semi-structured interviews with five participants at the end of the third meso-cycle to learn about how they used the app throughout *stage 3* of the research design. Because of the potential language barrier of some of the lower proficiency participants, it was important to have a translator available. Two of the interviews were supported by a Chinese/English translator (Charles and Lin) while the other three were conducted in English. Recordings were later transcribed verbatim and translated from Chinese to English.

Interview questions were originally focused on the evaluation of the intervention and designed to explore their interpretation of the feedback and interactions available and their perspective on how it had impacted their learning and decision-making (See Appendix D). An interview protocol was developed referencing the questions used by Bown (2009) and Park and Jo (2015) while allowing flexibility to respond to the themes that emerged through initial phases of the research and secondary data sources. This step in the research design was intended to extend earlier research in the field of learning analytics dashboards which has tended to limit evaluation studies to measurements of user satisfaction (Bodily et al., 2017; Jivet et al., 2018; Schwendimann et al., 2017). Later research has focused on identifying the benefits to learner motivation (e.g., Gelan et al., 2018; Jivet et al., 2020), time management (e.g., Jovanovic et al.,

2019), and impact on goal orientation (e.g., Beheshitha et al., 2016) and SRL (e.g., Lim, Gasevic et al., 2021).

An additional objective was added to the interview process following the update to the research design in response to the Covid19-related interruption where achievement goal orientations were explored. Each of the participants demonstrated high learning persistence by returning to continue their learning following the extended learning centre closure. I decided to investigate the reasons behind their decision to learn English and, in consultation with the literature, develop an achievement goal framework that could be used help guide further development of the intervention. Data collected from interviews were analyzed to address this objective in response to calls in the literature for more qualitative research that suggested these data would be useful for providing insight to better understand the diverse achievement strivings of foreign language learners (Lee & Bong, 2019). This was in contrast to the majority of the previous research investigating achievement goals, which has relied predominantly on the use of self-report scales using pre-set wording for items, to collect data (Kaplan & Maehr, 2007).

Secondary Data Sources

Behaviour Logs

Data from the LMS was collected and reviewed for patterns of study and resource use. In *stage 2* of the research, these data were used to generate samples for the design prototype review. In *stage 3*, these data were reviewed regularly and used to generate instructor feedback for inclusion in the app. They were also a useful reference to support guided reflection with the participants during the coaching meta dialogue sessions.

Instructor Feedback

Instructor feedback is provided to learners following attendance in an online class or submission of a writing activity. All feedback is then stored and displayed in the LMS provided by the institution. Feedback from the class participation and activity completion during the *stage 3* research period was reviewed and referenced during the coaching meta dialogues.

Data Analysis and Synthesis

Data collection and analysis were undertaken as a cyclical, iterative process in accordance with the research design leading to the conceptualization, refinement, and implementation of the intervention. The process of analysis occurred concurrently with data collection and was used to inform improvements to the intervention design and evaluation in each stage. To improve the credibility of the results, the study included a variety of data sources (activity, participants) and collection methods (observations, focus groups, surveys, interviews) (Creswell & Plano Clark, 2018). Qualitative data was generated from stage 2 and stage 3 research activity and analyzed using thematic analysis of content. Thematic analysis is described as a method or process for identifying and encoding patterns of meaning in qualitative data (Braun & Clarke, 2006). All data collected was stored securely and hand coded using Microsoft Excel spreadsheet software.

Two slightly different approaches to data analysis were employed to address the two research objectives. The primary objective, related to the development and evaluation of the intervention, employed the conceptual framework that informed the study to develop a priori codes that were based on research aims and focus group and interview questions (Swain, 2018). The second objective explored achievement goal orientations using an analytical framework related to achievement goal theory. Both frameworks are described in detail in Chapter 2.

In both instances, a hybrid approach to thematic analysis was employed (Swain, 2018). This is described as incorporating two methods of reasoning: a top-down, deductive, theoretical process; and a bottom-up, inductive, data driven process (p. 4). To begin the first cycle of data analysis in *stage 2*, for the first round of coding I used a priori codes derived from the theoretical framework. Referred to as deductive coding, the researcher generates a list of codes from the key variables that the researcher brings to the study (Miles et al., 2014). This initial set of codes can be applied and reviewed for fit and utility, and later revised where relevant.

During the process, I made notes that were later used to create additional posteriori codes. To facilitate this process, the data were manually divided into text segments labelled with codes to identify sentences or paragraphs that were deemed important, frequently cited, or unique (Saldana, 2021). Each segment was coded with a descriptive label that captured the meaning of the text. Posteriori codes were created through several rounds of analysis of the qualitative data generated from surveys, field notes and focus groups in *stage 2*. Following the completion of *stage 2* further exploration of the literature was used to help validate and refine this list. These codes were later revised to reflect decisions made concerning the app functionality and to add new codes that had emerged in the subsequent rounds of analysis conducted in *stage 3* with the interviews, surveys, and field notes collected. These codes were then applied to data collected from *stage 3*, grouped into major themes, and analyzed. The final list of codes can be viewed in *Appendix H*

In *stage 3*, while exploring achievement goal orientations with the sample population, I used open coding or inductive analysis (Patton, 2014) to label the reasons for studying English identified in the survey, field notes, and interviews. This was pursuant to the call for further contextualized research to better understand the goal orientations and dynamic motivational

patterns that can emerge from using an inductive approach (Dowson & McInerney, 2001, 2003). After completing the open coding using codes derived from the language produced by the participants, I reviewed the data and identified patterns that could be collapsed into the categories or *themes*. The resulting themes were then compared with the achievement goal orientations described in the literature. I added direct quotes from the data into the coding framework to assist with the categorization. The model that emerged through inductive analysis and consultation with the literature included a combination of the framework proposed by Grant and Dweck (2003), together with the approach/avoidance valence of performance goals with the original definition included in the trichotomous model (Elliot & Harackiewicz, 1996; Elliot & Church, 1997; Middleton & Midgley, 1997). This resulted in four achievement goals including learning, outcome, performance approach, and performance avoid.

Upon further review and consultation with the literature, I noted that I had focused in particular on the positively valenced or approach goals so I decided to recode the interviews using a deductive method to see if any further reasons could be identified. This process was facilitated by the practice of taking note of thoughts and interpretations as research memos. Recoding the *stage 3* data was useful for identifying reasons that were negatively valenced, or ‘avoidance’ goals (Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). The final set of in vivo labels is included in Tables 3 and 4. Upon completion of the second round of coding, the final grouping of labels was organized into themes and categorized by individual participant.

Themes	Posteriori codes	Illustrative examples
Learning	<i>To improve English language skills</i>	"I'd like to communicate with other people fluently [in English]. I'd like to know what they are saying."
	<i>For general self improvement</i>	"And most importantly [another reason to study English is]... to improve myself."
	<i>For enjoyment or interest</i>	"So I really love that [learning English], it's one of my hobbies."
	<i>To make good use of free time</i>	"And I just have a full schedule on my day off, so I just got a sense of achievement [from studying English]."
	<i>To be able to enjoy English media</i>	"I'd like to be capable to translate [understand] news [in English]."
	<i>To improve current job-related skill</i>	"So writing is my weakest part because as I told you before, sometimes I need to write some English proposal, or English email"
	<i>To live or travel overseas</i>	"For my personal life, I want to be able to communicate with the locals when I travel abroad."
	<i>To use English as well as others*</i>	"I will think like what are other people doing? Like if they are speaking in the public place, can I do it? I do that so that will keep me motivated and I want to do that, also."
	<i>To improve social confidence</i>	"I'm not quite a talker, so I hope that [learning with] passionate people can make me more open."

Table 3. Learning achievement goals identified. (*) Indicates a controversial categorization.

Themes	Posteriori codes	Illustrative examples
Performance Approach	<i>To outperform others</i>	"I also made significant improvements at that time, and then I realized I know the product inside-out... (better) than my coworkers"
Performance Avoid	<i>To avoid embarrassment</i>	"I don't think I will jump to a higher level class because... they will speak fluently. When they are speaking, I won't be able to understand so I'm afraid of attending the higher level classes."
	<i>To avoid failure</i>	"I don't think I need to always remember it [what I've studied]. I found that maybe I can remember now, and I can remember in one week, but I still will forget. So, now I don't care too much. If I forget it, I forget it."
Outcome	<i>To prepare for future career opportunities</i>	"I also want to speak fluently (in) English...just let this become my... How to say... my competitiveness in this market."
	<i>To prepare for a job in the future</i>	"My expectation is that I can work in the management in a foreign company [in my current field]."

Table 4. Performance and outcome achievement goals identified.

Ethical Considerations

Prior to beginning the research, formal approval of the research plan was sought and received from the University of Calgary's Conjoint Faculties Research Ethics Board. Additional permission to conduct research within the organization was obtained from the chief operating officer in China. Before starting any of the research activity, all participants were informed of the study purpose, process, and data to be collected, and signed a consent form. Instructors were also asked to sign a confidentiality agreement due to the access they were provided to sensitive

learning data. All information and consent documents were made available to participants in both English and Chinese for accuracy and clarity.

I have a position of leadership within the organization in which the research took place, where my team and I work very closely with instructors in a collaborative manner without any supervisory capacity. I did not have any oversight or line management responsibilities for the two instructors who collaborated with me during the research, though I did take steps to help ensure they felt comfortable and rewarded for their contribution to the research. My relationship with the learners as part of the research was not complicated by my role in the organization as I had no direct impact on their learning experience. All of the activity completed as part of the research was extra-curricular and had no negative impact on the learners' study results, or their ability to complete the course.

Issues of Trustworthiness

Qualitative research is interpretivist in nature and as a result it is of utmost importance that researchers corroborate their findings across data sets to determine their accuracy (Creswell, 2015). Lincoln and Guba (1985) suggested the criteria for evaluating trustworthiness, including credibility, dependability, and transferability, that parallel the traditional approaches for determining validity. Credibility refers to the accuracy of representation between the participants' perceptions and researcher's portrayal of them. This criterion most closely resembles that of validity which is commonly used in quantitative research (Bloomberg & Volpe, 2016). Several means exist to determine the validity of results in qualitative data, including triangulation, member-checking, reporting disconfirming evidence, and asking others to examine the data (Creswell & Plano Clark, 2018).

These considerations were used to guide the research along with regular debriefings conducted with my supervisor. Triangulation, for example was conducted through ongoing analysis of iterative data collection from multiple sources (Miles, et al, 2014). I believe it was also important to create transparency within the research, due to the nature of my role in the organization, by recording reflective field notes and sharing my data and interpretation with both colleagues and my research supervisor. The sharing of subjective perspectives is one way to help minimize the impact of the researcher's bias on the interpretation of the results (Bloomberg & Volpe, 2016). I was aware of my bias towards the interpretation of more positive results, for example and seeking the perspective of informed others was helpful for maintaining a balanced perspective. Additional measures taken included following up on surprise results and searching for negative evidence in the data. The use of a translator was also helpful for avoiding elite bias, or the instinct to communicate more or exclusively with learners who communicated more fluently using English (Miles, et al., 2014).

To help establish dependability, a detailed account of the creation of the data coding system, in addition to all data collection and analysis procedures was discussed with my supervisor and was included in the *data analysis* section in this chapter (Bloomberg & Volpe, 2016). While addressing transferability of the research findings to other locations, I attempted to provide rich, detailed contextual descriptions or “thick descriptions” (Geertz, 1973) to facilitate a vicarious experience. This was especially important to this report due to the unique nature of the context, working with adult language learners in China.

Limitations and Delimitations

There were limitations and significant challenges encountered using DBR and conducting research in real educational contexts (Anderson & Shattuck, 2012). The time required for

implementation of the study, together with the timing of the study coinciding with the onset of a global pandemic, created several logistical challenges for the participants in addition to the collection and management of large volumes of data, a common issue with this type of methodology (Collins et al., 2004). There was significant participant attrition during both stages of the research while still generating large amounts of qualitative data. In stage 3, for example, there were 50 participants before the study was paused due to school closures resulting from covid19-related restrictions. The study was later resumed with only 11 of the original participants.

Being able to generate relevant findings and develop theoretical insights that are applicable beyond the local context was another challenge to acknowledge (Barab, 2014). The research design was completed across one full macro-cycle of the DBR process. However, it is clear that the process will require further iteration in order to be generalized to apply across the entire organization. The limited number of participants who were involved in the implementation of the intervention proved to be an additional constraint when generating and evaluating the design principles. While generalizability was not the goal of the study, large-scale implementation remains a longer-term objective for on-going research and practice. Barab (2014) elaborated on this point in his discussion of “storied truths” (p. 155) in the local context that helps to bring meaning to events that are situated and as a result, can be deeply meaningful. This requires “opening up of the black box” (p. 158) by providing rich detailed accounts of theory in action and relating these to local outcomes. I attempted to address this issue by ensuring that a careful review of the ecosystem was included as part of the research documentation. An example of this was the consideration of the unique blended course design

that forms the learning environment where the research was situated, in addition to the discussion of cultural implications of English language learning in China.

An additional limitation that arose in this study was associated with the subjectivity of the researcher. Both Barab and Squire (2004) and later Anderson and Shattuck (2012) provided a useful critique of DBR, noting both the benefits and limitations of the researcher's intimate involvement in the conceptualization, design, development, and implementation of an intervention. To help address the concern of the dual role I played as both practitioner and theoretician, I followed the recommendation of McKenney and Reeves (2012, 2019) by documenting conscious bias in a research journal, keeping track of observations and field notes along with important reflections on the intentions of the design.

The study was delimited to data collection over three meso-cycles of eight months between August 2019 and November 2020. It was located in three learning centres based in Shanghai, China that were owned and operated by the Chinese legal entity of a global company. The participants included both instructors and learners at the institution. Two instructors were invited to take part and consented to being involved in developing and delivering training materials. The number of learner participants in each stage of the research was determined based on the number of people who responded to the advertisement for the study.

Summary

This DBR study was developed to explore adult learners' self-regulated learning in blended language learning environments. Drawing on the process model of SLR (Zimmerman, 2000), this DBR project investigated the study behaviour of a group of Chinese, adult English language learners through three iterative stages of development of an intervention. *Stage 1* and *2* involved the analysis and exploration of the local context, and design and development of the

intervention while *Stage 3* culminated in a small-scale formative evaluation of the design. An additional objective was added in response to changes required to the research design in *Stage 3* related to the investigation of achievement goal orientations. Qualitative data were collected and analyzed in an iterative process, from *Stage 2* and *3* using several different methods to facilitate and improve the trustworthiness of the results. Data were analyzed using a hybrid thematic approach (Swain, 2018) to address the different requirements of the two research objectives. Inductive analysis was of particular importance for the development of a contextually relevant achievement goal framework.

A detailed discussion of the results and findings from each stage of the research design is provided in the following chapters. Chapter 4 details the process and findings from the first two stages of the research including a detailed description of the intervention. Chapters 5 and 6 focus on the research activity from *Stage 3* following the implementation of the intervention. Chapter 5 includes a review of the findings that emerged in *Stage 3* followed by a discussion of results in chapter 6.

Chapter 4: Development of the Intervention

This chapter focuses on the analysis and exploration of the local context, and design and development of the intervention, which corresponds to the first two stages of the research, and to a lesser extent, stage 3. The implementation of the intervention was executed across a full macro-cycle consisting of three stages of the design-based research (DBR) process (see Figure 4). Stage 1 included one micro-cycle of the preliminary research for the purposes of analysis and exploration. During this stage, several examples of interventions were reviewed while conducting a deeper analysis of the research problem and context. The second stage of the research consisted of prototyping where the early design of the intervention was developed and evaluated through two iterative meso-cycles. Each meso-cycle consisted of a build phase followed by evaluation and reflection with the participants in the study.

The research goal of a DBR study is the development of an innovative intervention that is valid in a specific context (Plomp, 2013). With this objective in mind, the study was created to address the overall research question for the project:

RQ: What are the characteristics of an intervention for promoting self-regulated learning which will support Chinese adult language learners in a non-linear, blended learning environment at scale?

This overall research question was addressed in several stages of research, as is customary in DBR studies (McKenney & Reeves, 2012, 2019). Three additional research questions were developed and used to guide the early stages of the research. These questions were addressed in this chapter and corresponded to stages 1 and 2 of the research design:

RQ1: How was self-regulated language learning in the institution supported at the beginning of the research period?

RQ2: What were the data and technological opportunities and constraints?

RQ3: How can Chinese adult learners be assisted with self-regulated language learning in the institution at scale given the data and technological opportunities and constraints?

Stage 1	Stage 2		Stage 3
<p>Micro cycle</p> <p>Analysis and Exploration</p> <p>My experience in the organization and own teaching practice</p> <p>Document Review</p> <p>Review of institutional policies and practice</p> <p>Review of technical and data infrastructure in the organization</p>	<p>Meso cycle 1</p> <p>Design and Construction</p> <p>Conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • A review of the literature • Document review <p>Evaluation and Reflection</p> <p>Concept Sketches Demographic survey 2 Focus groups of 4 participants each Field notes</p>	<p>Meso cycle 2</p> <p>Design and Construction</p> <p>Re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>Evaluation and Reflection</p> <p>Storyboarding 2 Focus groups of 2 participants each Field notes Behaviour logs Instructor feedback</p>	<p>Meso cycle 3</p> <p>Design and Implementation</p> <p>Further re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>App design and development</p> <p>Evaluation and Reflection</p> <p>App Implementation Demographic survey 5 student interviews Field notes Behaviour logs Instructor feedback</p> <p>New Prototype To be developed</p>
<p>RQ1: How was self-regulated language learning in the institution supported at the beginning of the research period?</p> <p>RQ2: What were the data and technological opportunities and constraints?</p>	<p>RQ3: How can Chinese adult learners be assisted with self-regulated language learning in the institution at scale given the data and technological opportunities and constraints?</p>		<p>RQ4: What is characteristic of the goals Chinese, adult language learners with high persistence are likely to pursue in achievement situations?</p> <p>RQ5: How effective, from the participants' perspective, is the intervention in supporting self-regulated language learning for Chinese, adult learners?</p>
<p>RQ: What are the characteristics of an intervention for promoting self-regulated language learning which will support Chinese adult learners in a non-linear, blended learning environment at scale?</p>			

Figure 4. Implementation of the design and development of an app-based intervention in a macro-cycle of the design-based research process. Figure adapted from Dowse and Howie (2013) illustrating 3 stages of design-based research.

Research Stage 1

The initial research stage in the DBR process adapted from McKenney and Reeves (2012, 2019) was used for analysis and exploration. This stage constitutes one micro cycle of research and includes problem identification and diagnosis. McKenney and Reeves (2012, 2019) suggested to include a thorough exploration of the research environment to contextualize the problem together with a review of the literature to develop preliminary design principles.

Learning Context

Adult learners who are taking the English language learning program provided by the institution have many options and resources at their disposal. The course is largely modular, structured around thematic units consisting of language presentation and practice, leading up to the achievement of a central communicative objective. The learning design employs a flipped learning model where learners prepare to participate in synchronous, communicative tasks in class by exploring and reviewing relevant language practice activities in advance, asynchronously. Learners attend teacher-led classes regularly, either in the brick-and-mortar schools or digital classrooms. In this design, students are expected to take ownership of the learning process as the design introduces non-linear access to information, ideally resulting in a “felt responsibility for how their knowledge is applied” (Johnson & Marsh, 2016, p. 62).

The course design at its core is flexible to enable busy adult learners to best incorporate language learning into their schedules. In response to this requirement, learning pathways were designed to be customizable along various axis including sequencing, pacing, and selection. Learners can vary their study schedule between attending live, in-person group lessons and online one-to-one lessons with a teacher. Learners do not join courses in regular cohorts, for example, which allows them to progress at their own pace. They also have the flexibility to select the mode of delivery (e.g., online or offline) and theme. Additionally, they may choose to miss a week due to a busy week at work, etc. They will meet different classmates and instructors frequently because of the highly customizable course design.

Review of Institutional Policies and Practice

Self-regulation skills have been identified as essential for successful learning, particularly in flexible, non-linear programs where learners themselves take on a significant amount of

learning management responsibility directly. The social cognitive process model proposed by Zimmerman (1989, 2000) has been adopted as the theoretical framework, as detailed in Chapter 2. Supporting goal setting and self-assessment have been identified as priorities for productive SRL in this context, in addition to the provision of feedback. What follows is a detailed description of the policies and procedures related to these priorities in the institution.

Goal Setting and Self-Assessment

All new and potential learners begin a process of setting goals for their course during their initial encounter with the institution. At first, they may choose to engage with the literature available on the institutional website or other marketing material. Alternatively, they may join a consultation with a course representative to discuss their reasons for learning English and select a course. Can-Do statements are used to describe proficiency targets in both instances, framing performance in general terms according to the level scale used in the institution (see *Figure 5*). After selecting a set of goals and a target level, learners complete a placement test to help them approximate their starting level.

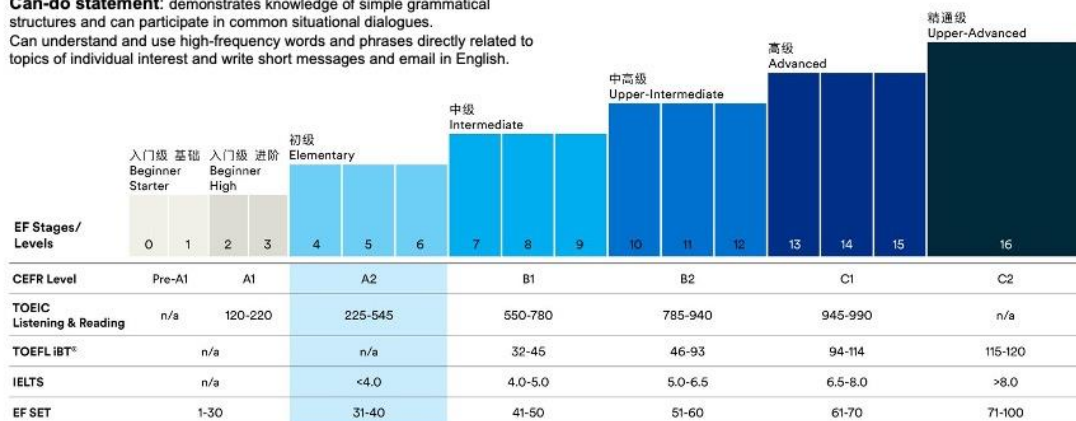
With both the proposed start and end point identified within the context of the course, learners are assigned a Study Advisor (SA), with whom they will meet to set up a study plan. Using the proficiency targets selected, the SA will work together with the learner to refine them into customized SMART goals. Once established, the long-term goals are used to guide the planning for the 12-month study duration. The goals, plan, and relevant progress will be reviewed together in their first 3 months in the program in bi-weekly sessions, by an SA, who will continue to help them evaluate their goal achievement and subsequently set new goals. This service will later be offered in 3-month on-going study sessions where it is expected that learners

will have developed the means to continue to set their own goals and track their progress using the learning management system.

初级 4-6

Elementary

Can-do statement: demonstrates knowledge of simple grammatical structures and can participate in common situational dialogues. Can understand and use high-frequency words and phrases directly related to topics of individual interest and write short messages and email in English.



英孚和CEFR进度表(欧洲共同语言参考标准) EF & CEFR (The Common European Framework of Reference for Languages)



Figure 5. Level scale representing the courses offered by the by the institution.

While Can-Do statements are referenced initially, the practice in the institution differs significantly when it comes to establishing short-term goals. The SA helps learners to schedule their classes and corresponding study activity into weekly goals working towards course completion. The goals established are framed using the logic of the course, connecting modules into units of progression, which would be considered target goals applying the nomenclature from Chapter 2. Modules are organized and arranged to ensure sufficient coverage of learning objectives as learners navigate the course and progress through different levels of proficiency. An example of a target goal in this context would be *complete module 1, Level 1 by May 15th*. The accompanying study schedule would be developed together with the learner, to help them fit the required study activity around the events in their personal calendar. In some cases, this could

involve helping learners to book lessons and other events of interest taking place within the school community. See *Figure 6* for screenshots illustrating a sample study schedule.

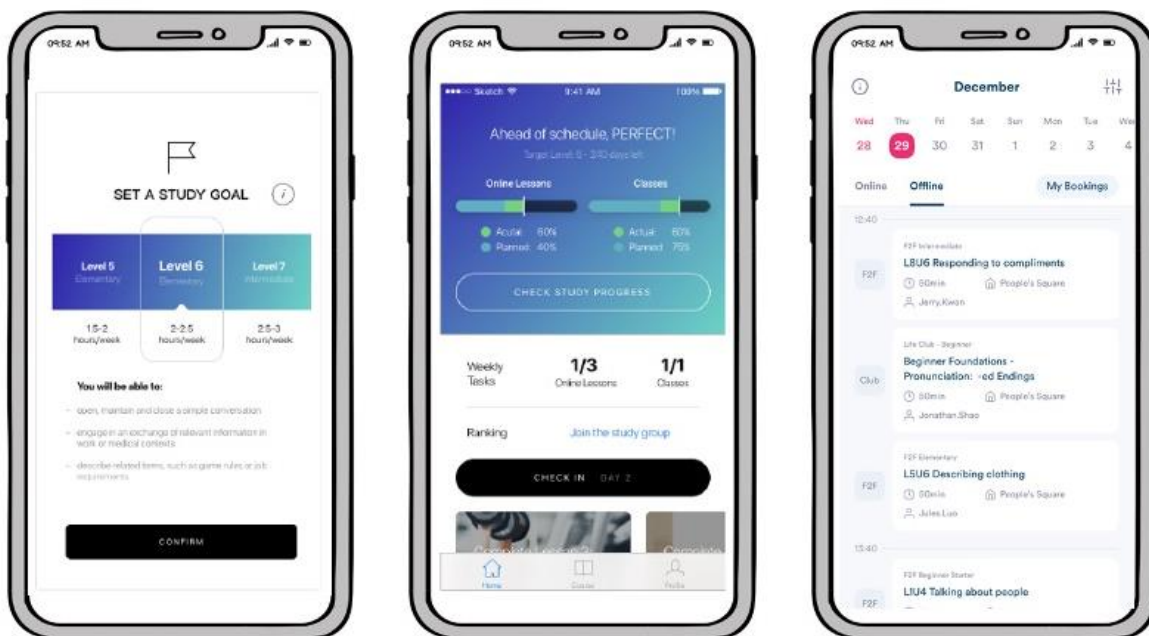


Figure 6. Sample learner study plan information.

Feedback

Feedback plays an important role in the learning experience provided by the language training organization. Learners receive auto-generated feedback while completing closed-question type activities in the self-study courseware. Various activity templates are provided where learners explore the meaning and use of language structures covering four skills of speaking, listening, reading, and writing. Advanced speech recognition is used to provide feedback on pronunciation-related exercises while most other interactions require the selection of an item or text-based input. In addition to the feedback provided in response to interaction with the activity templates, learners have access to a dashboard in the learning management system (LMS) with general information related to course usage including time spent, date accessed and

completed, and summative assessment results. Importantly, this report is only available on the web version of the course, organized by unit and cannot be queried for further detailed analysis.

See *Figure 7* for a sample LMS dashboard.

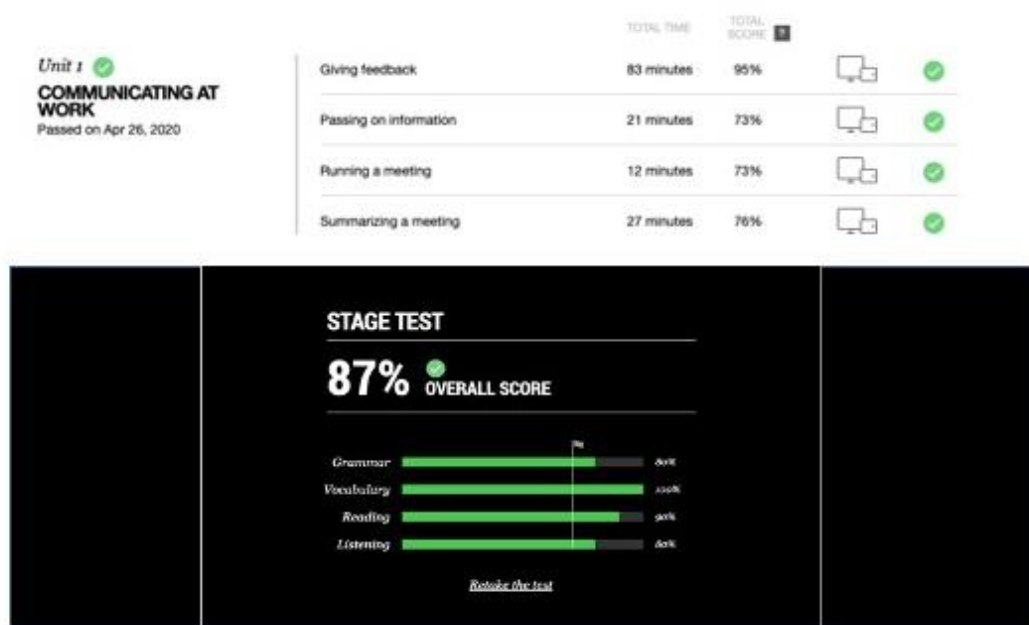


Figure 7. Sample learner LMS dashboard.

Learners also receive instructor-generated feedback in various formats. Following the completion an extensive writing activity, for example, an instructor reviews the submission and provides feedback according to the specific task-related rubric. During lessons, instructors observe learners participating in communicative tasks and correct errors in language use. They also produce an after-class report for certain lessons, that summarize the instructor’s observations from that lesson. See *Figure 8* for a sample of an after-class report and feedback on a writing assignment. Due to the nature of the learning design, instructors are limited in their ability to refer to previous work completed by the learner. Instructors and learners generally encounter each other only once or twice during the course as their schedules are flexible.

Learners may study online or in a brick-or-mortar school, on various days, times, and locations. As a result, instructors frame comments around what was directly observed, making suggestions with limited knowledge of the history or context of the learner.

After-class Report

Teacher's Note

Overall Perpetual, thank you for attending our lesson. You were a terrific student. Your pronunciation was clear and easy to understand throughout the lesson and you used an appropriate range of language to complete the tasks. Be sure to review and practice any new target language from the lesson notes and listen to, speak, read, and write as much English as possible to build fluency. It was great working with you and I hope to see you soon for another lesson. Please feel free to send me an email at [redacted] - com if you have a question or if you would like to book another lesson with me. Kind regards Teacher [redacted]

Strength You were able to improve from the corrections given in the feedback section to produce some accurate sentences. Well done!

Improvement A good way to practice pronunciation is to learn the phonetic alphabet. You can find this on the online study tools. You can also try more general pronunciation practice in the Online Study Tools.

Writing Feedback

Topic

Your colleague is proposing a new location for your office. Read his email, then write the executive summary telling which one he recommends, Office One or Office Bravo.

Teacher's Note

1. Missing Word: Something is missing in the description. The meaning of the sentence becomes complete and clear after inserting the missing word. You have written 'it would keep staff happy'. There is a missing determiner before the word 'staff'. It should be 'the staff'. You should add the article 'the' a determiner that fulfills the general function of making it clear whether the noun in question is referring to something specific or not. E.g. It would be the most convenient, and it would keep the staff happy. Please check your work for errors with missing words before you submit it. 2. You have written the spellings correctly and framed the sentences well. The punctuation marks are used appropriately. You have followed the topic format as instructed. You have used appropriate vocabulary and a clever development of ideas. Well done! E.g. An obvious advantage of Office One is that the rent is cheaper. Another big advantage is that there are a lot of restaurants nearby, as well as a bus and train station. A big con of Office Bravo is that it's too far from the city.

Figure 8. Sample after-class report and feedback on writing assignment.

Review of Institutional Technical and Data Infrastructure

The initial concept for the design of the intervention to support self-regulated learning (SRL) at scale was to employ learner trace data collected through learners' interactions with the digital components of the course. These data could be analyzed and potentially visualized for learners in dashboards to assist them with goal setting and self-assessment. Enabling the function of capturing learning goals has been highlighted as a promising direction for learning analytics dashboards, though with a view to capturing the standards of the learner (Matcha et al., 2019). To be effective, goal functionality should be complemented with instrumentality to collect data

related to the standards on which the learners are expected to evaluate their products and process. These data could be used as feedback to enhance student's self-assessment or inform the selection of study tactics and strategies.

Unfortunately, after completing the review of the data infrastructure, it was found that very little data of significance was being captured and stored by the institution. Time data was available for specific resource use, which could be visualized to help learners understand their study patterns but nothing relevant for describing tactics for activity completion or evidencing learning. As a result, the data availability became a major design constraint for the initial development of the intervention as there was to be a strong exploration of different analytics that could be provided to help interrogate an individual's study process through the analysis of their interactions with the digital course. This approach was abandoned for the purposes of the research reported in this document. Potential uses for the available data were explored in the prototyping phase that followed. It should be noted that a major update to the data infrastructure has been undertaken by the institution since the completion of this initial study. The output of the review for this research contributed to the designs for instrumentation and data collection process.

Research Stage 2

The design of the intervention was explored in *stage 2* through two meso-cycles of work including phases of Design and Construction which resulted in the initial conceptualization and prototyping of the app. Design was followed by Evaluation and Reflection, generating data that were used to inform the subsequent round of design (McKenney & Reeves, 2012, 2019). The initial research design for *stage 2* included learning strategy training sessions as part of the

intervention, with the cooperation of two instructor participants, each of whom was responsible for leading training for two separate cohorts of 15 to 20 learners.

The training program took place over 10 weeks, with five sessions of 50 minutes every two weeks. The sessions started in August and concluded in October 2019. The initial research and design for the app intervention was conducted between August and September 2019 in two meso-cycles with the participants of the learning strategy sessions. The first cycle included the use of concept sketches while storyboarding of the sections of the app were added for the second cycle.

Research Participants

Participants for *stage 2* of the research project that began in August 2019 were recruited from one large training centre in Shanghai. A total of 35 adult learners from the institution responded to the recruitment posters displayed in the centre by scanning a QR code and completing a demographic survey (see *Appendix A*). Based on the availability listed by the survey respondents, two bi-weekly sessions were scheduled to take place on-site on different days, lasting for one class-period each (50 minutes). Of the 35 people who responded to the survey, 27 participated in two or more of the five sessions over 10 weeks. Cohorts were divided into groups of 16 and 11 learners respectively based on the levels of proficiency reported in the survey. The larger group became the more advanced cohort and was led by an international English-speaking teacher, while the smaller one was conducted by an English-speaking, Chinese teacher. Instructors collaborated on their session plans and attempted to standardize their delivery where possible. Chinese support was provided by a translator or directly from the instructor, where required. Although the groups were differentiated to begin with, the make-up

of each cohort was not strictly maintained as many of the participants chose a session to attend based on convenience and availability.

Meso-cycle 1

This initial phase of prototyping was intended to help refine the execution of the design of the intervention by reviewing different use cases and data visualization strategies. The concept of the intervention originally included two components: learning strategy training sessions together with an app-based intervention. The research design evolved, however, as I was able to secure design and software engineering resources to help me build a fully functioning, high-fidelity version of the app that could be deployed at scale. With this in mind, I shifted the focus of the research towards investigating the use of the app as the main invention. I decided to reduce the scope of the training and develop content that could be deployed remotely as self-access materials focused on supporting app use. As the strategy training objective was removed from the scope of the study, the chapter reports on results that are relevant to the app design.

An initial conceptualization of the intervention was developed from a review of the literature combined with output from *stage 1* of the research. This first version of the app was then evaluated using focus groups, conducted following the first training session with two groups of four learners each. The process employed concept sketches together with scenarios to help participants explore the future use of the intervention (Martin & Hanington, 2012). Several possible concept sketches were shared with learners to help support the exercise and later used to elicit their responses (see *Appendix E*). The examples included a variety of different interactions and data displays all related to the core functions of goal setting, self-assessment, and time

management. Questions included in the research protocol were focused on degree of understanding and perceived usefulness (see *Appendix B*)

Three themes emerged from the thematic analysis of the data collected during the focus groups as priorities when discussing the functions of the intervention. Support for personal goal setting accompanied by strategic planning emerged as key concerns for these adult learners. The main reason given was that studying is time consuming and that it wasn't always clear to them how or where to begin. The second theme was the perceived relevance of having access to the type of information displayed on the various screens. It wasn't clear how the information presented was to be used to benefit their learning. Some learners commented they would prefer to spend their time practicing English rather than reviewing the displays to make a study plan. A final theme that emerged related to cadence and how often the learners might want to access the intervention. One learner indicated that daily notifications might help to keep them motivated. A final viewpoint that was shared by many participants, was a desire to be able to review the performance of other learners for the purpose of comparison. The use of normative benchmarks has received mixed reviews in the achievement goal literature, having been associated with a performance-oriented framework (see Chapter 2 for further discussion).

Meso-cycle 2

The second meso-cycle of app intervention design research continued with the same group of participants who were attending the learning strategy training sessions. Two focus groups were conducted, each with two participants. The design of the sessions this time reused the scenarios from earlier though with updates based on the findings from the previous round of evaluation conducted in meso-cycle 1. I managed to recruit the assistance of a user experience designer who helped to create the design mock-ups for the user interface for the app, to be used

to illustrate the proposed scenarios. The updated scenarios were explored using storyboarding techniques or what is sometimes referred to as a low-fidelity prototype of the app (Martin & Hanington, 2012). Design mock-ups including data visualizations were created using the participants' study records manually drawn from the LMS and for this round of research, also included sample instructor feedback using these study data. The scenes were presented to the participants in a sequence representing the expected user journey in the app (See *Appendix F*). For simplicity, we used the interface designs that were intended for laptop viewing. I then narrated the journey for participants and answered any questions. Unfortunately, it was not possible to simulate any interactivity during this exercise, but the functions were described during the narration.

The user journey description provided touched on several key design elements and outlined the main use cases to help guide participants on how best to incorporate the use of the intervention into their study routines. It was communicated that all data would be available in real-time and the app would be accessible on their mobile devices. It was also suggested that some functions would be accessed only at the start and/or completion of a task sequence, while others could be helpful on a daily basis depending on their study frequency. Importantly, because the data visualizations were now personalized for each participant, they were able to describe in more detail how they might use the information available. Observation during this session also helped to uncover the types of challenges learners might have translating the information into positive action.

Several important observations were made during the two focus groups and reflected in the data analysis that followed. Firstly, the visualizations associated with time spent accessing course resources were easy to understand and all participants quickly explained they would use

this information to help plan their study. Further prompts requesting participants to describe specific actions, however, did not elicit much detail. They liked that they could also view time spent by other learners.

The other section the learners responded to positively was the instructor feedback. The comments were directed at the process and self-regulation levels (Hattie & Timperley, 2007). Each of the participants responded enthusiastically to the instructor's feedback but requested additional detail related to their "specific weaknesses in speaking." One participant suggested that a table displaying an error rate could be included in this section. This type of information is not currently captured anywhere, unfortunately, though it might be possible in the future to review recorded lesson transcripts as well as speech practice captured through interaction with the speech recognition software in the course. An additional point of interest concerned the inclusion of reflective questions in the feedback. These were included to address the notion that good feedback design should be dialogical, and not seen as transmission of knowledge from an instructor (Boud & Molloy, 2013). Participants commented that they would use them for reflection but would appreciate being able to discuss their ideas with an instructor in-person.

The two sections that proved most complicated for the participants were those associated with goal setting and self-assessment. It became clear that creating personalized achievement goals from task titles on the screen would require additional training and supervised practice. The same was true for completing self-assessment as the participants were unfamiliar with the use of Can-Do statements and often referenced test scores and made general observations about their levels of proficiency. The legend included for the star-rating was deemed unhelpful for interpreting the standard. The participants felt it was unrealistic to expect help with speaking and tended to see things in binary terms, they were either capable or not. It was clear that these two

functions would need to be supported in some way if learners were going to be successful using the intervention to support self-regulation.

Research Stage 3

Stage 3 included a third and final meso-cycle of research that included a design and implementation phase followed by an evaluation and reflection phase.

Learning Intervention Design

Following the two previous meso-cycles of design and evaluation phases included in *stage 2*, work began on turning the design mock-ups into an interactive user-interface in late September 2019. I recruited an experienced mobile app designer to help with this process as creating the interface for use on a mobile device proved challenging. Together we worked at creating usable wireframes from the mock-ups, incorporating the findings collected during the previous research phases. Once completed, the designs were shared with a small engineering team consisting of three members who helped to review options available for creating a simple user experience for both the instructor and the learners to use. Achieving simplicity in the design was a priority not only for efficient use of development resources but also for future implementation at scale. We worked through two development sprints of three weeks each, starting in October and finishing in late November 2019.

Several opportunities and challenges were encountered while exploring options for extracting data from the database to be visualized in the app. The software engineers decided it would be possible to develop the app using the architecture of the LMS which meant that data would be updated and visualized in real-time. This framework was also applied to the interface used by the instructor to publish feedback, which resulted in feedback being available instantly to learners within the app. We explored providing event notifications for learners' convenience,

but this proved too complicated for the development time available. Additionally, we were unable to apply any provision to be able to track app usage, so there was no way to collect trace data as learners accessed the tool.

The learning intervention implemented as part of this study was designed as an interactive app accessible through both web-based and mobile platforms. Though accessed through a separate portal from the course, it was connected to the course database and thus all data visualizations were synchronized in real time. Due to other limitations, actual app usage was not recorded. It was designed to promote the adoption of a learning goal orientation through the provision of learning goal content and the generation of self-referenced internal and external feedback. All text including feedback and navigation elements were translated into Chinese for ease of use and to better ensure comprehensibility.

A secondary feature of the intervention was added following the adjustments to the research design in response to Covid-related complications. The number of participants who returned to continue participating in the study was limited to eleven, so I decided to include coaching meta dialogues that were arranged bi-weekly during the research period for each participant. Meta-dialogues discuss processes and strategies of assessment and feedback rather than the specifics of a particular piece of work (Carless & Boud, 2018). I organized and conducted these sessions for the purpose of exploration. In their current format, they could not be implemented as a standard feature due to resource constraints. The intention would be to develop guidelines to overcome the logistical challenges for future implementation, should they prove essential as part of the intervention.

The app-based intervention included five sections laid out across four screens (see *Appendix G*), as described in the following sections.

Task Goal Setting

One of the main functions of the intervention was to assist with personal task goal setting. The design was based heavily on the previous work done on language learning portfolios (Little et al., 2011; Ziegler & Moeller, 2012). In the app, learners can view the task sequences from a title page that mirrors the course entry page in the LMS (see *Figure 9*). It presents an overview of the sequence as a short, action-based phrase, translated into Chinese. An example from a Beginner (A1) level includes four sequences: *inviting someone to a party*, *talking with people at a party*, *discussing vacation plans*, and *writing about a holiday or celebration*. The phrases are derived from more general Can-Do statements, and have been analyzed into smaller, short-term learning objectives designed to guide learners to adopt goals framed in terms of communicative proficiency as opposed to knowledge of specific items of grammar or vocabulary.

Level 3, Unit 4 Holidays and celebrations

The screenshot displays four task sequences, each with a corresponding image, a description, and a priority scale. The priority scale consists of three circles labeled 1, 2, and 3, with the selected priority number highlighted in blue. The text 'This is NOT important to me' is on the left and 'This is important to me' is on the right of each scale.





Task Sequence	Priority Scale
 Inviting someone to a party	1 (selected), 2, 3
 Talking with people at a party	1 (selected), 2, 3
 Discussing vacation plans	1, 2 (selected), 3
 Writing about a holiday or celebration	1, 2, 3 (selected)

Figure 9. Screen 1 of the app displaying task sequences and priority scale. Learners can indicate which task sequences are more or less important for them.

This approach adopted by the institution is heavily influenced by task-based learning and communicative language teaching (Canale & Swain, 1980; Ellis, 2003; Skehan, 2003). The Can-

Do statements included are a set of proprietary learning objectives that have been developed by the institution. On this page, learners are encouraged to indicate a degree of importance for each of the task objectives by selecting from one, two, or three stars. Their selection is saved in the app but can be modified at any time. Corresponding selections can be viewed by both learner and instructor, and be used to help guide the coaching conversations, and subsequent instructor feedback. Note that the selections did not impact access to course content.

Following the selection made in the app, the transformation of goal content into personalized achievement goals was facilitated during the coaching meta dialogues. This process was included following the recommendation that Can-Do statements should be personalized into statements that would be relevant for each learner, considering their needs and relevant context (Little & Perclova, 2001). In the institution, adult learners are typically looking for career-related outcomes so objectives could be reworded to reflect a need at work, for example. In doing so, the learner could ideally envision a relevant task they could perform to demonstrate evidence of having achieved the goal. It was suggested that this process would need to be scaffolded until learners were able to perform this task independently (Little & Perclova, 2001; Ziegler & Moeller, 2012). Learners were not able to record personal goals in the app due to technical constraints, though this function is recognized as an important addition for a future iteration of the app.

Feedback and Time Management

The next three sections of the app were designed to support strategic planning, strategy selection and self-reflection through the combination of instructor feedback and data visualization. Many earlier studies have demonstrated the close connection between effective time management and learning achievement (Gelan et al., 2018; Il-Hyun et al., 2015; Kizilcec, et

al., 2017). The results from earlier research on the design and use of learning analytic dashboards (LAD), however, have had minimal impact on learning (Lim et al., 2019; Park & Jo, 2015). The design of the current intervention was inspired by the work conducted by Pardo, Jovanovic and colleagues (2017) that combined a student facing LAD (Khan & Pardo, 2016) with personalized comments. In their research with this intervention, they discovered a positive relationship with increased strategy usage as well as improved reflection on learning (Lim, Dawson et al., 2021).

Data Visualization

Learners can navigate to the second screen of the app using a persistent menu at the top of the screen, where they will find a set of horizontal histogram graphs visualizing time spent in the self-study digital courseware (see *Figure 10*). The five graphs in the series represent the total time followed by each of the task sequences from the corresponding listing on screen one. Each graph in the series includes a guiding value, provided by course designer as a benchmark for time required for completion, and a progress bar that represents learner's study time in comparison. Data is displayed and updated in real-time to provide an accurate representation of learner behaviour. From this view, learners can easily get information at-a-glance to help with time management. It was hoped that the time reference would help promote conscious review and reflection on activity within the self-study courseware. Evidence collected from the institution suggests that many learners, especially those who are new to the flipped learning design utilized in the course treat the self-access materials as extraneous resources and do not spend much time using them. There were no time guidelines provided prior to their inclusion in the app.



Figure 10. Screen 2 of the app with horizontal histograms that provide a guideline for time required in total and for each task sequence in comparison to actual time spent. A toggle can be used to activate the display of average time used by other learners.

One additional function was added to this view to enable reviewing the average time spent by other learners. It was felt that having access to time guidelines associated with other learners in the course would potentially be of interest to some. Previous research related to social comparison in other digital learning environments has turned up mixed findings (Jivet et al., 2018). However, Perez-Alvarez and colleagues (2018) found evidence in both MOOC and more traditional online learning environments suggesting social comparison had a positive effect on time management. The group of learners included in the data set used in the time visualization were drawn from the total population of learners who had completed the respective task sequence in the month prior to viewing. For example, if a learner accessed the visualization in March, they would see data collected from all learners in February. The definition of the data

cohort could easily be modified in future iterations. The additional learner-based time reference feature could be activated or deactivated using a toggle at the top right-hand corner of the screen.

Directly below the time summary is a vertical histogram chart to provide a more detailed view of time spent in discrete activities (see *Figure 11*). It was recommended previously that this view be made accessible to assist with prioritization decisions and planning (Lim et al., 2019). The detailed time display can only be viewed for one task sequence at a time, due to space limitations as the app view was optimized for use on a mobile device. The full menu is collapsed by default and learners can select the task they would like to query by tapping on the corresponding task sequence from the summary view. When in this view, learners can touch the

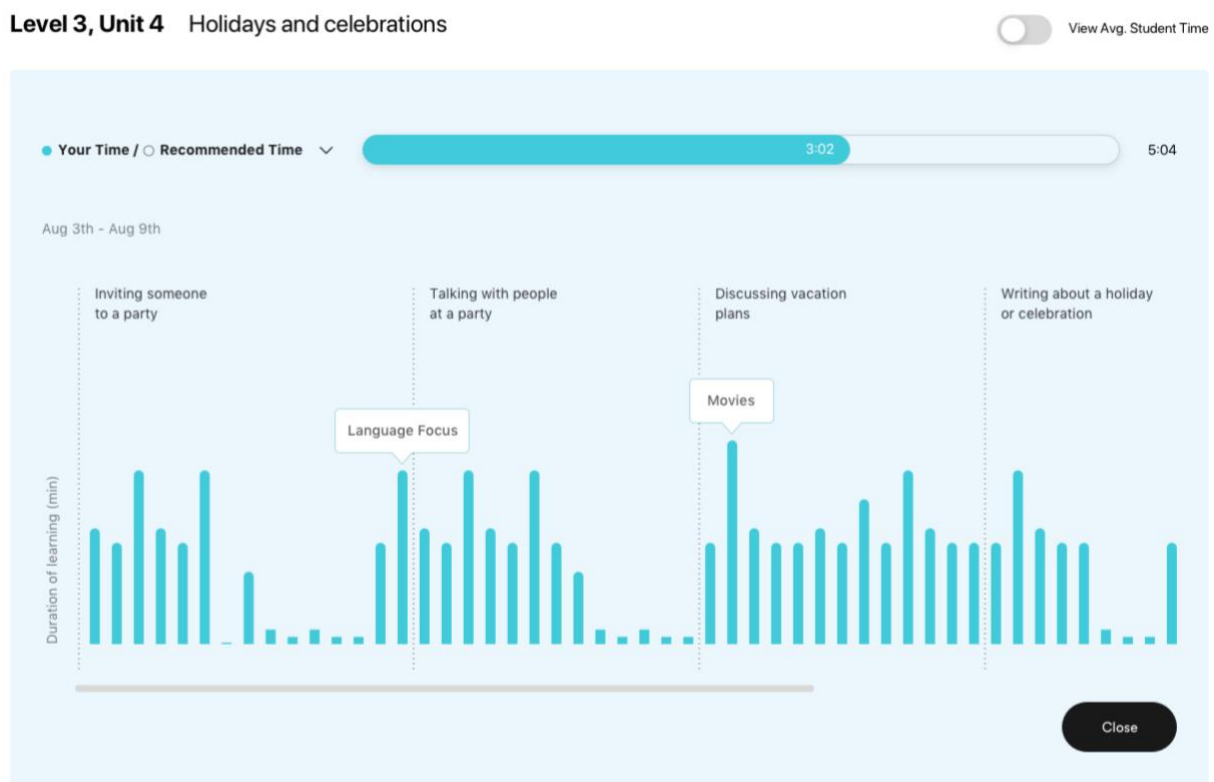


Figure 11. Screen 2 of the app with the vertical histogram displaying details for each activity completed, below each horizontal bar. Users can touch the vertical bars to reveal the time spent on each specific activity.

screen to reveal the activity index and see how much time was spent on each individual activity. They can scroll left to right in order to review the full display.

An additional time management-related visualization was displayed on the third screen of the app. The view presented was of a timeline that displayed all classes and courseware activity completed from the selected task sequence (see *Figure 12*). Each indicator on the timeline can be selected to reveal class or activity details. Learners can scroll left to right to reveal the full timeline. Displaying the learner behaviour along a timeline was chosen to be able to visualize the activity in the sequence it was completed as well as the time between engagement with the course materials. From this view, learners would be able to see what resources were used in preparation for which classes, and the regularity of their study behaviour. Consistency in learning engagement has been found to be a strong indicator of learning achievement (Il-Hyun et al., 2015) and it was believed that visualization could help encourage learners to plan for regular practice and study. This view of the data could be used as a reference for assisting with strategic planning and tracking goal achievement when combined with the study plan provided by the institution (see *Figure 6*)

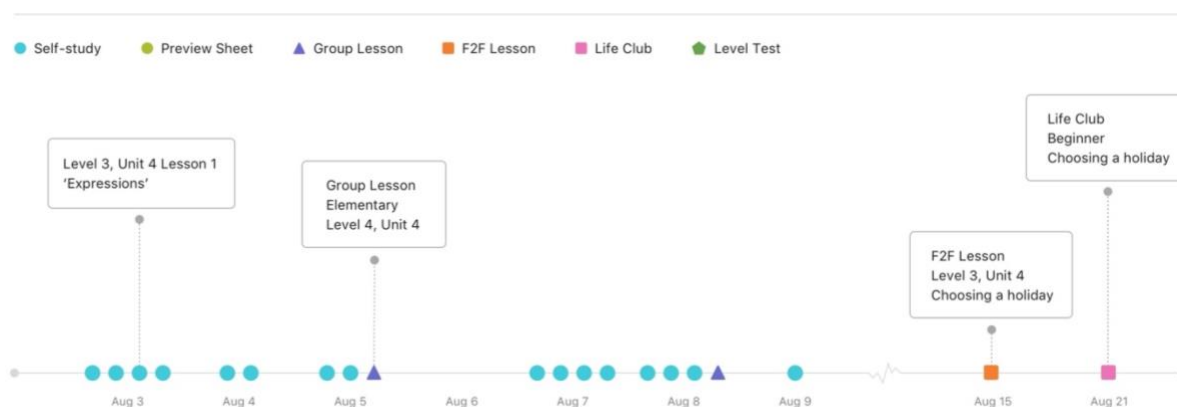


Figure 12. Screen 3 of the app displaying the timeline and sequence of classes and courseware activity completed from the selected task sequence.

Instructor Feedback

Below the timeline of learning activity was a section to display feedback from an instructor (see *Figure 13*), a role I filled for the purpose of this study. The design of this section of the intervention was highly influenced by the work of Pardo, Jovanovic and colleagues (2017) on their platform to support the delivery of data-informed, personalized feedback. In their research, using OnTask, students received personalized messages with information and suggestions created depending on the data obtained from their interactions with the course resources. This approach relied heavily on the instructor's knowledge of the learning design, and the capacity of the instructors to provide relevant, comprehensible feedback.

Comments	Level 3, Unit 4 Holidays and celebrations
General	You have completed Unit 4 – great job! You completed a lot of activity in only 6 days! Try and give yourself a little bit of time between practice so you don't overload your memory. 你已经完成了第4单元–很棒!在仅仅6天的时间里你完成了很多练习!请尝试在练习与练习之间稍作停顿,让你的记忆能力更高效。
Courseware	You spent an average of 19 min on the language focus activities. This is a good pattern and seems you get a lot from these activities. Excellent result on your writing as well! 你在Language Focus活动上花费的平均时间是19分钟。这样的习惯很不错,你应该可以从这些活动中学到很多。你的写作部分的学习也很棒!
Classes	I noticed you haven't taken a Private lesson for this unit. It might be useful. You attended the Group lesson for this unit 2 times, and you improved on your score. Well done! It looks like you haven't reviewed the feedback from your F2F lesson, yet. The teacher commented on your communication with your partner. This seems like a pattern in your F2F classes. Do you have any ideas about how to improve in this area? 我留意到在这个单元里你还没有参加Private Lesson。这个课程会很有用。在这个单元里你已经上了2次Group Lesson,成绩也有所提高。非常不错!看起来你还没有收到F2F课程的反馈。老师已经为你和同伴的沟通做了反馈。这似乎像是你F2F课程的常见现象。你觉得有哪些方法可以在这个方面有更多提升?

Figure 13. The bottom half of screen 3 in the app is used to display instructor feedback. It is organized into three sections and provided in both English and Chinese.

Using the OnTask platform model (Pardo, Jovanovic et al., 2017), instructor feedback was provided to learners based on data collected in the course LMS, some of which was also visualized for learners in the intervention. The remaining data that was used to inform the instructor feedback as part of this intervention design was available to learners on different parts of the platform, including the course homepage, study progress page, and lesson feedback page.

All these data were easily accessible to an instructor through the LMS. Comments were added to the system using a simple web-based interface though it was recommended they be written using word-processing software and later copied over in order to make use of the various editorial features. Bilingual feedback was written in both English and Chinese (translated) and made available upon completion of one unit, which consisted of four task sequences. This process generally took the participants between two and three weeks as they were heavily engaged with the course. Data collected from the institution suggests that learners on average take much longer. Participants in this study could review feedback from previous units by selecting the level and unit details on the first screen of the app.

The design of the instructor feedback system was based on the theoretical model provided by Boud and Molloy (2013) where they define feedback as a process in which learners obtain information that helps them appreciate the similarities and differences with appropriate standards to improve their work. This approach promotes the need for feedback strategies based on a dialogue between instructors and learners. To help achieve this dialogical nature, feedback included several communication features such as reflective prompts and suggestions to help guide learners. The prompts could also be referenced later in the coaching meta-dialogues (see below) as a way of continuing the conversation. In general, the comments to learners in the app were aimed at the learning process and self-regulation levels (Hattie & Timperley, 2007). Care was taken to connect personal achievement goals with recommendations from the course guidelines and Can-Do statements to help facilitate the application of these standards during self-assessment.

The format of the feedback provided in the app intervention contrasted with the approach to instructor feedback taken within the course, which using Hattie & Timperley's (2007)

framework would be classified at the task level (see *Figure 8*). This was in part due to the nature of the learning design where instructors have limited interaction with each individual learner. As a result, they tend to focus their feedback during instruction on the identification and correction of errors produced in spoken language while completing a collaborative task. Delayed feedback is also provided in the form of after-class reports; however, they are generally a reflection of the comments made by the instructor during the class.

Self-Assessment

Once again, the earlier work on language learning portfolios provides the basis for the design of the self-assessment function within the intervention using Can-Do statements (Little et al., 2011; Ziegler & Moeller, 2012). The support for self-assessment is provided on screen four of the app as the fifth and final section (see *Figure 14*). To achieve this function, there are three types of information on this interactive page, organized by task sequence. The first two sections are static and include (1) the short, action-based phrase and corresponding priority rating for the task, carried over from screen one and (2) the results from courseware-based assessment. Unfortunately, it was technically unfeasible to display the relevant class feedback and assessment from the LMS on this page as it would have helped to provide a more holistic view of the learner's performance.

The third section asks the learner to indicate a confidence rating by selecting one, two, or three stars for each of the task sequences. A description of the standard is provided in Chinese. The learner's selection is recorded but can be modified at any time. By prompting the learner to reflect on their confidence level in relation to the self-selected priority of the goal, it was hoped that learners would see a positive change in the areas they value. The decision to frame self-assessment as a rating of confidence in the design of the intervention was inspired by the

additional teacher support provided in the implementation of Linguafolio (Ziegler & Moeller, 2012). At the same time, learners may also identify gaps in their knowledge and choose to review previously completed course exercises or reference materials.



Figure 14. Screen 4 of the app is designed to support self-assessment. It includes action-based phrases and corresponding priority ratings for each task sequence, the results from the courseware-based assessment, and a scale for indicating confidence levels.

Coaching Meta-dialogues

As a result of the reduced number of participants at this stage of the study (11 from 50), it became possible to include another design feature as part of the intervention that would have otherwise been difficult to accommodate with only one researcher. I scheduled these one-to-one personal meetings on a bi-weekly basis with each participant where I functioned in the capacity of an instructor. I recorded field notes from each session on what I saw and heard directly, as well as ideas and questions that arose during the sessions, which were used for further reflection and analysis.

The coaching sessions served multiple functions. From a practical point of view, they were helpful for keeping the participants engaged with the study and collecting data through the interactions. These reflective conversations were structured in general around the following five

questions as adapted from Dam (1995): 1. What am I learning? 2. Why am I learning it? 3. How am I learning it? 4. How successful is my learning? 5. What am I going to do next?

The sessions also served an important role for guiding learners in using the app-based intervention. In the literature on learning analytics interventions, there has been much attention directed at implementation with recommendations calling for integration within the learning design to provide opportunities for data interpretation and subsequent action within the context of the course (Wise, 2014; Wise & Vytasek, 2017). The ongoing meetings with the participants were helpful for establishing coherence between the intentions of the intervention design and their learning. Specifically in the context of this study, supporting the process of goal setting and self-assessment was a priority. Using the short, action-based task phrases, learners were guided in the development of personalized SMART goals. When evaluating the goals, learners shared anecdotal evidence of having achieved them. Through practice, it was intended that learners would develop their skills to be able to perform these tasks independently while regulating their learning.

Additionally, in response to Carless and Boud's (2018) concern that learning analytics enabled information might still lead to passivity on the part of the learner, the coaching sessions prioritized discussions around the data visualization, instructor feedback and the process and strategies for putting them into action. In this way, the meta-dialogues were intended to help with the development of learners' feedback literacy and improve their ability to develop accurate representations of their level of proficiency (Carless, 2015; Carless & Boud, 2018).

Implementation and Evaluation

In December 2019, with the app intervention live, I proceeded to recruit new participants with the intention of continuing with the implementation and running a larger scale evaluation of

the intervention as part of the final phase in the macro-cycle (McKenney & Reeves, 2012, 2019). The purpose of the phase in this research study was intended to be used for formative evaluation of the app to explore the local impact on supporting SRL in the institution. The software was completed and ready to be deployed to many learners within the organization to enable the collection of further data. The app was hosted within the proprietary eco-system of the LMS owned by the institution but for security reasons, was only accessible via a customized web link. Individual web links were shared with each learner using WeChat, a chat-based platform that is commonly used in China. This sharing process made it more convenient for learners to access the app through their phone. Each learner was provided a unique account that could only be accessed by clicking on the link. This design helped to ensure the integrity of the data and privacy for the learner as they were only able to view their own personal account.

A short training program to introduce the concept of SRL and how this was supported by the features of the intervention was developed. There were three rounds of training created: round 1 included two short introductory videos using screen capture software and voice-over to demonstrate how to access and use the intervention. Round 2 consisted of an in-person session aimed at helping participants develop strategies for incorporating the intervention into their study routine and responding to any questions. Round 3 was incorporated into the coaching sessions and included a personalized level of training based on individual circumstances and observed usage patterns. The aim was to provide on-going assistance aimed at promoting regular engagement with the intervention.

The final stage in the design-based research cycle was designed to include a larger scale implementation and evaluation of the app; however, due to the changes in the research design in response to challenges associated with the Covid 19 pandemic, the plan for larger scale

implementation was modified. In January 2020, the Covid pandemic started in China and had a massive impact on all facets of life. The language training organization was forced to close all their physical centres in mainland China in January, which remained closed for many months. The centres in Shanghai were allowed to reopen in the summer of 2020 but most students did not start to return for regular classes again until the fall. In September 2020, I was able to restart the app implementation and continue with evaluation and reflection with eleven of the participants with whom I had first approached in December of 2019. Implementation continued through September to November 2020, when the evaluation was eventually concluded in November of 2020.

Recruitment for new participants began in two learning centres in Shanghai before the Covid pandemic took hold and prevented the continuation of the study. Following a 9-month delay, the implementation was re-started with a subset (11) of the learners recruited before the pandemic. Importantly, this subset represented a unique opportunity to collect feedback from learners who were highly persistent, as evidenced by their return to study at the institution following a 9-month hiatus. As a result, the objectives of this final phase of this stage in the research were altered. A process of formative evaluation was conducted but from a more exploratory perspective as the participants in the study no longer provided a representative sample of the target users of the intervention.

In addition to the evaluation of the app intervention, the study established a second objective which was to explore the types of achievement goals that adult learners adopted in the language training context. Goal orientation has long been considered an important element of self-regulation and associated with strategy use, achievement, and persistence (Pintrich, 2000a). As a group of persistent learners, the study participants presented a unique opportunity to further

explore the nature of achievement goals and contribute to the discussion. The formative assessment of the intervention and the exploration of achievement goals are informed by the findings resulting from previous phases of analysis and exploration, and the prototyping phases that followed. The findings from the final evaluation and reflection phase are presented in Chapter 5 and discussed in Chapter 6.

Chapter 5: Findings

Stages 1 and 2 of this research study were presented in Chapter 4 while this chapter presents the key findings related to stage 3 of the research concerning the implementation and evaluation of the intervention. An overview of the research design is provided below (see Figure 15).

Stage 1	Stage 2		Stage 3
<p>Micro cycle</p> <p>Analysis and Exploration</p> <p>My experience in the organization and own teaching practice</p> <p>Document Review</p> <p>Review of institutional policies and practice</p> <p>Review of technical and data infrastructure in the organization</p>	<p>Meso cycle 1</p> <p>Design and Construction</p> <p>Conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • A review of the literature • Document review <p>Evaluation and Reflection</p> <p>Concept Sketches</p> <p>Demographic survey 2 Focus groups of 4 participants each Field notes</p>	<p>Meso cycle 2</p> <p>Design and Construction</p> <p>Re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>Evaluation and Reflection</p> <p>Storyboarding</p> <p>2 Focus groups of 2 participants each Field notes Behaviour logs Instructor feedback</p>	<p>Meso cycle 3</p> <p>Design and Implementation</p> <p>Further re-conceptualization Based on the results of:</p> <ul style="list-style-type: none"> • Student research • Reflection <p>App design and development</p> <p>Evaluation and Reflection</p> <p>App Implementation</p> <p>Demographic survey 5 student interviews Field notes Behaviour logs Instructor feedback</p> <p>New Prototype</p> <p>To be developed</p>
<p>RQ1: How was self-regulated language learning in the institution supported at the beginning of the research period?</p> <p>RQ2: What were the data and technological opportunities and constraints?</p>	<p>RQ3: How can Chinese adult learners be assisted with self-regulated language learning in the institution at scale given the data and technological opportunities and constraints?</p>	<p>RQ4: What is characteristic of the goals Chinese, adult language learners with high persistence are likely to pursue in achievement situations?</p> <p>RQ5: How effective, from the participants' perspective, is the intervention in supporting self-regulated language learning for Chinese, adult learners?</p>	
<p>RQ: What are the characteristics of an intervention for promoting self-regulated language learning which will support Chinese adult learners in a non-linear, blended learning environment at scale?</p>			

Figure 15. Implementation of the design and development of an app-based intervention in a macro-cycle of the design-based research process. Figure adapted from Dowse and Howie (2013) illustrating 3 stages of design-based research.

The two questions used to frame the inquiry at this stage of the study are:

- RQ4: What is characteristic of the goals Chinese, adult language learners with high persistence are likely to pursue in achievement situations?
- RQ5: How effective, from the participants' perspective, is the intervention in supporting self-regulated language learning for Chinese, adult language learners?

The first question addresses an objective for the study which was to explore the characteristics of the goals that Chinese, adult language learners with high persistence pursue in achievement situations. This was adopted in response to an opportunity that presented itself with respect to the participants in stage 3 of the research. The second question represents a slight reframing of the evaluation objective from the original research design due to the small number of participants involved in the study.

In analyzing the qualitative data, I conducted a thematic analysis of the content (Braun & Clarke, 2006) collected from several primary data sources including a demographic survey, 5 in-depth interviews with the participants as well as observations and field notes kept during *Stage 2* and *3* of the research. A hybrid approach to thematic analysis was employed, combining both deductive and inductive reasoning (Swain, 2018). To address RQ4, I completed the first round of coding using an inductive technique (Patton, 2014) to label the reasons given for studying English once all data had been collected. A second round of coding was later conducted following further reflection guided by data collected from the demographic survey and review of the literature. In contrast to the inductive coding, I began the investigation of RQ5 with a deductive method, starting with a coding framework that was first derived from the conceptual framework and refined through several rounds of analysis in *stage 2*, and updated iteratively while progressing through *stage 3*. The final set of codes were applied and used to group the data into major themes for analysis.

Both research questions from stage 3 are addressed by the key findings, first with the exploration of achievement goals followed by an evaluation of the four functions of the intervention from the perspective of the participants. A discussion of the findings is preceded by

a review of the research setting and participants. Such review is relevant to contextualize the findings.

Research Setting

The research was conducted in a privately owned, global language training organization that offers a range of online, blended, and brick and mortar school learning options to hundreds of thousands of language learners around the world. The study is focused on the China-based entity of the business, which is a predominantly blended English language learning solution catering to adult learners in tier 1 and tier 2 cities with commitments that prevent them from studying in more traditional settings. The institution has introduced an innovative learning design where learners purchase access to live instruction and learning content following a subscription model. The basis for the decision was the desire to provide flexibility, which is seen as a key requirement for meeting the needs of their adult learners. In this model, learners purchase access to courses for 12 months where they have a fixed number of classes they can attend. However, they are not bound to any specific cohort, schedule or location which means they have substantial flexibility to select from different program features to create a personalized learning journey. They may choose, for example, to attend several lessons in one week, and none in the next without penalty. This helps to ensure learners are always able to arrange lessons to match their own personal timetable.

To enable the flexible learning design, the institution employs a flipped learning model where the learners prepare for classes by completing exercises and studying language references in the self-study courseware prior to attendance. While learners are encouraged to complete all the self-study, they are not obliged to. Nor are they required to maintain a regular schedule or check in with a study advisor. The substantial flexibility afforded to learners while improving

their access to learning, increases the need for deployment of self-regulation strategies to be successful. Some support is provided by the institution to assist with setting goals for learning and establishing a desired study plan. The role of the study advisor and institutional policies and procedures associated with study planning are described in Chapter 4.

Research Participants

This study involved two sets of participants; one set who were involved in *stage 2* of the research described in Chapter 4, and another group who joined for *stage 3* after the research recommenced following the restrictive measures put in place due to the Covid-19 pandemic. A description of the participants from the final stage is provided, below (see *Table 5*).

	Vicky	Sabrina	Jarvis	Charles	Lin
Demographic					
Age	25-30	18-24	30-35	25-30	25-30
Gender	Female	Female	Male	Male	Male
Education	Undergraduate	Undergraduate	Undergraduate	Other	Other
English Qualification	CET6	None	CET4	None	None
Years Learning English	10 years	10 years	10 years	9 years	5 years
Job	Study Advisor at the institution	University student	Sales person in international company	Software engineer in local company	Airport security officer
Use English at Work?	Yes	Yes	Yes	Yes (Little)	No
English Learning					
Price of the course	Work benefit	Full price	Full price	Full price	Full price
Months Studying at the Institution	14 Months	1 Year	1 Year	18 Months	10 Months
English Level	Level 10 (B2)	Various	Various	Level 9 (B1)	Level 6 (A2)
Course Completion	NO	Completed	Completed	NO	NO
Operating Level of Proficiency	B2 High	B2 Low	B2 Low	B1 High	B1 Low
[Survey] Reasons for Learning English	Speaking English more fluently	To improve communication skills and use sophisticated vocabulary	Improve listening and speaking skills	Get a job in international company	Get a promotion
Study Time per Week	More than 5 hours/week	More than 5 hours/week	More than 5 hours/week	More than 5 hours/week	More than 5 hours/week

Table 5. Research participants from stage 3 of the study.

This final group of participants included learners who had returned to the institution following closures and class-size restrictions in accordance with the local regulations in response to the Covid-19 pandemic. In total, there were eleven participants when the study began anew in September 2020. There were six remaining from two different language training centres in Shanghai when the study concluded in November 2020, five of whom completed interviews. A summary of the participants is provided in Table 5 which includes data collected from a demographic survey (Appendix A) combined with a variable derived from field notes (*operating level of proficiency*).

The group of participants included both male and female learners, all above the ages of 18 years old. Pseudonyms were selected by each of the participants. All the learners required a flexible schedule to study English as they were employed, apart from Sabrina who was in her final year of a Bachelor of Arts degree at university. Two of the learners had completed external qualification exams at university: College English Test (CET) for non-English majors (see Yan & Huizhong, 2006). Most of the learners had been learning for nearly 10 years. Lin was the exception, who had not had any formal instruction and had been studying by himself before joining the institution. Lin was also the only participant who did not use any English at work, although Charles reported little to no use as well. Of the participants, Vicky, had a unique position as both learner and employee of the institution, though I was unaware of her employment status until later on in the study. She was also the only participant who did not pay for her subscription to the course as it was provided to her as part of her compensation. Reasons for learning English were provided in the survey and reflected either an emphasis on language skill development or career progression. This theme was explored more extensively during the interviews.

There were several factors that made this group of participants unique and thus not a good representative sample of the learners in the institution. In terms of their English learning proficiency, the participants mostly came from the higher end of the spectrum, with Sabrina and Jarvis having completed the C1 or advanced levels of the course. I added an additional field (*operating level of proficiency*) to represent my own assessment of their language ability using the CEFR (Council of Europe, 2001, 2018), based on my experience as an examiner, language teacher and course developer. Two additional, related factors that made this group of learners unique was the duration and frequency of their learning in the institution. All of the learners were still active after 10 months or more and dedicating five or more hours per week to studying English. The institution does not share learning data publicly; however, I was permitted to confirm that the average duration and frequency observed by the participants in this study was above average.

Findings

Several findings were identified following multiple rounds of qualitative data analysis. These have been organized in two sections according to the guiding research questions they addressed. The first section relates to achievement goal orientations while the second includes an evaluation of the four functions of the app intervention.

Achievement Goal Orientations

Three major findings emerged from this study in relation to RQ4. It was found that all the participants in this study had adopted multiple learning goals as reasons for pursuing English study. Though none of the participants were committed exclusively to a learning goal orientation (Learn), they all described a variety of reasons why they were interested in developing their language skills. The second category explored related to outcome goals

(Outcome), which were adopted by four of the participants. Future, work-related needs featured in this goal set as did the theme related to more general career development. The final category discussed included performance-related goals. Only three of the participants indicated that they were motivated to achieve performance goals, two relating to performance approach (Papp) and one to performance avoidance (Pavo). See Table 6 for a complete summary. Following is a discussion of each finding that provides further details with support and explanation.

Themes	Achievement goals	Vicky	Sabrina	Jarvis	Charles	Lin
Learn	<i>To improve English language skills</i>	yes	yes	yes	yes	yes
	<i>For general self improvement</i>	yes	yes	yes	yes	yes
	<i>For enjoyment or interest</i>	yes	yes		yes	
	<i>To make good use of free time</i>	yes	yes		yes	
	<i>To be able to enjoy English media</i>		yes	yes		yes
	<i>To improve current job-related skill</i>	yes		yes	yes*	
	<i>To live or travel overseas</i>		yes		yes	
	<i>To use English as well as others</i>		yes			yes
	<i>To improve social confidence</i>		yes			
Papp	<i>To outperform others</i>	yes	yes			
Pavo	<i>To avoid embarrassment</i>			yes		
	<i>To avoid failure</i>			yes		
Outcome	<i>To prepare for future career opportunities</i>	yes	yes			yes
	<i>To prepare for a job in the future</i>				yes	

Table 6. Achievement goals organized by participant. (*) Indicates that the job-related skill was not required for his current role.

Learning Achievement Goals

Learning achievement goals are of particular importance to this study as it was believed that for the intervention to be successful, it would need to foster the development of this type of orientation within learners. Due to the high levels of persistence demonstrated by the participants at this stage of the study, developing a clearer understanding of the characteristics of these types of achievement goals became a priority. The participants in this study all reported

their reasons for studying English were motivated by a variety of shared learning goals, as detailed in the following sub-themes.

Improving English skills

All five of the participants spoke of achievement goals associated with the *improvement of English language skills*. Vicky, for example, talked about wanting to improve her writing because it was “my weakest part, because I think my speaking and my listening are better than writing or reading.” Lin, on the other hand, mentioned improving listening specifically, “I’d like to emphasize the listening [practice]. Sometimes my listening is not very good.” When describing their prioritized skill, it was common amongst all participants to compare it to their other skills as a weakness, and presumably therefore in need of improvement.

Job-related skills

The prioritization of specific skills also appeared in conjunction with other related reasons for learning English. *To improve current job-related skill* was found to be relevant for Vicky, Jarvis and to a certain extent, Charles. Vicky and Jarvis were required to use English regularly in their work context. Vicky, who was both a learner and a member of staff at the language training organization, was the most advanced learner and used English at work daily to communicate with instructors, guide learners, and during the study took on some responsibility for business development. Though she was already quite accomplished in her role, Vicky seemed to be focused on improving her job performance by advancing her English language skills as evidenced in the following excerpt.

I work in an international company... we use email all the time...at first, I thought we just [had to] write some short email... not really long. But a few months ago, one of my partners, he just had a project with (an)other company, so we need[ed] to

write a long article...a long email, just like a proposal. So I really need[ed] to focus on, how to say... the formal or informal language...[and if] I use[d] it properly or not.

[Vicky]

When asked to explain how she had addressed this challenge, Vicky responded:

Well, I also buy some books about the writing, you know, just like the Business English certificate, they have the writing part, and I just buy the writing books to learn some writing structures, like email, how to write email, how to write the proposal, or invitation. Yeah. Something related with business English. [Vicky]

While working to improve her writing skills, Vicky identified a valuable and specific need for this skill in her work context. She has used this need to help direct her behaviour and has invested substantial time and effort towards its fulfillment. The actions she has taken to study include the selection and procurement of learning resources, the prioritization of practice material, the evaluation of writing output, among others. It should be noted that all these actions were selected and taken independently, as the specific skills she was interested in developing were not covered by the curriculum of the institution.

Jarvis was the other participant with work-related needs though was not quite as self-directed in addressing them. His focus, unlike Vicky, was the improvement of his oral skills, with an emphasis on speaking, as can be read in the following excerpt.

I have worked in an international company for quite a few years. I need to speak English with my colleagues, and I also need to read some technical documents in English. And if I want to improve myself, I think I need to improve my English. And when I talk with my customers, some of my customers are from other countries and I need to speak English with them. [Jarvis]

Jarvis was interested in improving his ability to perform his job tasks by increasing his level of English-speaking proficiency. In this way, improving English skills and job-related skills are intertwined. Jarvis connected his learning in the language training organization to addressing his work needs by selecting task sequences that he thought would be relevant for helping him to prepare for job-related tasks.

In response to the prompt asking him to describe how he studied English to improve his work skills, he shared the following example:

... next week I need to do some job according to which part in English. So, if I need to attend a meeting, maybe I need to know... I will search for some words on some topics. So I will use the courseware and I will also choose the classes next week that I need to attend. [Jarvis]

Charles is another participant that has identified specific, work-related tasks that he would like to complete in English. His context is different from that of Vicky and Jarvis, however, in that he has no specific demand for English use in his current role. Charles works for a local Chinese software company where English was not required to complete his job-related tasks. He has found a way to incorporate his English learning within his work context, however, by reading technology updates published by Google.

[Translated from Chinese] *Google releases documents on technology development each year, so I have to read them and learn from them, otherwise I would get left behind. I have to keep my knowledge up to date to keep my job. Initially, I was reluctant to read the technology-related documents and I was even not willing to spend time on them. Now I have developed the habit of reading in English....* [Charles]

Continuing to maintain his knowledge level is important for his career and industry, however, previously Charles mentioned that he, like many of colleagues, would seek out Chinese translations of Google publications. The use of English was not made a requirement by his work environment. Instead, Charles was actively able to develop his own achievement goals related to his work context but also in support of his longer-term career plan. To address this goal, he established a routine where he would regularly practice reading in English. He also made use of translation technology to assist with gaps in his language knowledge.

Enjoyment of English media

Three of the participants also talked about the English skills they wanted to develop in relation to being able to access English media. As mentioned above, Lin was focused on developing English listening skills because he had determined that they were not as strong as he wanted them to be. He came to this conclusion because he was unable to fulfill his desire to listen to overseas news media:

I don't like to know some news from some reporters. I'd like to translate some news from... translation happens according to different cultures so probably some translations are not correct. I'd like to use my ... I'd like to be capable to translate news.

[Lin]

Listening to the news was of course, a long-term goal as Lin was only just starting at B1 and would have struggled to listen to news aimed at a native English-speaking audience. Jarvis expressed a similar desire to be able to improve his oral skills to “watch movies in English or listen to the BBC [British Broadcasting Corporation].” Sabrina was the other participant, who like Jarvis, was interested in developing her oral English skills so she could watch English movies “that don’t have a submission...kind of words under the movies...subtitles, so I can

understand what they are talking [about]”. Both Jarvis and Sabrina indicated they were not able to complete these tasks at their current level of proficiency (B2 low).

Living or travelling overseas

Sabrina and Charles both indicated they were interested in improving their oral English skills to be able to communicate easily when living or travelling overseas. Charles, for example, listed his reasons for learning in order of importance:

[translated from Chinese] *to read some tech documents in English from time to time [...] I want to learn English as a steppingstone from my potential career move [...] For the third reason, it's for my personal life. I want to be able to communicate with locals when I travel abroad.* [Charles]

For Sabrina, she also had ambitions of travelling and potentially living abroad at some point though she explained “I think it’s still a long time away... Like perhaps higher than two years because I still need to study here in Shanghai.” It is worth noting that neither Charles nor Sabrina had any plans in the coming 12 months to leave China for travel.

Improving social confidence

Sabrina’s reasons for studying English presented the greatest variety, including all learning-related themes apart from *improving job skills*. Sabrina was the youngest of the participants in this study and still a university student, so this perhaps affected her view on learning as well as her priorities. One unique aspect from her interview was more aspirational, when she described how developing her English skills might change her life.

So... you will feel like the life you never think of... it would be living in a different... life. Like different things, you have seen... The person you haven't met. And if you can communicate with foreign people like English, American, that it... will let you

change your behavior. If you are like the quiet person, you meet American people that will let you change a little bit... For the long term, it will change a lot [...] I'm not quite a talker, so I hope that the passionate people can make me more open. [Sabrina]

Sabrina referred to this theme of developing social confidence several times throughout both the interview and coaching meta-dialogues. Through her explanation it became clearer that she wasn't referring simply to using English confidently but developing her communication skills as she worked to overcome her shyness. She aspired to be able to demonstrate confidence in front of other people and she equated this type of extraverted behaviour with that of her foreign instructors. While interacting with the international staff in the institution, it appeared as though she was not only practicing English but trying to model herself after some of them by way of observation and imitation. This was most evident during the times when she pushed herself to take risks to speak first in class and participate in public performances at the institution.

General self-improvement, enjoyment, and making good use of free time

Other learning achievement goal-related reasons associated with skill development and intrinsic interest shared by the participants were learning English for self-improvement, enjoyment, and the desire to feel like they were accomplishing something useful in their spare time. All the participants indicated they were motivated to learn English out of a desire for continuous self-improvement. Lin, for example, talked about his need almost as if it was expected of him stating "I think we must extend our horizons" because his major at school was "opposite language" and he wanted to learn new things. Equally Charles indicated that the most important reason for learning English was "to improve himself".

Vicky shared this desire for self-improvement but added to it that she had a sense of joy and accomplishment from studying English at the institution:

After taking classes for one month, and I think I really love the course because I really enjoy the time when I was taking class. And I just have a full schedule on my day off, so I just got a sense of achievement. [...] I also really enjoy learning English because every time when I'm taking a class, I can always immerse myself in it. So I really love that. [Vicky]

Next to Sabrina, Vicky included the greatest variety of learning achievement goals, also describing learning as “her hobby.” In this example, she describes her personal interest for improving her writing ability and finding inspiration from a recent visit to a restaurant:

Recently, I'm trying to write something on purpose. Just like yesterday, I took a workshop [class] called 'Nice Restaurant Food'. So, I tried to write a short essay or article... to describe my favorite restaurant because today, no, Wednesday night, I just went to a really nice restaurant. And on Thursday, I took this class, so I have a lot of things I want to say, and I tried to use the language I learned from the workshop to write the article. [...] I tried to write. I just (made) like a plan... at least once a week to write a short article. [Vicky]

A similar sentiment of pursuing English for the joy of learning was echoed by both Charles and Sabrina, the latter of whom explained that “learning English is not the wrong thing. Even if it's not for a kind of reason, you just enjoy it and you can learn a lot from it.” Jarvis had a slightly different perspective but was equally committed to learning English as a worthwhile, long-term investment shared: “For now, I don't think I will stop learning English. Because, I think for language, there is no limit.”

Using English as well as others

This final category for learning achievement goals may be seen as controversial as it involves comparison with others. Other themes involving social comparison were categorized using a performance framework, however, I interpreted these reasons were for the purposes of skill development as the objects of comparison functioned as both a model and benchmark of desirable performance or behaviour and were thus better represented within a learning framework. Sabrina and Lin each shared examples of how they compared themselves with their peers to improve their performance. In one example, Sabrina applied social comparison as a strategy for learning goal development in the context of describing the importance of making continuous progress:

*I'm kind of like a little bit stressed when other people are good. Like I don't want to... I... not have progress. And I'm worried about when... I don't have some progress[...]
I will think like "what are other people doing"? Like if they are speaking in the public place, can I do it? I do that so that will keep me motivated and I want to do that, also.
[Sabrina]*

In this quote, Sabrina indicates that she looks to others to identify areas that she can target for improvement. Arguably, she also conveys a sense of competitiveness as though she does not wish to fall behind her peers. This secondary element will be addressed below in Finding 2.

Lin is the other participant who, like Sabrina, referred to using social comparison as a strategy for setting learning goals. Lin does not have an opportunity to use English at work and also happens to be the participant in this study with the lowest level of English proficiency. He

has little experience studying English during his formal education but views developing English skills as a way of unlocking opportunities for future career development.

Lin described how he views his level of ability in response to the prompt: “Do you consider yourself good at learning English?”

I will often ask myself this question...70% no. [...] I know some students and teachers who were born in China, and they speak very well. And I am not as good as them. [...] I am confident I can achieve my goal with hard work. [Lin]

In his statement, Lin explained that he had identified areas for improvement by observing other learners and teachers that faced the similar limitation of “being born in China.” Lin held the belief that not being born or having the opportunity to study overseas were constraints on one’s ability to master English and avoided comparing himself with other English speakers who were not subject to those same constraints to develop a more relevant standard for comparison.

During the coaching meta-dialogues and subsequent interview, Lin did not share any specific tasks or examples of having worked towards a standard established by observing other learners. He did, however, express a desire to be better informed when talking about the intervention:

It will make me feel we are connected. Probably sometimes we will compare with other students... because sometimes I must know, in my level, what's the horizon of the other students. Because I want to know how my abilities compare with other students in my level. [Lin]

Lin talked about his desire to be connected to other students in the sense that he wanted to know more details about how well they were performing. He explained that he was less interested in reviewing their learning strategies or study plans but wanted to know more about

skill level so he could identify gaps in his own knowledge. He suggested that it would be helpful if the intervention could provide more support in this regard, perhaps indicating that he found it difficult to conduct this assessment, unassisted.

Outcome Achievement Goals and Career Development

All of the participants apart from Jarvis spoke about learning English in order to improve their future job prospects. This contrasts with the earlier theme of *improving job-related skills* in that the participants were focused on obtaining a job in the future or on improving career competitiveness in general. Exploring the nature of career ambitions as outcomes of learning English is of importance due to the pervasiveness of this achievement goal orientation amongst the wider population of learners within the institution. Vicky, Sabrina, and Lin all discussed wanting to *prepare for future career opportunities*. Charles alone was unique in that he had a more specific job that he was working towards and so was *preparing for a job in the future*.

Job in the future

Charles did not pay much attention to studying English during his formal schooling years, opting to study science through school and then computer science in university. He took a job in a local Chinese company as a software engineer but decided that moving to an international company and learning English would be a good career move. Charles shared his career plan:

[Translated from Chinese] *My expectation is that I can work in the management in a foreign company. I want to be able to communicate with my foreign colleagues and my English is good enough for the job requirement. When the opportunity emerges, I hope I am ready for it. I don't want to miss the chance just because my English is not good enough.* [Charles]

Charles spoke about developing both his skills as a software engineer and his proficiency in English in order to find a more senior role in an international organization. It was this goal that helped to guide much of his planning for his English study. He adopted a course completion target set for him by his study advisor, working towards a specific level that he felt matched the level of competence he would require to obtain the job he was seeking. Charles shared the following when talking about his initial study plan:

[Translated from Chinese] *When I first started at the [language training organization], my initial goal was to reach Level 12. Now I am at level 12, but I feel my English is still not good enough.* [Charles]

Charles described how he had operationalized his career goal by selecting and working towards a specific level within the course. However, after reaching the level, he was unsatisfied that he had achieved his target level of competence, which appears to have been estimated based on the skill level Charles believed he would need to be able to function in the management role he aspired to. In this way, it appears as though having a more developed sense of his career goal has helped to guide his learning.

Furthermore, when asked to elaborate, Charles explained how he had developed a new plan to help him progress towards his desired management role:

My goal of finishing the first stage at the [institution] is to take some English interviews with some international companies. If my English is not fluent enough, I will take that as a motive and come back to the [institution] and start learning again. I might as well take the BEC (Business English for Careers) test to check my language competency, so I know which areas to improve when I come back to the [institution].

[Charles]

Charles appears to have modified his strategy, no longer relying on the course structure to define his study goals. Rather, he has developed a plan to engage in a form of authentic assessment related to the job he was seeking by way of participating in some interviews to help guide his future study, in addition to registering to sit a formal business English related exam.

Future career opportunities

In contrast to Charles, neither Vicky, Sabrina, nor Lin had a specific career in mind though Sabrina had some ideas:

Pre-school education [is my major] but I have some experiences that I'm sure that I don't want to be a Kindergarten teacher. So that is not my aim. [...] I want to be an actor...a kind of actor. [Sabrina]

Sabrina was majoring in education at university and was in her third year of a four-year degree. She explained that she was no longer committed to her program but was still almost two years away from graduating and had no plans to leave university. Sabrina did not share anything further during her interview or the coaching meta dialogues related to any actions she had taken to pursue a career as an actor.

Vicky and Lin were even less clear about their future career options. Lin, for example, replied in the demographic survey that he was interested in pursuing a new job. He was aware that not having strong English skills might prevent him from pursuing certain careers, but he did not seem to have a specific job in mind. When asked if he was working to develop any specific career-related skills he simply replied: "No, not really." Likewise, Vicky explained that did not have a specific job or even industry in mind that she was preparing for, just that she didn't want to waste time and potentially miss an opportunity:

[I do] not really [have] a specific industry, or [know] what kind of job I want to do in the future. I just think learning something, just get inner peace. Yeah, because I don't waste time, I'm using the time to improve myself. But you don't have really know when the opportunities will show up in front of you, but if one day the opportunity appeared then I can grab it. [Vicky]

Performance-Related Goals in Study and Work-Related Contexts

The investigation of performance-related goals and their impact on study behaviour amongst the participants of this study was of interest due to the aim of the intervention, which was designed to minimize performance orientation amongst learners. With the sample of experienced, persistent learners participating in this study, it was of interest to explore any performance goals more deeply to evaluate and measure any potential effects, both positive and negative.

Only three of the participants referred to performance-related achievement goals. Vicky and Sabrina both indicated that they were motivated in the pursuit of English learning at the language training organization by the notion of being able to perform well in relation to others at work and in the learning context, respectively. This theme was classified as a performance approach goal. Notably, none of the participants spoke of achievement goals that would suggest they were inclined to want *to demonstrate their ability*. Jarvis, in contrast, seemed more motivated to improve his English skills to be better able to avoid situations that might lead to embarrassment while studying, and at work, or the risk of failure. Consequently, these were labelled as performance avoidance goals, in accordance with the analytical framework from Chapter 2.

Outperforming others

Sabrina is quite an advanced learner in the language training organization, having completed the course and now returning to review lessons that she had previously completed. When describing her experience in class, and how she felt about repeating lessons she said she felt like she “was learning well.” I asked her to explain further, and she shared the following:

[It feels] like...kind of ...in the classroom with the teachers who are teaching... you are the first one to think of something that is correct, or also in a new way, which is also correct. [...] Yeah, other people don't think about...but I think about it. [Sabrina]

In her example, Sabrina indicated that she felt good about her experience in the classroom repeating lessons and notably, she equated learning well with being able to outperform other learners. She demonstrated a sort of pride at being first to answer a question or propose a novel way of doing something. This was, of course, in addition to the other types of achievement goals identified previously in earlier findings.

When Vicky first started learning in the language training organization, she said that it was to make use of her work benefit. However, shortly after, she realized that using the course helped her to develop her skills and soon she “realized that I know the product inside-out...[better] than my coworkers!” She continued to study and improve her knowledge of the course, later achieving a promotion which unlocked other doors for her to extend her job scope significantly in the direction of sales leadership and business development. Though she talked about doing well at her job, Vicky didn’t ever describe her learning performance in relation to others. She did tend to compare learners, however, and provided evidence of people she had supported outperforming others in class.

Avoiding embarrassment

Jarvis was the only participant in the study with achievement goals with a negative valence which appeared in achievement situations in both work and learning context. Working in an international company, Jarvis was required to use English regularly while discharging his work duties. He had to communicate with a variety of English speakers, from a variety of international backgrounds (e.g., German) where English was not spoken as a native tongue. His European colleagues tended to be more outspoken during interactions at work, however, and Jarvis found this to be intimidating at times. For example:

During the meeting time, I think from the meeting we need to have our clear ideas. And we also need to share the opinions during the meeting. But sometimes, I feel when I attend a meeting, I'm afraid of talking with my colleagues because I think my listening skills and speaking skills are not good. They are not good enough to say something very clearly... I want to feel better. [Jarvis]

From his description, it seemed that Jarvis found his work quite challenging and struggled to convey his meaning clearly during interactions in English with his colleagues. Learning English provided him with a way to address his anxiety, as a means of reducing the likelihood of encountering unfamiliar language or being unable to convey his ideas with confidence.

Evidence of Jarvis' performance avoidance orientation appeared in the context of his learning behaviour as well. In both the interview as well as his coaching meta dialogues, it was common for him to share moments from his study time where he had taken action to avoid discomfort or embarrassment. For example, he shared an anecdote from his past where he talked about avoiding interaction with more advanced level students:

I also have the same feeling, like before, like if I'm an Intermediate level student, I don't think I will jump to a higher-level class because I think in the high-level class, their level is higher than me. They will speak fluently. When they are speaking, I won't be able to understand so I'm afraid of attending the higher-level classes. [...] Now I do, of course, because I know the topic... I know... I also have experience with high level students. So now I can jump to the high-level classes or low-level classes. [Jarvis]

Jarvis was quite open in sharing that he feared the idea of attending classes with higher level students who would be more fluent speakers of English, than him. This led him to choose classes where he felt confident, he would not be matched with other, more proficient users of English, in a way mirroring the situation at work. Improving his English skills would help ensure he would be able to avoid meeting other more advanced learners and avoid the embarrassment of not being able to communicate with them. Notably, Jarvis mentioned that he is now comfortable interacting with all students, both high and low level, after completing the course.

Avoiding failure

Despite having completed the course, Jarvis continued to study at the language training organization, repeating some of the previous coursework and attending non-compulsory classes he had missed earlier. As an advanced level learner, however, he elected to focus on repeating beginner and elementary task sequences (A1, A2), well below his level of skill (B2 low), making it easier for him to complete. When asked about his process now that he had completed the course, Jarvis explained:

For now... I think it's difficult to set my [study]goal. So now... but I still have a goal. Every week I should attend classes. I need to practice... to study one part of...[the course] topic I need to learn... [Jarvis]

Jarvis appeared to frame his goals according to the completion of tasks and attending lessons, suggesting he thinks of learning in terms of task completion. By prioritizing course content that he is confident he can easily complete, he effectively reduced the risk of demonstrating incompetence.

Here it is interesting to note how the approach taken by Sabrina, another participant who has completed the course, contrasts with the steps taken by Jarvis. For Sabrina, completing the course was an important milestone and resulted in her adopting a new approach to learning.

While discussing how she had modified her study process, Sabrina said:

Yeah, it's like when I don't understand what they are talking [about]... I will keep listening. The whole part or the question. The answer I need to make... If I'm wrong... where I am wrong. So I will listen again. If I really don't understand I will keep listening to that topic on this communication. Before that, I will just go on. [Sabrina]

When responding to a request for explanation, Sabrina elaborated:

Because I already finished the level of this...this class. So I'm not worried about, how much time I take here. I just want to understand what they are talking [about], otherwise why should I go to the higher level? [Sabrina]

Sabrina explains her new approach, which seems to be focused on achieving mastery of the learning objective, with the way in which she had previously prioritized moving on. In this way, she seems to have adopted a new orientation towards studying, moving away from task completion towards prioritizing skill development.

Further evidence of Jarvis' desire to avoid pursuing challenging goals became clear when he described how his personal learning methodology had evolved from when he started studying at the institution.

Yeah, before I felt that I learned... I felt very tired. Now, I just use the natural way to study.[...] I don't think too much... I don't think I need to always remember it. I found that maybe I can remember now, and I can remember in one week, but I still will forget. So, now I don't care too much. If I forget it, I forget it. Even if I forget, I can learn it again. It's like I just don't care. [Jarvis]

Jarvis contrasted his new approach to learning with his earlier strategy by way of having lowered his expectations for achievement. He had struggled with being able to make efficient learning gains as he had originally set out to do and adjusted his expectations to make it easier to accomplish what he had set out to do. He also mentioned that his new approach had helped him to alleviate the stress he had previously associated with learning English.

Summary

Several participants in this study demonstrated a mixed profile consisting of learning, performance, and outcome achievement goals. Learning goals were the most common and supported by all of the participants. Notably, all participants in the study expressed a desire to improve their English skills, which appeared in conjunction with other reasons for learning English including improving job-related skills, enjoying English media, and travelling or living overseas. Another widely shared theme concerned the desire for general self-improvement in addition to enjoyment of learning and the preference for using free time wisely. As noted, a controversial theme that was categorized as a learning goal concerned the ambition to use English as well as others. It is worth mentioning that Sabrina supported all the themes in the

learning goal framework, apart from improve job-skills, which was not applicable due to her status as a university student.

In addition to learning goals, four of the participants indicated they held achievement goals that were classified as outcome oriented, learning English in anticipation of improving their job or career prospects. Charles was uniquely identified as focused on a near-term job opportunity which was well-defined and as a result, was useful in helping to direct learning-related decision-making. The remaining participants subscribed to more general career plans that did not appear to have direct impact on study plans or behaviour.

Three of the participants also held performance-related achievement goals. Sabrina and Vicky demonstrated performance approach goals, which seemed to impact their learning experience in a positive way. It should be noted, however, that both participants are advanced learners and would likely be able to outperform most other learners in the institution. Jarvis, in contrast, was oriented towards performance avoidance, both at work and in a learning context. This orientation was connected to several maladaptive behaviours related to avoiding embarrassment and risk.

Evaluation of the Intervention

The evaluation of the intervention was conducted to explore the impact of the interaction with the app on the participants' behaviour and performance. Based on the qualitative data collected from the interviews and field notes following the implementation of the intervention, four design elements were investigated: a) Goal setting; b) Time management; c) Instructor feedback, and d) Self-assessment.

Task-Goal Setting

The primary finding by way of responding to the evaluation of the design of the intervention was that all but one of the learners in this part of the study chose not to prioritize some task sequences over others or use Can-Do statements to establish personalized target goals. Only Sabrina indicated that she found this process helpful for supporting learning and modified her behaviour in response. Learners were prompted to select a rating for each task sequence using the partial Can-Do statements displayed in the app interface and then develop them further during the coaching meta-dialogues. As part of an on-going process, I supported learners with crafting more personalized statements that fit their needs and context, leading to internalization of the course standards. Based on the participants' descriptions there were multiple reasons for the lack of engagement with this feature. These reasons are discussed in detail, below.

All but one of the participants in this study indicated that they struggled to rate each of the task sequences based on the information provided in the intervention. Vicky, for example, found as a learner she could not determine the personal relevance of any task sequence simply by reviewing the Can-Do statement.

Yeah, that's the problem, because as a student, I don't know which one is important for me or is useful for me. Maybe the topic, just like suppliers... I don't think I have [any] interest in that. But you know when you do an online lesson, there are some words, there's some grammar, I think it's really, really useful. [Vicky]

She refers to the importance of words and grammar in her evaluation which seems to indicate that she approached the goal selection process through consideration of the language system as opposed to the more functional formula expressed by the Can-Do statement. Note that a selection of the language targeted for study is listed in the course documents though not

accessible in the app. Her emphasis on the importance of words and grammar is further demonstrated when she described how she supported goal setting for other learners in the capacity as a study advisor in the institution.

...at first, if he's a Beginner student, and I know, I already know these four lessons, which one... what kind of language in... contained in each lessons...just like Lesson One, just some vocabulary he already know[s] and lesson two, some grammar he doesn't know before, I will recommend it to him. [Vicky]

The theme referenced in Vicky's description above helps to illustrate why she chose not to engage with the intervention as it was intended. She describes her approach to selecting goals based on a perceived knowledge gap of the language system. This strategy was echoed in Lin's explanation for why he found that he was ill-equipped to select learning goals from the list of partial Can-Do statements. Lin shared that he would appreciate it if, "...we can record some grammar which is... when we make a test, we are wrong. So probably we can summarize this grammar point." Lin seemed to feel that he was unprepared to direct his learning on his own and wanted additional help selecting areas for focus and improvement, which he indicated could be identified by taking a test.

While Vicky seemed to place more emphasis on the importance of the language system in the context of goal setting within the course, she relied more heavily on a skills-based, functional approach consistent with the use of Can-Do statements, when discussing her language learning goals as they applied to her work context. Vicky shared that when learning English for use at work, she "...bought the writing books to learn some writing structures, like email, how to write email, how to write the proposal, or invitation. Yeah. Something related with business English." In this example of her goal description, she is referring to what she wants to be able to

accomplish using the language. This was consistent with the content of our discussions during the meta-dialogues where Vicky was much more engaged in discussing workplace-related goals and strategies than those provided within the course.

Charles' approach to goal setting equally relied on connecting the task sequences to his work context. Though we only managed to arrange 2 sessions, during both sessions Charles talked extensively about his desire to improve his English to help him find a new job at an international company. In his description, he often referred to applying his English skills to learn about new technology so that he didn't "...get left behind. I have to keep my knowledge up to date to keep my job." Though his personal goals seemed to fit with the approach of Can-Do statements, he didn't seem to have made use of any of the standards provided in the course to create personalized goals.

Sabrina was unique in finding this part of the intervention helpful for supporting her learning and devised her own process for using the intervention to help her prioritize task sequences that she wished to review further after initial completion. She explained that she was uncertain about the relative importance of each task sequence until she had completed it and could decide if she felt she had achieved her expected standard. Sabrina recalled: "But now, today, I use it like I've finished it and I put the important or not important... like the 1, 2, 3 part so that I know was it important for me or not." Sabrina completed the course during the research period and began to use this feature to help guide her when selecting which parts of the course to prioritize for review. She also later decided to focus on developing her writing skills, so the task sequences that included writing practice were emphasized.

Time Management

Three of the five participants interviewed in the study indicated that time management was a priority for them. This function was accommodated for in two important ways: (1) resource access and time spent, and (2) frequency and sequence of study events. Time spent accessing different course resources was visualized in the app across the different task sequences and at different levels of detail, giving learners precise information about how their time studying was used. This feature was important for supporting reflection and further goal refinement. Jarvis described his process as follows:

I will choose.... I will find which part the data is ... maybe I spent less time.... I will want to know why I spent less time on one topic. Then I will think about this topic and decide if it is useful for me or not useful for me. If it is useful for me, then I will probably do it again. [Jarvis]

In this example, Jarvis described his reflective process as involving two steps: first, identifying areas of the course where he was faster than the guideline provided, and second, deciding if the topic or task was important. After completing his review, he would decide whether to revisit the course content or not.

Like Jarvis, Charles also indicated that the time distribution graph was very helpful indicating that: “it can make me become more aware of the time I spent on each part. I can figure out which part is more difficult for me.” When interpreting the data, however, Charles had a different focus as he was most concerned with identifying areas of difficulty which he determined was indicated by longer time spent.

When I finished the unit or the level, I would check the timing and reflect on why I spent this much time on this part [...] I will try to review the part that I spent a long time on and find out what hindered the progress of study. [Charles]

Charles referenced the time spent practicing in each “part” of the course and was interested in learning more about where he was struggling.

Vicky explained that while time spent was not especially important for her, she acknowledged that reviewing the distribution of study time was a helpful standard to consider during self-reflection. Like Jarvis, she suggested that time spent was a good indicator of goal achievement, particularly for learners when they first start studying in the institution.

Some students, they have some foundation, but they're still Beginner or Elementary level. When they do the online lesson (courseware), they think, “Oh, it's quite easy. Very, very easy. I only use 15 or 20 minutes. I can finish each one.” But I will challenge them “Do you still remember, what was the topic you learned last time?” They cannot remember, right? So that's the problem, you know [...] so they just realized, “Oh, I know I still need to spend more time on it.”

For some students that could just give them some instruction. They know, “Okay, maybe I didn't use enough time on that so I cannot remember... remember it.” [Vicky]

In her capacity as a study advisor, Vicky shared that it was common for new learners to orient the study process towards hasty completion of the course content. She hypothesized that this was partially due to a lack of awareness regarding a performance standard for the learning outcomes of the courseware. As a result, new learners often employed learning strategies resulting in superficial learning. Using time guidelines and tracking time spent against those, she

proposed, would be helpful for setting expectations for new learners and guiding them towards the use of more effective learning behaviour.

Lin held views similar to Vicky in that he did not find the time management function particularly useful. When describing his response to the intervention, Lin said:

It was not very useful [...] because if some grammar or vocabulary... I can't understand it.... I will spend more time on it. So if you give me a recommendation... I can probably do it by myself. I know how much time I need to spend to understand it.

[Lin]

Lin indicated that he was not interested in receiving guidance related to the time required to complete a task because he would continue until he was satisfied, he could use the language that was the object of instruction. The time required to complete the activity did not seem to be a consideration of his self-assessment process, as it was for Charles and Jarvis. Time was also absent from Vicky's assessment of her learning who added that "it didn't take too long to complete the activities...maybe only one or two hours."

Another especially important aspect of time management in this context concerns study frequency and planning for when to attend lessons and complete relevant courseware learning. With the flexibility provided by the learning design, learners have easy access to lessons and learning resources. However, this course feature can often result in procrastination. Sabrina referred to this scenario when describing how she used the data visualization in the app:

Just like when you haven't studied for a long time... then you look at it, you will know exactly what time you haven't studied... So that will make you think "Wow, for this.. I haven't studied for a long time." It will make you think,.. is that useful or is that really... not have time to study? [Sabrina]

Sabrina explained that when she looked at the app and saw large breaks between study episodes, she would feel regret, which in turn led her to persist in continuing with more frequent study.

Instructor Feedback

Of the features included in the intervention, instructor feedback was reported as the most highly valued. I prepared this for each learner following a template that included comments on the self-study resources, classes taken, and general suggestions, prompts and observations. Feedback was organized by unit within the LMS and provided upon completion of four task sequences. This resulted in each participant receiving feedback six to eight times during the two-month duration of the research. Information collected for use in writing the feedback was gathered from the student learning portal within the LMS and reports generated by the intervention. Feedback written later in the study also captured information generated during the coaching conversations. All the data referenced in the feedback was also available directly to the students.

In their response to questions about the instructor feedback, three of the participants reported a strong positive response of an affective nature. Vicky, for example, explained that there is an important emotional need addressed by this type of feedback.

First, when I see so much feedback, I think my teacher or my consultant really cared about me, really, really cared about me.... Not just automatic feedback... you really reflected my study progress, so I feel you really care about me. That's something we really need nowadays... That is emotional needs. [Vicky]

Vicky's response highlights an important function of instructor feedback in this context that helps to provide a motivational benefit. In her response, she contrasts the instructor's

comments included in the intervention with other feedback received in the course, which she characterizes as automated. Most of the feedback provided in the course today is auto-generated apart from a report that is completed by an instructor after each online private lesson. Her response suggests a clear preference for feedback that appears to be carefully written and aimed at addressing an area of personal significance. Sabrina's response also seems to convey delight when responding to a prompt asking her about how she felt about the instructor feedback:

I feel like you... know what I studied in that kind of part, the level or the unit, the whole thing like a summary for my study progress... It made me happy... you like the teacher to know, the students and their study process. It's unbelievable! [Sabrina]

Jarvis's response also helps to illuminate the rationale for the affective response to the instructor feedback by explaining the importance of accuracy, and inclusion of comments on items of personal relevance:

When I saw it, I think it's very touch my heart. Yeah, I think the weakness was very close to my learning. [...] because for us, we don't know which part... where is our weakness. Maybe we can know a little bit but we ... we also need to know it... maybe other people or the teacher can know what we are weak at, which part we need to focus on.... [Jarvis]

Jarvis' description serves to indicate the value of the perception of the instructor and the trust directed towards the benefit of their comments.

The same three participants also shared how they had modified their study behaviour in response to the prompts and suggestions included in the feedback. Jarvis provided the following example:

You mentioned in the feedback... "Why do I need to review the low level in the course?" When I saw that, I think, "yeah, in the low level I can review some new words but... maybe I wasted time." Most of the language in the course, I know it already... so I don't think I need to review the low levels. I can use the time to review the higher levels.

[Jarvis]

Jarvis was responding to a prompt included in the feedback challenging him to think about how to prioritize his study time. Connecting this comment to the previous extract, the weakness to which he was referring appears to be with his study approach as opposed to his proficiency level. He explained how he reflected on the question and modified his learning process as a result.

Sabrina also found the question prompts included in the feedback effective, sharing that they led her to question her assumptions: "You will think for yourself. 'Did I agree?'" She later expanded on action she took following a suggestion included in the feedback "It's like I told before, I... I seldom like to communicate with others and you said I can join some public places where students or the teachers are speaking, so I will join sometimes... ." Sabrina's example also points to the importance of relevancy in the feedback and connecting suggestions related to study process to personal achievement goals.

Two of the participants shared a less positive view of the instructor feedback. Charles described the feedback received as being "...too general. I need feedback to tell me about the specifics." He explained in response to further prompting that he was looking for more details to help him identify errors in his spoken language use:

I want to see more details and specifics. It is like when a teacher can point out in front of me when we are talking [...] I still need to talk to someone to solve it bit by bit over time [Charles].

It should be noted that Charles did not seem as concerned with the source of the feedback as he was with the level of specificity and focus. In the example shared above, Charles referred to requiring assistance with error correction from an instructor during class. However, he proposed that more descriptive data collected from his learning behaviour in the course could be used to provide useful insight:

I want to see the specific data such as which word that I hovered over and which sentence structure I paused over and which grammar point that took me a long time to understand. The data can be more specific. [Charles]

Charles was very focused on identifying the errors he made during language practice and expressed a strong opinion about his expectations for feedback in helping him with this task.

Charles was alone in his support for the collection and use of additional learning trace data, however, Lin shared a similar opinion about the value of the instructor feedback in the app evaluating it as “a bit helpful.” He shared that he wanted the instructor to “...recommend which class you can attend” and then afterwards, “...help you know whether you understood the instruction or not.” Lin seemed to be highlighting the importance he placed on the role of the instructor to help with performance evaluation and guidance, and returned to this point again in response to a request for suggestions to improve the usefulness of the app. He stated that he would like more information to help him “know whether I really understand the grammar or vocabulary.”

Self-Assessment

All five of the participants in this part of the study acknowledged the importance of self-assessment for managing their learning and tracking their progress effectively. This was facilitated through the app on screen 4 (see *Figure 14*) by way of presenting a table that included the summative results achieved in the self-study courseware, organized by task sequence, together with the prioritization rating selected on screen 1. Learners were prompted to indicate how confident they felt in relation to their ability to perform the task associated with the relevant sequence by selecting one, two, or three stars. Self-assessment was also discussed during the coaching meta-dialogues where learners were encouraged to reflect on progress, they had made over time by comparing recent and older standards of performance.

None of the participants were satisfied with the design of this feature in the app. There were several reasons provided for this opinion. Vicky, for example, explained that “most learners will feel like it is a waste of time because they cannot get any benefit from that...” while referring to the design of the rating selection process. Interestingly, none of the participants commented on the value of the summative assessment result which is perhaps indicative of the relative value placed upon the course measurement standard.

The course standard used to support self-assessment in the context of the app also proved problematic for some. The Can-Do statements were used to provide a framework for learners to think about language learning in terms of what can be accomplished with it. However, some learners seemed more focused on their ability to remember examples of the language system. Vicky suggested that learners would struggle to complete the evaluation due to a lack of knowledge about the relevant grammar and vocabulary explored within each task sequence and their ability to remember it. This point was echoed by Sabrina who stated that she “wanted to

see the information...the language and sentences...” in the task sequence to be able to rate her level of confidence with each standard. Charles described his self-assessment process in a similar way:

I will try to apply the sentence patterns that the teacher has taught related to the particular task. Then I will try to make sentences like questions and answers based on different contexts related to the topic. And then decide whether I can do it or not.

[Charles]

In this example, although Charles described his process of using language and not simply whether he could remember it, he emphasized the language taught by the instructor as the object of learning as opposed to his ability to successfully complete the task.

While the participants generally avoided using the task as a standard for evaluating their performance, four of the learners spoke of applying the standard by comparing their performance level with other learners. Only Charles made no reference to social comparison during the interview or the coaching meta dialogues. Vicky provided a recent example of one of the learners she was supporting who she believed was a strong student and drew confidence “...by comparing with other Elementary students in the classroom.” Classes are designed around group and pair work where learners focus mainly on completing communicative tasks where they use the language they have been studying and practicing in the self-study courseware. In this example, the learner was described as being motivated by his ability to complete the tasks at a higher standard in comparison to his classmates.

Jarvis provided a similar example of using the task standard for comparison while completing a task during pair-work, though with the opposite result:

When I was a low-level student, when I had partner in class... I felt disappointment. Although I don't know what she talked about and she also maybe didn't know how to speak English with me. So, I think for one class, I couldn't learn anything. And we felt embarrassed. [Jarvis]

Jarvis elaborated on his anecdote further, explaining that it was natural for learners to compare their abilities with each other as they collaborated during the group work, and evaluated each other's relative contribution to the task achievement.

Lin shared that the process of social comparison helped him to stay motivated to learn as he would use a social benchmark to help him evaluate his performance during the tasks in class. He also requested that more data on other learners' performance could be added to the app "because I want to know how my abilities compare with others in my level [...] It will also help me feel we are connected."

Summary

Most participants (four of five) did not find the goal setting feature very effective, describing it as difficult to provide a rating of the task sequences with the information available. One of the main reasons cited was the mismatch between the participant's preference for information related to the language systems covered as opposed to the more skills-based functional approach promoted by the intervention, in the app and coaching meta dialogues. Interestingly, several of the learners referred to a skills-based approach when describing their goals for learning in the context of work needs, for example. Sabrina also found another application for the design, completing the rating after completion to use as a record of the task sequences that she planned to return to review.

Time management as an important part of effective learning was supported by only three of the five participants. Time-related data, it was believed, could be used as input for self-reflection. More specifically, participants used it to help identify areas requiring further attention, though the interpretation of results varied as both more and less time usage were seen as indicators of a task sequence requiring further attention. Vicky did not value time as an important variable for planning process because she indicated she was prepared to use as much time as was required to achieve the learning objective of the task. She did acknowledge, however, that it could be useful for new learners who struggled to internalize the standards of the course learning objectives. Sabrina added that it helped her to keep a regular learning pace as the visualization of study frequency heightened her awareness of the time between study sessions.

Instructor feedback was generally well-received. Three of the five participants had a strong positive affective response to the feedback, commenting on the appreciation they felt for someone demonstrating the care required to construct their feedback in such detail. Importantly, the feedback was described as relevant because it was connected to topics of personal value to the learners, information which was often garnered through the coaching meta dialogues. The same three learners also shared examples of how they had modified their behaviour in response to the feedback, frequently referring to the question prompts as guides for self-reflection. Two of the learners were less positive and found the feedback was too general. It did not seem to match their expectations for helping identify errors in their work or provide suggestions for how to correct errors.

Self-assessment was viewed as an important part of learning by all participants though none found the design of the intervention very helpful for supporting them with this process. Reasons provided by the participants included a lack of tangible reward for completion and the

challenge of using the course standard for conducting the assessment. The rating process supported in the intervention was very different from the method some of them employed for self-assessment, which seemed to be more reliant on social comparison.

Chapter 6: Discussion

The purpose of this study was to explore self-regulation in adult language learning. As a design-based research study (DBR), the research goal was the development of an innovative intervention that is valid in a certain context (Plomp, 2013). This objective was addressed in several phases of research organized across three stages, as is customary in DBR studies (McKenney & Reeves, 2012, 2019). The two earlier stages of the research focused on the development of the intervention and were addressed in Chapter 4 of this document while this chapter focuses on a discussion of the findings reviewed in Chapter 5, from *Stage 3* of the research design. The chapter is organized into two broad sections to address the main research questions concerning (1) the achievement goals that Chinese, adult learners pursue while learning English, and (2) the participants' perspective on the functionality of the intervention and its use in supporting adaptive self-regulated learning (SRL).

Achievement Goals and Chinese, Adult Language Learners

The three findings relating to RQ4 and goal orientations included in the previous chapter, in their presentation, were organized around the categories from the analytical framework derived from the literature. These included the different types of achievement goals, namely: learning, outcome, and performance approach and avoidance goals. The discussion below addresses the achievement goals identified by exploring the various goal orientation profiles observed and their implications for adaptive, self-regulated learning (SRL) behaviour. Each section in this discussion includes a synthesis of the main ideas from the data together with the prominent themes identified in the literature to address the research question and contribute to the development of design principles to guide the next iteration of the intervention. Theoretical contributions are also highlighted, where relevant.

The three findings from Chapter 5 have been reorganized in this chapter into two analytical categories based on prominent themes identified in the data. English learning and career development is the first discussion theme, and it includes information derived from all three findings. Job skill development is an important reason for learning English for most learners in the language training institution and is explored together with the value of utilizing environmental affordances and supporting an outcome expectation of future career development. The discussion is developed further by contrasting these beliefs with the negative implications for holding a performance avoidance orientation, a prominent theme in the literature. The second theme for discussion was crafted from findings 1 and 3, investigating the notion of social comparison and the role it plays in self-assessment. A review of the process and how it is shaped by both a performance and a learning orientation, is included.

English Learning and Career Development

In achievement goal theory, the goal construct is a relatively broad concept referring to the purpose for engaging in competence-relevant behaviour (Elliot & Dweck, 2005). Reasons for learning function as a cognitive schema that guides the interpretation of achievement related information within a specific context (Dweck & Leggett, 1988). Achievement goals create a framework for how individuals select and experience achievement situations. In the process model of self-regulation, the adoption of achievement goals fits into self-motivation beliefs, part of forethought in the SRL cycle.

Many adult learners in China are highly motivated to learn English for career-related purposes. One of the main reasons for this is the near universal need for English across most professions (EF, 2019). ‘The promise of English,’ as Park (2010) described it, posits that learning English not only increases one’s employability but leads to a better job with higher pay.

English is acknowledged as a gate-keeping language in global workplaces in China and the pursuit of English is largely motivated by the need for self-improvement (Gao, 2016). A good command of English not only helps improve work efficiency but authenticates a professional identity through the demonstration of English usage as proof of legitimacy, credibility, and authority (Wee, 2008).

The language training organization that was the research location for this study attracts a wide variety of adult learners with various needs. However, they recognize the importance of promoting the value of English learning with respect to career development. It has been estimated that 70% or more of the learners in the institution at the time the research was conducted indicated their purpose for learning English was related to career development. Career-related reasons for learning English was a prominent theme raised by all participants in this study, as reviewed in the previous chapter, either as required skill for securing a new job, or for improving their ability to discharge their duties in their current role.

Conceptualizing Achievement Goals

Research on achievement goals in a work context have noted that those who focus on ways to master tasks to develop competence, acquire new skills, and learn from experience tend to be oriented towards learning goals (Brett & Vandewalle, 1999; Seijts et al., 2004; Vandewalle et al., 1999). Similar findings have been observed in the language learning literature, where the pursuit of learning goals has related positively to adaptive learning outcomes (Ghavam et al., 2011; He, 2005; Jahedizadeh et al., 2016). In this study, Charles demonstrated several examples of proactive self-regulation related to managing his environment, his time, and goals. In terms of connecting this adaptive self-regulatory behaviour with a goal orientation, he shared many reasons for learning English that seemed consistent with

these previous findings related to learning goals, providing further evidence of the benefits of this orientation. Many themes identified in the analysis of Charles responses to the survey and collected from field notes and during his interview, for example, were coded as learning achievement goals. These included *to improve current job-related skill, to travel overseas, for general self-improvement, enjoyment* and *to make good use of free time*.

However, an additional reason that was prominent in our discussion concerned *preparing for a job in the future*, which was coded as an outcome goal. While this finding does not contradict the earlier positive results reporting the benefits of learning goals and increased SRL strategy use, it does seem to question the exclusivity of their impact. This is due, in part, to the conceptualization of achievement goals employed in this study. Outcome goals were added to the traditional trichotomous model used in the literature to create a fourth goal orientation for use in this study. This goal construct was defined as wanting to do well in an achievement situation, based on Grant and Dweck (2003), which could represent a desire to maximize learning as an indicator of successful learning or for instrumental reasons. Charles frequently highlighted how learning English would benefit his career, though the impact was modest in his current context it was essential for his long-term plan of “working in management in a foreign company.” Outcome or instrumental goals have previously been found to be powerful motivators among Chinese adult learners (Chen et al., 2005; Guo & Shi, 2016; Tong et al., 2020). It also seems to lend weight to the benefits of introducing qualitative research methodologies while researching achievement goals in order to capture the rich patterns and descriptions that might be otherwise omitted in closed-response, self-report surveys (Kaplan & Maehr, 2007; Lee & Bong, 2016; Senko et al., 2011). Of additional importance is the need to develop models and descriptions that

fit the research context as previous conceptualization have largely emerged from research in either K-12 or university settings (Lee & Bong, 2019).

Though a distinction is made between learning and outcome goals in the achievement orientation model employed, more research is required to investigate the appropriacy of this designation. *To prepare for a job in the future* was coded as an outcome goal because of the emphasis on the future utility of the achievement of learning English. Conceptually, however, this reason is not dissimilar to the definition of a learning goal used in the literature. For example, this conceptual “fuzziness” was acknowledged by Grant and Dweck (2003) when they concluded that these types of goals could be integrated within either a learning or performance framework. It was suggested that doing well could be a means of assessing the acquisition of new skills (learning) or of demonstrating ability (performance). Pulkka and Niemivirta (2015) in their research, also chose to incorporate outcome goals under a learning framework acknowledging the external nature of the criteria for mastery by distinguishing between learning-intrinsic (original concept) and learning-extrinsic, or outcome goals. Key to their distinction was also the absence of any normative comparison, which also describes Charles’ perspective as he consistently referenced improvements made against a personal benchmark.

Another example that concerns the conceptualization of achievement goals and the value of qualitative inquiry comes from Vicky. As discussed previously, she was narrowly focused on developing her writing skills and regulating her learning to improve her ability to perform her job-related duties. It is noteworthy that Vicky has achieved the highest level of proficiency within the group of participants at a B2 High (Council of Europe, 2001). This level of proficiency is rarely attained within the institution, which estimated that only 5-10% of the learners studying there will ever reach that goal. From observation and interviews with Vicky,

she seems highly committed to improving her English skills. It has been argued elsewhere that work-related goals focus learners on how their learning promotes career advancement and heightens their concern with the products of learning (Ng, 2008). The prioritization of the utility of learning would be considered as extrinsic to the learning process and would therefore be better labeled as an outcome goal. This argument seems inconsistent with the achievement goal literature conducted in the workplace, however.

It is worth exploring the relationship between learning orientation and the notion of intrinsic and extrinsic motivation further, particularly in the local context as this distinction is not widely recognized in the achievement goal literature (Pulkka & Niemivirta, 2015). As noted above, Vicky was strongly focused on the development of competence, a position that was core to the conceptualization of learning goals within the context of workforce related literature, despite the instrumental or extrinsic motivation implications (Brett & VandeWalle, 1999; Littlejohn et al., 2016; Milligan & Littlejohn, 2014, 2016; VandeWalle et al., 1999). These studies typically make use of the trichotomous model of achievement goals, where performance orientation is characterized by normative comparison (Elliot & McGregor, 2001). A learning goal orientation has also previously been linked with higher intrinsic motivation while extrinsic, with performance orientation (Grant & Dweck, 2003). Probing deeper into Vicky's reasons for learning English, it would appear that she has combined her job need to improve her writing skills with more personal interests. For example, she talked about finding inspiration from a recent visit to a restaurant and writing about it as part of the routine she had established to improve her writing skills. In this example, Vicky appears to be describing a more intrinsic form of motivation for wanting to improve her writing proficiency. It is noteworthy that this type of

descriptive writing is not something that she would likely encounter in her job capacity though she frequently displayed SRL behaviour while working towards achieving this goal.

Of additional importance to this discussion concerns the context of the previous studies reported on in the development of achievement goal models in the literature. Early conceptualization of achievement goal research was conducted with school-aged children (Ames, 1992; Ames & Archer, 1988; Dweck & Leggett, 1988; Grant & Dweck, 2003) while this study concerns adult learners who presumably have very different reasons for their achievement behaviour. Where the age of the sample population is still in grade school, the notion of getting a better job is extrinsic to the participant while in the context of adult continuous learning, the distinction may not be as clear. For this reason, to remain consistent with the literature related to research on achievement goals in the workplace, Vicky's job-related reason was coded as a learning goal.

From the discussion above, it would seem that more research is warranted in order to test the robustness of the achievement goal model developed for this study. In particular, the distinction between learning and outcome goals will require further scrutiny before any conclusions can be drawn regarding the impact and potential benefits of outcome goals on the motivation and subsequent impact on SRL behaviour of the Chinese adult language learners in this institution. This topic is of particular interest in this research context due to the frequently reported desire from the wider learning community to learn English to improve future job prospects.

Job Skill Development and Environmental Affordances

Though Vicky's learning orientation was like that of Charles, an important distinction can be made between their current working contexts. Unlike Charles, who did not use English

regularly at work, Vicky relied on English to complete most of her daily tasks and for interacting with her foreign colleagues. It is possible that Vicky's environment was an important factor in sustaining her motivation, which is consistent with Yang and Kim's (2011) findings from their qualitative case study of two Korean, adult English language learners from studying abroad. The authors partially attributed the learning persistence demonstrated by one student to the affordances available in their environment while the other student changed their direction significantly when the environment did not appear to offer the affordances they were seeking. Additional research conducted with adult language learners in China (Gan, 2009) in addition to adults in both study (Bardach et al., 2020) and work (Hannah & Lester, 2009) contexts also seems to reinforce the importance of both social and institutional environments on learners' attitudes and strategy use. However, in contrast to the Korean, language learner depicted in the case study above, Charles managed to persist despite the limited opportunities to use English at work. In doing so, he demonstrated how one might proactively regulate one's environment (Zimmerman, 2000) to create opportunities to use English outside of the institution. This example could help to provide a blueprint for supporting other learners and be incorporated into the design of the intervention. It is rare in China that one would find sufficient environmental affordances to support English language learning and one of the main reasons that learners choose to study at a language training organization.

In addition to the need for English use at work, it is worth investigating the supportive structures available because of the deep interaction between Vicky's work and study context. Prior research has suggested that learning-structured work environments includes multiple support structures such as encouragement for employees to pursue meaningful, challenging opportunities, goal setting using high, realistic standards and the provision of constructive, self-

referenced feedback (VandeWalle et al., 2019). Social cognitive theory (Bandura, 1986, 1997) also suggests that employees can benefit greatly from a mentor or leader who help to model these behaviours. In Vicky's example, she was able to benefit from the learning support structures available in her study environment that would likely have extended into her work domain. Not only was she able to generate meaningful opportunities to use English and receive regular, constructive feedback for example, but she also formulated personal achievement goals related to her job. Additionally, she had regular access to many learning resources (e.g., classes, instructors, etc.) as well as English-speaking colleagues and language models.

Jarvis was the other participant from the group who shared a desire to improve his work-related skills. Like Vicky, Jarvis also worked in an international company where he needed to use English daily to communicate with foreign colleagues and customers. In this way, his work environment provided him with a similar opportunity to practice using English regularly and apply lessons learned from studying in his course at the institution. It was assumed in this study that a learners' achievement goal orientation profile would serve as a motivational lens through which the environment would be perceived and interpreted (Pulkka & Niemivirta, 2015). This orientation could then conceivably influence the ways in which different learners respond to the same environment (Bardach et al., 2020). Though Jarvis' need was like that of Vicky, he did not seem to demonstrate the same adaptive SRL capacity in response, lending weight to the notion he was pursuing different achievement goals. When talking about his work situation, for example, he used words such as "fear" and "anxious" to describe his feelings towards the challenge of using English at work, and that improving his English skills would help him "to feel better." It would seem that the combination of having a need for English and access to resources

is not sufficient for productive learning to occur, a result that has been observed in other language learning contexts (Henry & Davydenko, 2020).

In this achievement situation, Jarvis appears to lean towards a performance avoidance orientation which may have impacted his ability to leverage the opportunity to incorporate his English study into his work environment. During the interview and coaching meta-dialogues, Jarvis spoke of how he wanted to develop his ability to participate more effectively in meetings and how he would select task sequences in the course to help him prepare for these interactions. Importantly, however, he often framed his reasons as wanting to avoid demonstrating incompetence and seemed to regulate his behaviour accordingly. This avoidance orientation has been linked to a wide array of negative processes and outcomes including procrastination, anxiety, low intrinsic motivation, and less SRL (Elliot & Church, 1997; Elliot & Thrash, 2001; Grant & Dweck, 2003; Midgley & Urdan, 2001; Pintrich, 2000a, 2000b).

There was further evidence of the impact of Jarvis' performance avoidance orientation observed in the way he approached his studies, for example. Learners who focus more on performance tend to prioritize the product of learning activity over the process and find satisfaction in completing tasks rather than through advancing their skills (Schunk & Ertmer, 1999). There is evidence of the importance that Jarvis placed on task completion in the way he described his focus on completing the course. He described "wanting to learn all of the knowledge" which was his reason for maintaining a high frequency of study behaviour. However, this belief also resulted in him avoiding reviewing the material or addressing the gaps in his knowledge that he had identified, which may have been exacerbated by the study planning process employed by the institution. Personal task goal setting in the institution is facilitated through a process of establishing a level target for achievement within a specific period of time.

The avoidance volition of the achievement goal tends to result in the negative process of pursuing less challenging learning objectives to help improve the rate of success or avoid failure (Seijts et al., 2004). Jarvis seems to demonstrate this process when he discussed his appropriation of what he referred to as the “natural method.” He continued with the same maladaptive approach towards SRL after he completed the course, choosing to review the basic materials with which he was familiar to, it seems, achieve a high volume of tasks completed. Jarvis did respond well to guidance from an instructor, however, as evidenced in his description of how he modified his approach in response to the feedback provided in the intervention. This is discussed further in the section on the evaluation of the intervention, below.

Performance Avoidance and Cultural Influence

There is reason to believe that performance avoidance may be a commonly held orientation amongst the broader population of learners within the institution. Anecdotal evidence collected seems to concur with Brophy’s (2005) suggestion that performance avoidance goals may be underreported in qualitative studies and that Jarvis’ beliefs and behaviour are not uncommon. Jarvis was quite open in sharing that he feared the idea of attending classes with higher level students who would be more fluent English speakers, for example. From my experience, many learners avoid mixed-level events held in the institution for this reason, as they would prefer not to make mistakes while speaking with a more proficient peer that might lead to embarrassment. In China, this has been reported as a common reason for discomfort of communicating with foreigners (Gao, 2016). This notion of avoiding embarrassment has been compared with the practice of ‘maintaining face’ in East Asian cultures to remain a culturally valued person in a social network (Hamamura & Heine, 2008). Face, in this practice, has been defined as the “respectability and/or deference which a person can claim for himself from others

by virtue of the relative positions he occupies in his social network and the degree to which he is judged to have functioned adequately in that position” (Ho, 1976, p. 883). This can impact all manner of behaviour, including goal orientation where one would be inclined to avoid challenges for fear of making mistakes. To the extent that East Asians are concerned about this vulnerable resource, their self-regulation should be directed towards avoiding the loss of face (Heine, 2005).

Future Careers

Career development is one of the most important reasons for most learners studying in the institution, the majority of whom are looking to move to an international company where they can earn a higher salary, or for a promotion within their current working situation. Vicky, Charles, Sabrina, and Lin all indicated that preparing for a future career was one of the important reasons they were studying English at the institution. Within the group, however, there were some important distinctions that could hold implication for the development of intervention design principles.

Personally valued future goals have incentive value but are typically viewed as being “too far into the future or too general to shepherd specific actions in immediate situations that present many uncertainties and complexities. People have to create for themselves proximal guides and self-motivators for courses of action that lead to distal attainments” (Bandura, 1986, p. 336). When learners commit to a long-term future goal, they must develop a system or framework of proximal subgoals to guide action towards future attainment (Miller & Brickman, 2004). In the process model of SRL (Zimmerman, 2000, 2008b), proximal subgoals serve an important function in facilitating proactive self-regulation as they improve the functions that occur in subsequent phases.

For Charles, his path seemed quite clear as he described his preferred industry, role and over time, developed an awareness of the types of skills he would need to develop in English to be successful in this role. Importantly, he also had a well-developed plan for testing his assumptions in the not-too-distant future, in both an academic (business English test) and authentic (job interviews) context, which was associated with adaptive SRL behaviour. Adopting a valued future goal, however, does not automatically lead to the development of a system of proximal goals. It is for these reasons that a distinction was made between the theme *to prepare for a job in the future* that was used to code Charles' response and *future career opportunities*, which was applied to the remaining participants.

Sabrina and Lin included *future career opportunities* as reasons for learning English; however, it was difficult to ascertain the degree to which this influenced their study decisions, which contrasts with Charles' preparation for a specific job in the future. Sabrina was still a university student during the research period and intended to pursue a career in acting and though she seemed to have reservations about this career choice, she was certain that English would be important for her future. Similarly, Lin was convinced that English would help him to unlock new options for a better job in the future, though he was undecided regarding specifics. As a result, it was unclear that they had explored their career ambitions in any depth to develop proximal sub-goals that could be used to assist with SRL. Sabrina and Lin also shared a similar constraint on their learning in that they had few opportunities to use English outside of context of the course provided by the institution, which may have impacted their ability to derive proximal task goals.

Vicky's orientation towards the future was also raised during her interview though it seemed to have less of a motivational impact on her study behaviour. Vicky was unique within

the group because while she referred to the importance of her career development, she had a more immediate need to use English regularly in her current role. Developing her English proficiency for use in her current job role was a major theme of Vicky's interview and coaching meta-dialogues throughout the study. The importance of her current work context was explored above.

Drawing on the example of Charles and his success, it would appear that an intervention aimed at supporting self-regulated language learning in this context would benefit from further research on designs aimed at supporting learners to develop a system of proximal task goals guided by their future reasons for learning English. Many learners in the language training organization are likely to have reasons for learning that match the theme identified in this study as *future career opportunities*. Helping them to develop future goals that include personalized subgoals that are more specific and measurable can assist with productive SRL forethought, helping to identify the language skills required and provide a benchmark for performance. These sub or task goals could also be usefully related to Can-Do statements that form a part of the course and the current iteration of the intervention employed in this phase of the research design.

Career Advancement and Strategy Use

It has been proposed that learners who focus on how learning can promote career advancement would lead to more maladaptive forms of learning using more surface-level strategies and be less concerned with time and effort management (Dearnley & Matthew, 2000; Lyall & McNamara, 2000). In her study of adult, Chinese distance learners Ng (2008) observed that participants with a predominantly work-focused priority used fewer adaptive strategies and had a lower sense of efficacy. At first glance, this description might appear to apply to Sabrina as she approached completing the course in a way that enabled her to finish as quickly as

possible, “learning it from beginning to end.” However, upon completion of the main course Sabrina adopted a very different set of adaptive strategies that were focused more on skill and knowledge development. Her priority seemed to shift towards successful learning, away from simple task completion (in contrast to Jarvis, as described above). It is difficult to know if her original approach was associated with her career ambitions or something else as both learning- and performance orientation have been found to be related to both deep and surface-level learning strategies (e.g., Diseth, 2011; Koopman, et al., 2011).

It is less clear whether the results observed by Ng (2008) apply to Lin. He clearly expressed a desire to improve his career prospects by learning English, along with other learning-oriented achievement reasons. Like Sabrina previously, Lin also planned his learning around task completion as he explained he was targeting completion of Level 8 in January. There was some evidence that he was developing strategies associated with self-assessment, however, and prioritizing skill development over completion. When describing his response to the time management function of the intervention, Lin indicated that he was not interested in receiving guidance related to the time required to complete a task because he would continue until he was satisfied, he could use the language that was the object of instruction. It should also be noted that Lin is significantly below Sabrina in terms of study experience and proficiency (B1 low vs B2 low) so it seems natural that he would not yet have a comparable level of proficiency applying learning strategies and thus simply not have been aware of the value of considering time in his review process.

Social Comparison

The value of a learning achievement orientation is one of the strongest conclusions presented consistently across different models and research angles in the achievement goal

literature (Harackiewicz et al., 2000; Pekrun et al., 2006; Seijts et al., 2004). Learners who adopt this orientation have demonstrated many adaptive behaviours (Lee & Bong, 2019). The process of social comparison or using normative standards for evaluation, however, has predominantly been associated with a performance orientation as it was adopted in the standards model of achievement by Elliot and colleagues (Elliot & McGregor, 2001; Elliot & Thrash, 2001; Elliot et al., 2011). Findings associated with performance orientation have been mixed with both positive and maladaptive results having been observed (Elliot & Church, 1997; Elliot & Thrash, 2001; Grant & Dweck, 2003; Midgley & Urda, 2001; Pintrich, 2000b).

Benchmarking levels of proficiency with peer learners and thus using a normative comparison, to a certain degree may be promoted by the natural limitations of learning English in mainland China. It has been observed that language learning environments may be particularly prone to encouraging learners to compare with each other when they do not have many opportunities to use language outside of the institution (Williams, et al., 2015). In these instances, learners may be more inclined to use assessment results or other salient variables to measure their performance in relation to others. This description would apply to most learners at the institution, apart from those who work in a multinational company.

While exploring the participants' reasons for learning and their process of self-regulation what became evident during the discussions was the importance of social benchmarks for comparison. Four of the participants referred to comparisons with other learners when describing their ability, though for slightly different reasons. Sabrina and Vicky provided reasons for learning English that were classified as performance approach goals while Jarvis was oriented towards performance avoidance. In contrast, Sabrina, and Lin shared examples of

wanting to *use English as well as others* which was coded as a learning goal. Only Charles did not mention any reasons for learning associated with social comparisons.

Social Comparison and Performance Goals

Though not widely addressed in the language learning literature, performance approach goals have been primarily associated with negative findings (Ghavam et al., 2011; Koul et al., 2009; Tercanlioglu, 2004). In contrast, the two participants with performance approach goals in this study have achieved substantial success while studying at the institution demonstrating persistence, positivity, and a desire for achievement. Sabrina, for example, was quite animated when describing how she enjoyed being first in her class to respond to challenges provided by the instructor. This behaviour was coded as *outperforming others* using the normative standard and classified as a performance approach achievement goal. Sabrina was regulating her behaviour towards achieving a higher standard, which she defined using a social benchmark. Vicky demonstrated a similar desire to outperform her colleagues, also a performance approach goal, when talking about her reasons for studying in the institution. She realized the benefits of developing a deep understanding of the course would enable her to provide better support to the learners in her care. This improved service level led her to achieve higher learner satisfaction results, a key performance indicator for her role.

While these results were inconsistent with findings from the few studies reported on in language learning context, findings from the wider achievement literature have seen more mixed results with some linked to positive processes and outcomes including effort, persistence, and high performance (Elliot, 1999; Midgley et al., 2001). Other achievement goal researchers have also argued that multiple goals, i.e., holding learning and performance approach goals simultaneously, were beneficial for achieving learning success (Barron & Harackiewicz, 2001;

Lau & Lee, 2008a, 2008b; Pintrich, 2000b). Preliminary evidence from this study seems to support the advantages of the multiple goal hypothesis as both Sabrina and Vicky provided reasons for learning English that were coded as learning and performance approach goal orientations. Though tentative, these findings seem to provide support for Senko and colleagues (2011, 2017) calls for further investigations of the subject.

Unlike performance approach goals, the negative impact of performance avoidance goals has been demonstrated consistently in the achievement goal literature and been associated with maladaptive behaviour (Elliot & Church, 1997; Midgley & Urdan, 2001; Wolters, 2004). Like Sabrina and Vicky, Jarvis used a social benchmark and referred to comparisons of levels of competency with colleagues and classmates frequently. While Jarvis has achieved success in language learning, he seems to have done this while being concerned with *avoiding failure* and *reducing the likelihood of embarrassment*, two themes that were grouped as performance avoidance achievement goals. Jarvis demonstrated evidence of anxiety, low performance standards and other maladaptive strategies, which was consistent with the findings from the literature.

Social Comparison and Learning Goals

Though the application of a normative benchmark has traditionally been designated as evidence of a performance-associated orientation, Butler (2000) has taken a more equivocal stance on the matter. Building on earlier work in achievement goals, she theorized that learners would use normative comparison for self-assessment, an important phase of adaptive SRL behaviour in the process model (Zimmerman, 2000). Butler (2000) indicated that those who focused on improvement would be most concerned with the accuracy of the results. In this instance, social comparison may be employed to identify areas for improvement based on the

performance of peers and represent adaptive SRL behaviour. Evidence from the data collected during the interview with Sabrina seems to corroborate this proposal. During her interview, for example, Sabrina suggested that she was concerned with using information derived from observation of her peers to help her identify gaps in her own skill level to develop proximal task goals, such as when she described speaking English as part of a performance for other learners. This example was coded as *using English as well as others* and categorized under a learning framework. Further evidence of this behaviour was demonstrated by Lin who shared in his interview how he had employed a process of observing others to help evaluate his own performance to determine how to focus his learning effort. He talked about his process in more general terms and referred to this again when providing suggestions for how to improve the design of the intervention. By augmenting it with more data that enabled him to better understand “the horizon of other learners” in his level, he believed he could make better decisions.

An additional objective of social comparison associated with a learning orientation, identified in Butler’s (2000) model is the practice of observational learning for the acquisition of competence through imitation and emulation. From this perspective, comparison with others may signal a learning orientation when it is seen as an opportunity to identify alternate strategies or improve on ability to overcome challenges. In this study, Sabrina appears to provide evidence of this intention to regulate her behaviour through observational learning when describing how she interacted with the foreign staff and instructors in the institution, coded under the theme of *improving social confidence*. Sabrina was interested in adopting social mannerisms and seeking to emulate the confidence and means of interacting that she witnessed while engaging with her instructors. The notion that learners would seek to regulate their behaviour by modelling

themselves after their English instructors is also one of the underlying assumptions behind the hiring policies at the institution that requires all instructors to demonstrate proficiency in using spoken English as they will be expected to provide a model for successful language use. This is applied to both foreign and Chinese instructors.

While there was only one instance identified in the data collected and it did not include a comparison with a peer, there is reason to believe that the process of social comparison could be beneficial for learners. Imitation as a learning strategy may be fostered by the frequent use of group activity during lessons, a core feature of the learning design of the institution, for example. With a focus on completing communicative tasks during group and pair work in class, learners are encouraged to view their peers as sources of learning and even imitation as evidenced by the common practice of grouping stronger learners with a less capable peer. Evidence from research with successful English language learners in China also suggests that they commonly adopt a strategy of imitation to help with the accuracy of their language production (Ding, 2007). Learners in the institution may require additional support before being able to self-regulate and apply observational learning strategies to take advantage of this feature of the learning environment, however. Those with a performance avoidance orientation might struggle in these circumstances and regard the process of comparison with other, more-able peers as intimidating. An encounter like this could promote the adoption of maladaptive SRL patterns, leading learners such as Jarvis to avoid interacting with peers who were more proficient English users.

Summary

Research on achievement goals has consistently identified the benefits associated with the pursuit of learning goals across multiple different contexts (Harackiewicz et al, 2000; Lee & Bong, 2019; Pekrun et al., 2006; Seijts, 2004). The participants in this study equally reported a

variety of reasons for learning English that were identified as learning goals. What was less clear, however, was the impact of the learning goals on their motivation and capacity for SRL strategy use and whether the results would be better attributed to the pursuit of multiple goals. There was some inconsistency identified in the literature related to the conceptualization of achievement goals, however, relating to the notion of skill development and the distinction between intrinsic and extrinsic sources of motivation (Brett & VandeWalle, 1999; Grant & Dweck, 2003; Littlejohn et al., 2016; Milligan & Littlejohn, 2014, 2016; Pulkka & Niemivirta, 2015; VandeWalle et al., 1999). More work is needed to explore the designation of outcome goals to develop a useful conceptualization of achievement goals to be applied in this context, and to identify any benefits that could be associated with pursuing multiple goals.

Another theme that emerged from the findings was the way in which the participants regulated their behaviour in order to productively access environmental affordances for English language learning. The social environment within which learners engage has been demonstrated to have an impact on both goal selection and commitment (Lee & Bong, 2016; Yang & Kim, 2011). Equally, the opportunities present in a work context may help to promote the adoption of learning focused orientations (VandeWalle et al., 2019).

Performance avoidance achievement goals were included in the model employed in this study. There is little controversy concerning the drawbacks of pursuing avoidance goals, which have been linked to multiple negative processes and outcomes in the literature (Grant & Dweck, 2003; Elliot & Church, 1997; Elliot & Thrash, 2001; Midgley & Urdan, 2001; Pintrich, 2000a). In this study, only Jarvis reported adopting performance avoidance goals. However, it is possible that they have been underreported as previous qualitative studies have suggested this may be a trend when describing goal orientations (Brophy, 2005). Performance avoidance

orientations may have a significant impact on the learners in the institution where this study was conducted as I have observed on multiple occasions, evidence of similar avoidance behaviour as was demonstrated by Jarvis. Other research conducted in Chinese language learning contexts also seems to suggest that this behaviour is a common occurrence when faced with the need to communicate in English with foreigners (Gao, 2016) and might be associated with cultural elements (Hamamura & Heine, 2008).

Career development is an important theme for learners at the language training organization that relates to the concept of future goals and the SRL strategy to develop proximal subgoals to guide their future learning (Miller & Brickman, 2004). Two separate goal categories emerged from the analysis which included a future achievement goal supported by proximal subgoals (to prepare for a job in the future) and one that appeared to be unsupported (future career opportunities). This distinction was useful for identifying different types of SRL support required and as a potential application in the design principles of the intervention.

Connected to the theme of career advancement, previous research has suggested that learners who focus on the instrumentality of learning may employ more surface-level strategies (Dearnley & Matthew, 2000; Lyall & McNamara, 2000; Ng, 2008). While there was some evidence of this concern, more research will be required to determine if indeed pursuing career advancement as an achievement goal is detrimental to the development of SRL capacity.

Social comparison was another important theme identified and as a process that seems to be commonly employed in the language training organization. Normative comparison has been found to be associated with both adaptive and maladaptive depending on the goal orientation of the learner. The process has been more commonly associated with performance-related goals in the literature, with a negative outcome consistently observed for performance avoidance while

performance approach showed mixed results (Elliot & Church, 1997; Elliot & Thrash, 2001; Grant & Dweck, 2003; Midgley & Urdan, 2001; Pintrich, 2000b). Vicky, Sabrina, and Jarvis demonstrated performance-related achievement goals which could be susceptible negative outcomes. An alternative interpretation has been provided by Butler (2000) suggesting that social benchmarking could equally reflect a learning orientation should the learner use the information to identify areas for improvement or for accurate self-assessment.

Evaluation of the Intervention

The final research question was concerned with the evaluation of the intervention design though modified from its original intent. The final sample of participants in Stage 3 of the study was unique in that they demonstrated unusually high levels of persistence by returning to their studies following the temporary closure of the institution due to the Covid 19 pandemic. They had also achieved excellent learning results as demonstrated by their ability to communicate during the study using English. The majority of learners at the institution do not complete A2 before their subscription to the course expires. This suggests that each participant had a high level of commitment to learning English, which naturally predisposes them to a high level of interest to learning about learning.

As such, the evaluation of the intervention was conducted with a non-representative sample of learners who demonstrated an approach to learning that could prove beneficial for others. High levels of persistence in learning have been connected in the literature with other positive strategies and skills, including SRL behaviour (Usher & Schunk, 2018). In light of this arrangement, the interpretation of the findings was conducted with an emphasis on exploring the options for future design iterations in order to contribute to the development of a subsequent prototype.

The results discussed in the previous chapter were organized around the functions of the intervention including, goal setting, self-assessment, time management and instructor feedback. The discussion that follows is an attempt to review the functions according to the key features underlying their design. The section will culminate in a reconstruction of the functions into a general evaluation of the intervention in relation to the principal function of supporting SRL. In this way, it is hoped that the discussion can provide a more holistic understanding of the potential benefits provided by the intervention and contribute to the refinement of design principles for future iterations.

Can-Do Statements for Target Goal Setting and Self-Assessment

All the study participants struggled to use the target goal setting and self-assessment features as they were designed, nor did they achieve the outcome that was intended. Can-Do statements are SMART goals (Doran, 1981) designed to assist with learner self-assessment, both to determine their existent communication proficiency level and to identify a target level of language proficiency. As such, they are one of the most important features included in the design of the intervention, with the aim of developing self-regulation. Can-Do statements have been widely researched and used for language learning and testing, published as proficiency scales by both the Council of Europe (2001) and the NCSSFL-ACTFL in the United States (NCSSFL, 2014). The Can-Do statements used in the design of this intervention are proprietary to the institution but share the same approach and philosophy. Several challenges were identified during the research in this regard and are addressed below.

Can-Do Statements and Communicative Proficiency

Many of the participants seemed to find the formulation of the statement inconsistent with how they thought about language learning in the course. Can-Do statements are predicated

on a view of language ability that can be described as communicative proficiency. They are performance-related measures that “describe what learners can actually do in a foreign language” (Jones, 2002, p. 169). This can be contrasted with linguistic proficiency – “the words you know, the structures you can deploy, and the sounds one can articulate” (Little & Perclova, 2001, p. 55). The latter viewpoint seemed to be held in higher priority among the majority of the participants, possibly arising from expectations developed from previous learning experiences. One of the participants, Jarvis, reflected this view when describing his learning strategy where he talked about the need to know “which new words, which new sentences, which new phrases we will learn.” Jarvis described how he focused not on improving his ability to communicate or what he could do with language, but rather, on the new language he was learning after every study session.

This approach to learning design adopted by the institution is heavily influenced by task-based learning and communicative language teaching. The communicative approach was founded on the principle that success in learning language arises from having to communicate real meaning (Canale & Swain, 1980; Ellis, 2003, Skehan, 2003). Can-Do statements have been adopted by the language training organization as an extension of the learning design to frame learning objectives where proficiency in language ability can be demonstrated through the provision of communicative tasks. A similar approach has been widely adopted and well researched in the context of language learning (Moeller, 2018).

Research on Chinese approaches to language teaching have not received as much attention in the literature but tend to be characterized by a greater emphasis on the accumulation of English language knowledge and exam results (Cortazzi & Jin, 1996; Jin & Cortazzi, 2002, 2006). English often functions as a gatekeeper for better employment as students need to pass

English-related exams to enter higher education and the job market (Gil, 2016; Yang, 2006). In this way, English is commodified and motivation for learning English relates heavily to social advantages. This might help to explain the participants' views and the assumed prioritization of linguistic over communicative proficiency, which would be more beneficial for achieving successful test results. All the participants studied English during their primary and secondary education in China, and Vicky and Jarvis have further experience preparing for the college English test. This previous experience studying English may now continue to impact the way they approach learning as adults. Some have argued that the Chinese culture of learning is one of the major constraints to the adoption of the communicative approach and the prioritization of the development of general communicative competence is due to a misalignment of fundamentals of teaching and learning in China (Hu, 2002).

Personal Goals Using Can-Do Statements

While the participants did not use the Can-Do statements provided in the course to describe their task goals for the task sequences or levels of proficiency, they did seem to feel comfortable using this strategy to speak about their broader learning goals in the context of their work and career. The three learners who used English at work described their aims for language use in terms of their ability to perform certain tasks or achieve results. Jarvis talked about needing “to have clear ideas [...] and to share opinions during a meeting.” This was not limited to her current career as Vicky also described her process for improving her writing skills in general by “writing to describe my favourite restaurant because Wednesday night, I just went to a really nice restaurant.”

The participants who had opportunities to use English outside of the institution described their personal goals using Can-Do statements. What's missing, perhaps, is the connection

between the course content and the specific needs of these learners. In the design of both the European Language Portfolio (ELP) and Linguafolio, this was achieved through facilitation by an instructor, who guided the learners in establishing personalized SMART goals from the course objectives (Moeller et al., 2012; Little et al., 2011). During the pilot phase of the ELP, however, it was reported that teachers often struggled with this process (Little & Perclova, 2001).

Personalized goal setting was further explored by Ziegler and Moeller (2012) in response to an earlier Linguafolio study that did not find a statistically significant relationship between instructor and student goal writing. Their proposed solution was to provide learners with communicative goals from the course to select from, which they could prioritize and then personalize as their own. The example given was to go to a restaurant and demonstrate “ordering food” in the target language. They also introduced pre and post assessment of lesson objectives framed as student confidence ratings, that were aimed at helping students to internalize the communicative goals of the course and see positive change in their confidence levels.

A similar process was adopted in the design of the intervention reviewed in this study, whereby learners were guided during the coaching meta-dialogues on the customization of the task sequence descriptions. They were also asked to indicate a confidence rating following the completion of the task sequence. One potentially important distinction, however, is in the recording of said goals. In the language portfolio, student goals are recorded and referred to regularly, while in this study there was no place to record their goals once established and while they were re-visited in subsequent coaching sessions, no formal tracking of completion was established. This was an unfortunate limitation of the intervention design.

Can-Do Statements and Social Comparison

While the discussion around the Can-Do statements was intended to facilitate self-reflection using course standards as a reference for self-assessment, what became evident during the discussions was the importance of social benchmarks for comparison. Four of the participants referred to comparisons with other learners, using communicative proficiency to describe their ability. Sabrina demonstrated this approach when responding to a prompt asking her to talk about how she measured her progress: “I will think like what are other people doing? Like, if they are speaking in the public place, can I do it? I do that so that will keep me motivated and I want to do that, also.” Sabrina specifically used the phrase “can I do it?” in a way that conveys she was considering whether she could emulate the other learner’s performance.

Self-assessment as a practice in the context of the language training organization seems to be made more accessible using a social benchmark. Observing others and their performance may help to clarify the standard being aimed for during performance, a key requirement for effective evaluation (Sadler, 1989). Relying solely on self-reflection using a task standard or previous performance record may also be counter intuitive to most adult learners in this context. Research conducted in English as a Foreign Language classrooms in a Chinese context seems to indicate that in general, both self and peer assessment may be undervalued in practice, by teachers (Wu et al., 2021). This is consistent with my observations of both adult learners and English instructors in the context of the language training organization. Learners do not receive training on the practice or value of self-assessment, and instead rely more heavily on external feedback generated by an instructor. This attitude is evidenced in Vicky’s response to a prompt regarding the value of self-assessment when she asked: “What motivates them [learners] to do

that?” Vicky seems to be suggesting that the practice of self-assessment should lead to receiving a reward of some kind. Note that she proposed additional classes or attention from an instructor.

There is also a general concern that learners do not have the necessary skills or knowledge to assess themselves. At the level of communicative proficiency, this can be supported by the checklist of Can-Do statements and descriptors, and by requiring learners to demonstrate evidence of ability (Little, 2009). Self-assessment at the level of linguistic proficiency is likely to be more challenging as argued by Kohonen (2004) who has written about the “paradoxical nature of the task of self-assessment as the learner should possess the same degree of linguistic knowledge we are asking them to assess” (p. 39).

The prior comments and discussion illustrate that the use of Can-Do statements in the intervention is far from a straightforward matter. On one level, there are different perceptions regarding the value of communicative proficiency, as advocated by using Can-Do statements and linguistic proficiency. Chinese learners may be more familiar with measuring learning using linguistic proficiency, though it is unclear to what extent this would apply to most modern learning contexts. Participants with more immediate needs for language use did seem to think in terms of communicative proficiency, however, using these terms to describe their behaviour outside of the context of the course. This may suggest that the participants struggled in some cases to internalize the goals of the course. Communicative proficiency was also commonly used as a means of measuring performance in relation to others. The use of social benchmarks may be more accessible as a means of performance assessment than other course, task, or self-based standards. In light of these observations, more research will be needed to determine how to effectively incorporate the use of Can-Do statements into an intervention that leads to a productive cycle of personal goal setting and self-assessment.

Feedback: Data Visualizations and Instructor Comments

Successful self-regulation involves a combination of cognitive and metacognitive skills, and motivation these can be improved through the provision of feedback (Butler & Winnie, 1995; Hattie & Timperley, 2007). Many definitions of feedback have been proposed but essential elements include information provided by various sources regarding outcomes and the cognitive processes that lead to those outcomes, together with the process through which learners make sense of this information and use it to improve their learning and strategy use (Butler & Winnie, 1995; Carless & Boud, 2018; Hattie & Timperley, 2007).

Two types of feedback were incorporated in the design of the intervention, instructor comments and data visualizations. Participants in the study, in general, responded positively to the feedback provided through the app. Their comments are reviewed and analyzed, below.

Affective Function of Feedback

The instructor feedback drew an especially positive response from the three more advanced learners participating in the study. One theme that was mentioned was the care that was demonstrated by the comments made by the instructor, which was contrasted with the automated feedback that is available to learners within the digital courseware and the LMS. There was a sense that the instructor feedback was conveying a sense of vested interest in the study progress of the participants which is missing from the current experience. Sabrina's response in particular seemed to convey a sense of delight while both Vicky and Jarvis highlighted their appreciation towards the accuracy and relevancy of the comments.

In this study, the instructor was in a unique position to be able to develop a deep understanding of the participants' study behaviour and provide feedback and guidance on ways of improving learning. In the context of the institution, the learning design is such that

instructors do not follow cohorts of learners. As a result, the same instructors and learners will only meet each other periodically, thus limiting instructor feedback to comments made on the task performance, lesson by lesson. Continuity in the learner-educator relationship has been suggested as being of high importance, enabling educators to develop a close understanding of the learner's work over time, resulting in better feedback (Molloy & Boud, 2013). The decentralized arrangement in the institution can result in it being difficult for learners to get support on their study choices over time. In this way, the instructor feedback filled a gap that appeared to be of importance to the more advanced learners in the study.

Feedback as Dialogue

In addition to satisfying an emotional need, the instructor feedback also led to specific changes in behaviour by three of the participants. One reason for this was undoubtedly the level of trust that was allowed to develop through my deep, regular interactions with the participants. Trust is of great relevance to feedback processes because of the relational, affective, and emotional sides of feedback, as demonstrated above. For feedback to be effective, "learners must decode the feedback message, internalize it and use it to make judgements about and modify their work" (Nicol, 2009, p339). If learners trust the expertise or knowledge of the source and trust the source's intention (that they have the learner's best interests at heart) they are more likely to be able to process and utilize the feedback, even if the message challenges their own internal judgement (Carless, 2006).

Spending more time with each of the participants over the duration of the research study was helpful for establishing a basis for trust: transparency in procedure, goodwill and generosity from the feedback provider, and competence to provide useful feedback (Carless, 2013). Developing trust was essential for engaging with learners in what has been referred to as a

dialogical model of feedback (Boud & Molloy, 2013; Carless et al., 2011; Nicol, 2010a).

Dialogue in this sense is meant to encompass “all forms of interactions of different kinds with different actors, with a view to eliciting perceptions and judgements, and discerning what is needed for improved action” (Boud & Molloy, 2013, p. 709). In this study, interaction was designed for in the intervention in both the written feedback and coaching meta dialogues.

Instructor feedback was provided to learners according to their study pace, upon completion of a unit with the course, resulting in each learner receiving six to eight instances of feedback during the study. Feedback was initially based on the learning record provided in the LMS but later included themes that were derived from the coaching conversations. Care was taken in writing the feedback to adhere to the guidelines provided in Nicol (2010b) suggesting that it be understandable, selective, specific, timely, contextualized, non-judgmental, forward-looking, transferable, and personal. See *Figure 16* and *Figure 17* for samples of instructor feedback provided in the study.

General

Jarvis your study history has a lot of starts and stops in it! You have moved around a lot lately in different levels. I noticed now you have now moved into trying out Business Social Skills, which seems like a good opportunity to explore some different uses of English. I guess, as we discussed, you are exploring different parts of the course since you have been through most of it once before. Now I think this is a great opportunity for you to reflect on what your strengths and opportunities for improvement are, and really focus your learning on your priorities.

Figure 16. Sample of instructor feedback in the app.

Of additional importance was the language selected and later translated into Chinese for the participants with lower English proficiency. The danger with written feedback is that it may be conceived of as information as fact, due to the formality of the language, and the finality of the one-way format. Boud (1995) refers to the notion of ‘final vocabulary’ and suggests that instructors attempt to avoid using language of authority that could result in the learners being

complacent. This can inhibit the learner's agency in comparing both internal and external judgements, and thus creating a barrier for the development of productive SRL (Molloy et al., 2013). To help create a sense of negotiated meaning, question prompts were included in the text inviting the learners to consider their own interpretation of the data. The participants all commented on this stylistic choice. Describing the tone of the feedback, Vicky, for example said, "it was just like you were talking." When later asked about the question prompts, she responded "I noticed that, and I'm thinking 'Why I want to improve?', like why I have to, or I want to improve my writing skills [...] It's the right question for me."

Courseware:

I noticed that you started a new unit on Dec 28th and studied for 2 hours! That is a long time, so I hope you took some breaks in between. You spent quite a bit more time on the first lesson than was expected. Is that because you found it difficult or was it particularly interesting for you? You completed these unit on your mobile phone – is this how you normally use the courseware? You also regularly complete the writing tasks though the last 2 were done on your phone and maybe didn't score as high as you would normally expect. Did you understand the teacher feedback? Did you agree?

Classes

I see you have taken a lot of variety in your classes, which is a good strategy. It's important to make use of the various learning environments in order to get the most out of your course. I see you have had some great feedback. How do you normally prepare for a lesson? Do you tend to review afterwards? I also saw that you seem to be doing more writing lately. Has this become more important for you lately?

Figure 17. Sample of instructor feedback in the app part II.

The coaching meta dialogues provided another opportunity to revisit the questions and instructor feedback. During this time, learners could ask for clarification, respond to the prompts verbally, or disagree with the instructor's perspective entirely. In all instances, the participants chose from the first two options and though they were invited to disagree, it was unlikely that they would acknowledge anything concrete due to the nature of our relationship. The participants were thankful to have access to additional feedback and though they were aware of

the premise of the study, they went to great lengths to avoid communicating anything negative in their views. For this reason, I have leaned away from including much data collected during the coaching sessions because I do not believe it is truly reflective of the participants' opinions.

Feedback Needs Across Different Levels of Proficiency

Not all of the learners responded positively to the instructor feedback. Charles described it as “too general” while Lin wanted more recommendations for which classes to attend to help him address gaps in his knowledge. To address the concerns with the perception of the feedback, it may be helpful to consider the individual characteristics of the participants. One factor that may have been relevant was their level of English proficiency. There was marked contrast in the response to the feedback between the participants at the B2 level and those at the B1 level, for example. English speakers at a B2 level will have completed 600 hours of cumulative instruction and “can function independently in a variety of academic and professional environments in English, although with a limited range of nuance and precision” (Education First Standardized English Test, B2, para 1). B1 level English speakers will have completed 400 hours of cumulative instruction and are “beyond the basics but are still not able to work or study exclusively in English” (Education First Standardized English Test, B1, para 1).

The instructor comments were provided in both English and Chinese, so it was unlikely that the language itself was an impediment. However, in addition to having developed more advanced language skills, B2 learners have spent significantly more time developing their study skills. As a result, this difference observed between the B1 and B2 learners might reflect what Adcroft (2011) has characterized as different mythologies of feedback which informs their beliefs, attitudes, and behaviours about the feedback process.

Looking deeper into the distinction between the B1 and B2 level participants and their expectations for feedback, there are hints in their review of the intervention that may help to distinguish between their relative preferences. In their framework, Hattie and Timperley (2007) distinguish between feedback at different levels including: task, self, process, and self-regulation. Promoting SRL was the objective of the intervention and thus the focus of the instructor feedback. Feedback at this level would be characterized by targeting “greater skill in self-assessment or confidence to engage further on a task” (p. 90). Vicky, Sabrina, and Jarvis, the B2 level participants, all referenced SRL elements related to self-assessment or confidence in their reactions to the instructor feedback provided in the app. Sabrina, for example, shared how the feedback encouraged her to take action to address her discomfort with speaking English in public. Jarvis also described how he had abandoned his original review plan after he had been prompted in the feedback to evaluate other options.

Charles, in contrast to the B2 level participants, indicated the instructor feedback as it was designed, was of little value to him. He shared that he needed more guidance to be able to identify and correct errors with his language use, which he compared to the feedback he would receive during class. Lin shared a similar opinion and requested more direct support for testing or other types of assessment to help identify gaps in his knowledge. As was described above, error correction is the focus of classroom feedback in the institution, from both peers and instructors. It is common for learners of lower levels of proficiency in the language training organization to request more feedback of this nature or even complain when they feel they have made errors that went undetected. In Hattie and Timperley’s (2007) framework, this type of feedback would be classified at the task level.

From their research, Hattie and Timperley (2007) suggested that feedback practices should aim at moving students through task to processing, and then processing to regulation to be most effective. In the context of the language training organization, the results from this study suggest that more effort might need to be directed at lower proficiency learners to help them adjust their mythologies of feedback (Adcroft, 2011). Training aimed at informing beliefs and attitudes may be required, in addition to strategies for interpretation and application. While it is beyond the scope of this study to suggest that all B2 and B1 learners would share similar expectations for feedback, it may suggest that learners at different levels of experience will share common needs. Further research would be required to evaluate the accuracy of this tentative observation and possible directions for best addressing the needs of different learners.

Data Visualization as Feedback

Student-facing learning analytics were incorporated in the design of the intervention for this study, focusing specifically on visualizations to support time management. In the context of learning, students make decisions and form intentions about how they will allocate their effort to completing their work (Pintrich, 2000a). From the perspective of SRL, these are behavioural aspects of strategic planning. Several studies have demonstrated the importance time management strategies in relation to online course completion and achievement (Gelan et al., 2018; Il-Hyun et al., 2015; Kizilcec et al., 2017). In the context of the language training organization, time management is presumed to be of importance due to the amount of flexibility afforded to learners in the learning design.

Four of the participants in this study indicated they found the time-related data helpful and used it in some way to guide their learning. Charles and Jarvis incorporated a review of the data as part of a self-assessment process, using it to identify areas for further attention. Vicky

did not use it herself, but indicated she thought it could be a helpful guide for learners new to flipped learning. In the absence of internal standards for evaluating their learning, the time guideline could serve as a helpful proxy. Sabrina was the only one who mentioned using the data timeline to help encourage her to maintain a regular study schedule. Regularity of login intervals was found to be a strong indicator of adult learners' achievement in online courses in previous research (Il-Hyun et al., 2015).

While the evidence of the importance of strategic planning for successful self-regulation seems strong, it is unclear if the use of these data will have a scalable impact on learning in this context. The participants in this study were highly engaged with their learning and eager to investigate their study process. Earlier investigations where learners were provided access to these data through a learning analytics dashboard (LAD) seems to have had minimal impact on learning outcomes (Lim et al., 2019). Park & Jo (2015) tested their initial design for an LAD which included visualizations of trace data collected from different time management-related interactions with an LMS and found the LAD did not significantly impact learning achievement. Still, the early results are positive and warrant further investigation.

Summary

The participants' responses to the feedback provided in the intervention was generally positive. The inclusion of instructor feedback served to highlight the emotional impact that personalized, relevant guidance can have on many the recipients. Introducing continuity between the instructor and learners also proved effective for developing trust in the source of the feedback both in terms of competence and intent. The establishment of trust enabled the introduction of a more a dialogical feedback process to engage learners with self-reflection and thoughtful interpretation of the comments, even when they found the comments challenged their

own judgement. Ultimately, only some of the learners responded to the feedback with a change in behaviour while others felt the feedback did not meet their needs. It was posited that learners with different levels of English proficiency might have different expectations for feedback and require further guidance addressing not only learning strategy and process, but also targeting their belief system. Finally, the participants' preliminary response to the data visualizations was mostly positive though more research will be required to determine if support for time management would be valued by the wider community of learners in the institution.

Chapter 7: Recommendations and Conclusions

This chapter provides a summary of the design-based research (DBR) to develop an intervention to support self-regulated learning (SRL) for adult learners in a language training organization in China. This is followed by a discussion of the study implications and recommendations organized by learning goal orientations, the design of the intervention, implementation of the intervention, and finally, locally for the institution. Limitations of the study and suggestions for future research are also presented, together with concluding remarks.

Summary of the Research

English language learning in China has become less of an option for most adult, working professionals (EF, 2019). To address this need, many private and public institutions have experimented with different learning designs in an attempt to appeal to the special requirements of adult learners. The learning training organization where I have conducted my research offers a blended learning program consisting of self-study digital courseware, online classes, and classes set in a physical learning centre. The flexible learning design is based on a flipped learning model where learners prepare for classes by completing online exercises and studying language references in the courseware. In this model, as is common in other flipped learning designs, learners have much flexibility with non-linear access to learning resources (Johnson & Marsh, 2016). They are also in charge of their study schedule and can choose to attend lessons when and as they like. While the additional flexibility of this model has been popular with adult Chinese learners, it has also created some challenges. In particular, the increased need for more advanced skills associated with SRL has been identified (McLaughlin et al., 2013; Sun et al., 2016).

My research has set out to address the perceived need to help adult learners develop adaptive self-regulated language learning skills through the development of a digital intervention. As part of a DBR process, I designed and developed an app-based interactive dashboard for learners to access on their mobile devices that would enable them to select, track and evaluate learning goals. The dashboard also included relevant time-related data that was extracted from the learning management system, in addition to instructor feedback designed to support SRL behaviour. A simple feedback interface for instructors was also created to facilitate inclusion of the latter feature.

The research was carried out over three stages of design-based research including multiple iterations that completed a full DBR macro cycle, adapted from McKinney and Reeves (2012). Stage 1 included an initial micro cycle dedicated to *analysis and exploration* where a review of the relevant institutional policies and practices in addition to the technical and data infrastructure in the institution was conducted. Two meso-cycles were completed in Stage 2 followed by a third meso-cycle in Stage 3. Each of the meso-cycles consisted of two micro cycles. In Stage 2 these micro cycles included *design and development* followed by *evaluation and reflection*. The penultimate micro cycle in Stage 3 was characterized by a *design and implementation* phase, leading to a final *evaluation and reflection* phase.

In the analysis and exploration phase, the information collected was combined with the findings from an extensive literature review to inform the initial concept development for the design of the intervention. From this initial phase of the research, goal setting and self-assessment were identified as areas warranting further exploration. Goal setting in the institution was facilitated in a way that did not seem optimally designed to support learning or persistence, while formal self-assessment practices were not identified. The opportunity for providing

additional feedback at scale to support SRL was also noted, while drawing inspiration from the field of learning analytics and the use of learning-facing data visualizations presented through dashboards. Feedback provided to learners in the institution was mostly directed at the task-level using Hattie and Timperley's (2007) framework while the ambition was to generate and share feedback at the process and SRL level. Importantly, significant constraints concerning data availability were identified due to the limitations of the local data architecture and had a significant impact on the resulting intervention design. The analysis and exploration phase in *Stage 1* was completed over one micro-cycle of research.

In the subsequent stage of the research, the focus turned to prototyping and testing of some initial designs for the intervention. The final high-fidelity prototype deployed in *Stage 3* was developed and refined through two meso-cycles of research in *Stage 2*. In the first meso-cycle, an initial conceptualization for the intervention resulting from the earlier phase of the research was used to create concept sketches and scenarios (Martin & Hanington, 2012). Two focus groups were then conducted to review the possible future uses of the intervention, which led to a refinement of the initial concept. Three themes of interest emerged which included: a desire for support in setting personal goals and strategic planning, the types of information needed, and the cadence of use of the intervention.

The output from the first meso-cycle contributed to the reconceptualization of the initial design, which was then explored further through a combination of storyboarding techniques and recycling of the initial scenarios from previous cycle. These were used to create a low-fidelity prototype (Martin & Hanington, 2012) of the app that was reviewed and discussed in the second round of research. Resource use and time spent data extracted from the LMS were found to be of value for the participants, as was the new instructor feedback focus on supporting SRL.

Facilitating personal goal setting and self-assessment continued to be a challenge for the intervention.

Following the completion of the second mesocycle of design and development, the intervention design underwent another round of reconceptualization before proceeding into development, in preparation for implementation and evaluation as one full meso-cycle of research. A small development team consisting of a user-experience designer, and three software engineers were recruited to help build the app. Upon completion of the app, it was hosted within the ecosystem of the institution and accessible via a secure weblink that could be shared with individuals so they could review their study history and data privately. Video training on a model of SRL in addition to instructions for app use was created and then hosted on the I institution platform and accessible online.

After a nine-month delay due to covid-related complications, the implementation of the intervention began in two learning centres with eleven new participants who returned after extended facility closures. Each participant was provided with an individual link to use to access the app display of their personal dashboard. Due to the small group size, an additional supportive process referred to as coaching meta dialogues was conceived and added to the intervention. The intention of this part of the intervention was to provide additional support for individual goal setting and self-assessment, with support from me as the instructor to help review learning on a one-to-one basis with each participant.

To conclude this stage of the research the evaluation of the intervention took place where data were reviewed for the purpose of refining the preliminary design principles developed during the initial phase of the research. Data sources included interviews with five of the participants, field notes collected through observations during the coaching sessions and an

initial demographic survey that was completed by all study participants. A parallel research objective was added to extend the contribution of the study to be better able to address need for SRL support, focusing on exploring the achievement goal orientation of the participants. An analytical framework was developed from the literature to assist with this process.

Findings from the study were collected and organized around the two research questions relating to both goal orientations and the evaluation of the intervention. During the interviews, for example, all participants shared multiple achievement goals that helped to describe their reasons for learning English. Learning goals were prominent in the responses of the participants as they spoke about wanting to develop their skills, providing descriptions that were explored in depth through the interview process (Elliott & Dweck, 1988). All participants expressed a goal to improve their English skills, which when probed, revealed future ambitions for the application of these skills including job-related skill improvement, the enjoyment of English media, improving the ease of living or travelling overseas, and the improvement of social confidence. It was also discovered that all participants were enthusiastic about self-improvement in general and involved in other activities beyond learning English in the institution. Of particular interest to this research was the exploration of the reported desire to be able to use English as well as others. The function of social comparison has received mixed reviews in the achievement goal literature (Ames, 1992; Butler, 2000; Dweck & Leggett, 1988; Elliot & Thrash, 2001; Grant & Dweck, 2003; Pintrich, 2000b) and due to the prominence of this strategy in language learning contexts, was a focus for discussion.

In addition to learning goals, all participants held additional outcome and/or performance-related achievement goals. Career development was an important theme for most as a more instrumental application for the study of English, though the future-time distinction

seemed to have important implications how the participants chose to respond to this priority (Miller & Brickman, 2004). One participant had a very clear future job role in mind which was used to help direct planning efforts, while others with more general career ambitions were less impactful. Performance-related achievement goals were also situated in a work context, with evidence of both performance approach and avoidance goals being the reasons identified for achievement-related behaviour. Outperforming others was noted for two of the participants as a normative-based approach goal (Elliot & Thrash, 2001) while none of the participants appeared to be concerned with demonstrating competence (Elliott & Dweck, 1988). Regarding the negatively valenced avoidance measure, one participant demonstrated evidence of both avoiding embarrassment (normative) and having taken steps to avoid failure or the demonstration of incompetence. The distinction between definitions has been acknowledged previously as relevant for evaluating the adaptive benefits of performance approach goals (Hulleman et al., 2010; Senko et al., 2011) however, performance avoidance goals have been consistently associated with maladaptive tendencies (Elliot & Church, 1997; Midgley & Urdan, 2001; Wolters, 2004).

Additional findings from the study concerned the preliminary evaluation of the features of the intervention and contribute to the refinement of design principles. The feature designed to support personal task goal setting within the context of the course provided by the institution, for example, was not especially effective for the participants. One of the main challenges concerned the way the course goals were communicated, as Can-Do statements. While the concept of using performance-related measures (Jones, 2002) to describe what learners “can do” with language seemed to be consistent with how many of the learners described their needs for English language proficiency, it was less helpful for formulating task goals. This indirect rejection of

Can-Do statements as a standard also seemed to have a subsequent impact on the process of self-assessment as many of the participants chose to emphasize their ability in terms of their mastery of the language systems.

There was also some evidence in support of previous findings that self-assessment using a task or previous record of performance may not be a familiar practice in the educational context of Chinese learners (Wu et al., 2021). This lack of familiarity may have impacted some of the participants' desire to engage with the self-assessment process as it was designed in the intervention. Notably, most of the participants used social comparison as a way of generating internal feedback, which was collected through interactions with and observations of other learners in the institution.

External feedback was the other important feature included in the intervention and was more positively received by the participants. Instructor feedback seemed to have an impact of an affective nature, leading to positive well-being and the development of trust with some of the participants. Trust has been previously identified as an important aspect of feedback effectiveness (Carless, 2013). Developing trust was also facilitated by the more dialogical approach taken to encourage interaction that would enable judgement and identification of action required for improvement (Boud & Molloy, 2013). Participants were encouraged to engage in the negotiation of meaning through the use of question prompts and a conversational writing style employed in the written feedback, and later during the coaching meta-dialogue sessions. Not all participants responded positively to the focus of the feedback, which was more directed at the level of self-regulation (Hattie & Timperley, 2007). Early indications seemed to suggest that feedback preferences may be related to different levels of English proficiency and study experience. Most participants also responded positively to the time-related data that was

visualized in the app intervention, suggesting this feature should be investigated further as means for supporting strategic planning.

Implications and Recommendations

Several implications emerged in relation to the findings of this DBR study, leading to what has been described as the development of “local theory,” that which manifests from the examination of local experience (McKenney & Reeves, 2012, 2019). Emergent design principles are presented below together with recommendations for future iterations of the research design in addition to some preliminary suggestions related to institutional policies and practice.

Implications for the Development of Achievement Goal Orientations

A learning goal orientation appears to be an important factor for supporting successful self-regulated language learning for adult learners in China. There is no doubt that the learners’ social environment plays an important role and successful self-regulated learners are able to make use of the affordances available to improve their language skills. Preliminary evidence from this study, however, suggests that the presence of opportunities for regular English use in the work environment are insufficient without the learner also prioritizing skill development. In this way, they are more likely to seek out challenges, learn from mistakes, and actively seek help when needed. In contrast, a performance avoidance orientation seems to be particularly maladaptive as it seems to result in learners actively distancing themselves from opportunities to use English in an effort to avoid embarrassment or failure.

Given that the two participants with extensive requirements for English use at work have very different contexts of employment, it could be helpful to investigate further to develop a better understanding of the affordances available. Vicky, for example, is likely to have a

supportive work environment where most of her colleagues are Chinese and would also struggle with English language use. Her foreign colleagues are educators and are thus more likely to be helpful in providing guidance, and patient when misunderstandings occur. Jarvis works with many foreigners in a high-stress sales environment where interactions could frequently be seen as a competitive or adversarial. At the moment it is unclear how important these factors are in influencing the behaviour of the respective participants and whether a learning goal orientation would be helpful in the example of Jarvis, but it seems relevant.

A learning goal orientation may also lead English learners to actively seek out or create opportunities to practice English at work or in their daily lives. Many adult learners in China will not have a regular need to use English at work, nor will they have easy access to rich sources of English for practice outside of the course. This is true for the majority of learners who study English in the language training organization. Learning a new language requires a substantial investment of time and effort, with some estimates suggesting it can take between 100-200 hours of instruction to progress one CEFR level (Council of Europe, 2001). Finding ways to incorporate regular language use into their workday was an important strategy demonstrated by one of the participants in this study. By connecting English practice to his job, Charles was also able to fulfill a work-related development goal and elevate the impact of his study effort. While more research would be needed to confirm, this strategy may have contributed to his ability to persist with his studies when faced with other demands or obstacles. Training other learners to adopt this approach could have significant benefits.

Unlike a learning orientation, a normative comparison has been commonly described in the achievement goal literature as reflecting a performance orientation where learners attempt to either outperform others or avoid negative comparisons (Elliot & Church, 1997; Elliot & Thrash,

2001; Midgley & Urdan, 2001; Pintrich, 2000a). In this study however, evidence of learning through emulation and identifying areas for improvement were observed, suggesting that social comparison could equally be associated with learning achievement goals (Butler, 2000). This is significant as comparing with other learners is thought to be a popular strategy for self-assessment amongst language learners in communicative and task-focused class designs such as in the language training organization. Rather than try and dissuade learners from comparing with others, a more realistic option might be to train them to focus their observations on learning from each other. Implementing peer feedback schemes has been suggested as having potential for structuring this type of observation in a productive way (Boud & Molloy, 2013; Carless, 2013; Nicol, 2010b). More research would be required to investigate how best to promote and support this type of alternative approach in the flexible learning environment of the institution where the development of familiarity and trust between learners can be a challenge. At the same time, it will also be important to take steps to reduce the risk of encountering negative outcomes associated with competition and social benchmarking.

Concerning the final achievement goal category used in this study, outcome goals, there has been a lack of clarity in the literature and whether they should be characterized using a learning or performance framework (Grant & Dweck, 2003; Pulkka & Niemivirta, 2015). In this study, it was suggested in the case of Charles that his future-job related goals would qualify as a learning orientation. Importantly, Charles had identified the type of job he was seeking and could describe the skill level that was required. He had also established some performance benchmarks that he used to help direct his learning, in addition to having prepared two specific forms of authentic assessment. It was less clear how the career ambitions of the other participants should be classified however the relative time period appeared to be a significant

factor, where the participant was less clear about what might be required for an unspecified job role. Developing a better understanding of the implications of outcome goals for adult learners studying at the institution seems important as the majority of the student body are pursuing career-related benefits. Equally, exploring the nature of intrinsic and extrinsic motivators and their relation to goal orientations could help provide more insight into the development of achievement goal theory.

Implications for the Design of the Intervention

Initial design principles for the intervention were established and refined through the first two phases of research design, and later underwent a preliminary round of evaluation with a small group of participants. Four design elements were included in the app intervention, together with a supplemental meta coaching process, as detailed in Chapter 4. As the research design included only a small group of participants, the evaluation of the intervention was more of an exploratory nature. As a result, all implications are preliminary and would need to be further investigated. The following section includes a discussion of both implications of the research findings together with suggestions for further research.

Task Goal Setting

Learners require additional support for goal setting beyond what was provided in the intervention. Feedback collected from the participants of the study indicated that the interaction as it was designed was not particularly effective for supporting personalized task goal setting. The use of Can-Do statements, while not incompatible with the way some of the participants described their goals for language use, seemed inconsistent with how they were approaching their learning. This observation is relevant for all learners in the institution as the learning design has adopted a view of language ability that is based on the development of

communicative proficiency. Learners who prioritize linguistic proficiency may not find the course particularly effective and therefore disengage or lose interest completely. It is important for the institution that this area be further investigated in order to better address the needs of the greater learning community. Even before any investigation is conducted however, it is recommended that steps be taken to help learners improve their level of familiarization with the course goals. Instructors can make explicit reference to learning objectives in their classes, for example. Instructor feedback and formative assessment can also be used to help emphasize performance and standards in relation to Can-Do statements. A discussion of the course standards should also become a key focus of the current goal setting process within the language training organization.

Supporting the process of personal task goal setting at scale will also require some modifications to the interaction design of the app. One suggestion is to introduce a text field for each task sequence in addition to the prioritization scale. This will enable learners to record and review personalized goal statements in relation to the course material. The ability to record and track progress against personal standards was found to be an effective process in the context of language learning portfolios (Ziegler & Moeller, 2012) and seen as a promising direction for the development of learning analytics dashboards (Matcha et al., 2019). The process of crafting personal goals from Can-Do statements will likely require some additional support as this was facilitated by instructors in the design of Linguafolio and the ELP (Little et al., 2011; Moeller et al., 2012). Sample statements or sentence components could be provided to help guide learners in creating their own statements, for example. Training or workshops for new learners as part of the induction process are additional options. More exploratory research will be required to investigate possible solutions that will work at scale within the context of the institution.

Self-Assessment

Closely related to personal goal setting, the intervention also incorporated Can-Do statements into a process of self-assessment where participants were prompted to rate their level of confidence against a proposed learning objective. Participants in the study did not find this process effective. What seemed to be missing in the design of the intervention was support for reflecting on their achievement, including the establishment of a clear standard with which to use for conducting the assessment. Standards that define different levels of achievement or assessment criteria should be made explicit to assist with self-assessment as well as interpretation of external feedback (Nicol & McFarlane, 2006). Another way to help clarify an expected standard is to provide examples, in this case, of task performance (Carless, 2019). Learners may find examples more accessible than descriptions of standards and could be trained to use them as models for emulation. Sample dialogues are an example of a model of language use that is commonly included in a task sequence in the course. However, these generally feature native speakers in authentic contexts and function as instructional content. To produce task standards, however, tasks performed by other learners may prove to be more useful and perhaps a good alternative to comparing with peers and thereby dissuading learners from using social benchmarks. Both options including descriptions and examples are worth exploring further, in the next iteration of the intervention.

In addition to the recommended improvements to the intervention, for self-assessment to be effective it is suggested that the language training organization incorporate some changes to the support structure within the course. Not all participants were convinced of the value of self-assessment, for example, and indicated a preference for external feedback (e.g., test, instructor feedback). Learners need regular, frequent practice to make sense of their own internal

judgements and over time, reduce their reliance on instructors (Molloy et al., 2013). Learners may require training and support from instructors to begin to even buy in to the value of self-reflection. Self-assessment could become a regular part of lessons where learners are provided with a few criteria to use to help them with judgement concerning task performance. Prompts for reflection could be added to the self-study courseware, using a similar type of confidence rating to help with adoption. Additionally, confidence ratings completed within the course and/or the intervention could be revealed to instructors and study advisors to be reviewed during lessons or study planning sessions. In this way, learners may perceive the prompts as having increased value as the responses would contribute to the development of a subsequent action plan.

Instructor Feedback

The importance of the affective function of feedback was a clear theme from the findings of the research that suggested some of the participants valued the depth and relevance of the comments provided. Feedback was enhanced with relevant comments and references throughout the study as the relationship with the participants developed over time. This theme is of relevance to the language training organization where there is no regular cohort structure and learners have few opportunities for repeat encounters with the same instructor. It may be possible to solicit and record useful information from learners in an LMS to be able to reference in feedback from different instructors and achieve the same impact however, this will require further investigation. What is less clear, however, is if instructors will be able to develop trust with learners, to the level required to facilitate the dialogical approach that is recommended for promoting student engagement with feedback (Boud & Molloy, 2013; Carless et al, 2011; O'Donovan et al., 2016). Introducing continuity between instructors and learners would have

major implications for the operational policies of the language training organization so it is suggested that more in depth research be conducted to determine what can be achieved through the creation of an enhanced learner profile for reference when developing feedback.

The coaching meta-dialogues adopted as part of the intervention proved useful during the research for a variety of reasons however, they are not scalable in the context of the institution nor is the process that was used to create the personalized feedback for each participant. The intention was to use this process to evaluate the format of the feedback, including the conversational style and use of prompts, in addition to the SRL level-directed content (Hattie & Timperley, 2007). For the next round of research with the intervention, it would be helpful to replace this process with something similar to what was described by Pardo, Jovanovic and colleagues (2017) where specific events in the learning pathways would trigger relevant instructor feedback. This will require additional development effort with potential implications for the data infrastructure of the institution, however, the instructor feedback input portal could be reused. Further research will also be required relating to the development of trust and facilitating a dialogical process. In addition, preliminary findings from the research suggested that learners at different levels of proficiency may have different feedback requirements. The framework provided by Hattie and Timperley (2007) provides a useful starting point to begin this investigation.

Data Visualization

Although the time-related data mined from the LMS and presented back to learners was used frequently by the participants in this study, it is unclear whether this finding will generalize to the larger population of learners in the language training organization. The sample for this research included learners who were already highly engaged with their study so it remains to be

seen if most learners would be convinced of the benefits of carefully planning for and reviewing how they use their time. One of the suggestions from the participants seems worthwhile exploring further, however, related to planning with recommendations for time allocation. While the more advanced learners have developed a better sense of the expected task standards, new or inexperienced learners often speed through the self-study resources. Better guidelines for time allocation, together with guided reflection and access to samples and descriptions of task standards could prove useful for helping beginners get more value from their course.

In the next phase of the development of the intervention, it would be beneficial to continue to review different options for visualizing data for learners. Time management strategies employed by learners, while important, don't seem to have been impacted much by information made available in learning analytics dashboards (Lim et al., 2019; Park & Jo, 2015). A theme that was raised by the participants was a desire to have access to more variables with an external frame of reference (Wise, 2014). Results from the literature investigating this design have been mixed (Jivet et al., 2018; Perez-Alvarez et al., 2019) and suggest that enabling normative comparisons could impact the development of personal achievement goals in a negative way (Aguilar, 2018). A more promising direction, however, relates to enhancing goal selection and assessment. In addition to capturing personal goals, introducing instrumentality to be better able to collect data related to learner-identified standards was recommended in the literature (Match et al., 2019). This function has already started to receive some attention within the institution as a tagging framework related to goals and activities has been moved into development for implementation within the course LMS. Planning is also underway for introducing upgrades to the data infrastructure to facilitate more advanced data usage scenarios.

Implications for Implementation of the Intervention

Several implications emerged from this study with respect to supporting future implementations of the intervention. Due to the nature of the learning design of the course in the language training organization, the intervention must function at scale with minimal additional support from other instructors or other supporting staff. Convenience and simplicity of design were two important factors that were prioritized in this first iteration of the app. It was easily accessible through a mobile device so was available whenever needed, and all user interactions and data visualizations were reviewed and tested during the design and development phase of research. The interface for instructors to use for inputting feedback was equally simple, though did require reference to an additional list of participants to be able to review historical feedback. This feature would need to be addressed in future designs before releasing to a larger pool of instructors.

Though it did provide mobile access, the app user experience was not well integrated into the learning platform which required learners to interrupt their learning to view their feedback. The app was integrated within the data infrastructure of the LMS making it easy to access all information in real-time, however it did require participants to exit the course and launch a separate application. This extra step likely resulted in participants not using the intervention as regularly as intended. Better integration in the LMS would also enable the exploration of the design of the end-to-end user experience, accounting for when learners should access the intervention in relation to their study activity. For this phase of the research, participants were encouraged to review the intervention at several points during the completion of a task sequence however it was clear from the participants feedback that they did not use it this way. Another useful feature for evaluating and improving the design would be the addition of telemetry

capabilities to collect analytics on the use of the app. The initial design was not able to generate any use-related analytics and thus the review was limited to qualitative data collection.

The ability to both collect and display data within the intervention was limited due to constraints introduced by the data infrastructure of the institution. Much of the learning-related behaviour was not stored and therefore not available for analysis. Suggestions for how this could be used to generate potentially helpful feedback for learners was discussed above. An additional application, however, would be to help make visible any trends or patterns in the study behaviour to identify productive forms of SRL and strategy use. Recent research has demonstrated the benefits of using data mining and analytical techniques to reveal and promote SRL (Cho & Yoo, 2017; Cicchinelli et al., 2018; Jovanovic et al., 2017). These data could be used to improve the learning design of the course in addition to supporting the development of the intervention. Discussions regarding needs and investment requirements in support of this work at the institution have been on-going.

Training for users of the intervention was also important to help instruct participants on the various features of the app and their intended use. Taking action following the interpretation of data and feedback requires knowing when and how to work with analytics, and this requires explicit guidance (Koh et al., 2016). It was also helpful for guiding them to reflect on the potential benefits of self-regulation and the types of behaviour that could support them in achieving learning success. Training videos for this iteration of the study were created using screen capture software combined with recorded voice over narrative in English and Chinese. Additional support was provided during the coaching meta-dialogues, which was logged for inclusion and revision of the current training content.

Implications for the Institution

A relevant feature of DBR is the close collaboration required between researcher and practitioner in the selection and creation of an intervention (Anderson & Shattuck, 2012; McKenney & Reeves, 2012, 2019). This is essential to ensure the intervention is well designed to meet local needs and incorporate the perspective of those stakeholders whom the intervention is meant to support. It has been noted that local involvement collaboration can also lead to better buy-in or support for the proposed change, and ultimately improve the chances of the sustainability of the intervention (Coburn, 2003). Two roles in the institution that are integral for the success of the intervention and the learners in general are the study advisors, and course instructors.

Of importance to this learning context is supporting learners in expanding their awareness and level of comfort in being able to use the technology to support their learning in a productive way. Previous research in online language learning context have noted that learners do not always use learning tools in the way they were intended by the course designer (Chun, 2013; Fischer, 2007). Learners are also likely to benefit from assistance with SRL-related behaviour when it is integrated directly into the course structure (Lai & Huang, 2016; Wise, 2014; Ziegler & Moeller, 2012). Presently in the institution, this support is largely provided by a study advisor who is assigned to each learner for the duration of their course subscription. They provide initial induction training in addition to on-going study planning and support. As the coaching meta-dialogues would be discontinued to enable additional scaling of the intervention, future consideration will need to be given to the role that study advisors can play in helping to promote the benefits of SRL through discussion with learners. It appeared that the training videos were

useful for instruction on how to use the app but were less successful in generating buy-in leading to the preferred change in behaviour.

Instructors in the institution fulfill an essential role not only in influencing learners, but also each other's practice within the larger professional network. I have witnessed this many times throughout my employment in the institution, which led me to seek out team leaders within the learning centres where the research was conducted. Instructors participating in the research and development of the intervention are more likely to develop a deeper understanding of the pedagogical principles of the reform and help to sustain it in the absence of an external, supportive network. Furthermore, this collaboration with the teacher can contribute in an on-going, generative way to professional development and further intervention refinement (Clarke & Dede, 2009). Two of these instructors were involved in the design and development phase of the research and delivered learner training to the first round of study participants. Following the conclusion of the training sessions, they continued to refine the training program and helped to share it within the greater instructor community across Shanghai and later, greater China.

Limitations of the Research

There were at least three important limitations identified during the study. The research sample is of particular significance due to both its limited size and the unique characteristic of the participants, who demonstrated significant levels of persistence in pursuing their language learning despite the interruptions caused by the covid19 pandemic. As such, the sample provided an opportunity to investigate how self-regulation manifested in their study behaviour with a view to being able to support SRL amongst the larger population of learners. It did not, however, provide clarity regarding the specific challenges that most learners face when attempting to self-regulate and prevented generalizing principles from the findings. The small

sample size also prevented the research from evaluating the initial design principles as would be part of a standard DBR study (McKenney & Reeves, 2012, 2019). Further research would be required to determine whether the intervention would be successful with a much larger group of participants, employing a sampling strategy that would deliberately yield maximum variety given the characteristics of the learners in this institution are particularly heterogeneous.

A second limitation that arose was the difference in language and culture between the researcher and the participants. All the participants have grown up and reside in China, and shared mandarin Chinese as their first language. I have lived in China for more than ten years which has enabled me to develop some insight into Chinese culture though my level of Chinese proficiency is only elementary. This was mitigated to a certain extent through the use of a translator who helped with the text included in the intervention (e.g., training, feedback etc.) as well as during the interviews. However, most of the participants elected to speak in English during the interviews and although they have achieved a high degree of proficiency, undoubtedly this decision limited their ability to express themselves fully. This constraint was particularly evident during the interactions with Lin who struggled at times to comprehend and respond to the questions during the interview. It also limited the extent of our dialogue during the coaching meta dialogues. Culture was another important consideration that impacted the both the approach taken and interpretation of the results. More research is needed using a combined emic-etic approach (King & McInerney, 2014; McInerney, 2011) that explores the applicability of different SRL models that have been primarily derived from research conducted in Western contexts, in Asian settings (Li et al., 2018). This study has contributed to the discussion though from a more etic, externally focused perspective. The research benefitted from my 15 years of experience living and working with adult Chinese learners and the inclusion of many Chinese

focused studies in the review of the literature used to help shape the study. Still, further opportunities to collaborate on research with Chinese partners directly would undoubtedly improve the quality of the study.

A final limitation that should be noted stems from the positive bias of the researcher being an employee of the institution where the study took place. I was the investigator and designer of the intervention used in the research, as is common practice in design-based research studies (McKenney & Reeves, 2012, 2019). While this can have many positive benefits and lead to enhanced design quality it can also impact one's ability to think critically. Also worth noting is that achieving a positive result would be of benefit to me in my current role within the organization. As a researcher, I attempted to minimize the impact of the bias through the research design by documenting observations and decisions thoroughly and planning for multiple rounds of review of the intervention. Results from the evaluation were discussed in several phases with my supervisory committee. Future research would benefit from the inclusion of additional local practitioners, drawing from both instructors and study advisors to help improve the design and implementation of the intervention.

Directions for Future Research

The results of this study present various opportunities for future research, many of which have been discussed in the previous section in the context of developing further iterations of the intervention. As this phase of the study represented only an initial phase of design and development, further research is highly warranted in order to address the broader research goal. In addition, this research has touched on several themes that are relevant to a broader research community including the use of qualitative methods in researching achievement goals, the applicability of models of SRL in Chinese contexts, and principles of self-regulated language

learning in digital learning environments. Each of these themes would receive ongoing prominence in future iterations of the research design.

Of particular interest for further research in the context of the institution is to investigate the impact of the goal setting process currently employed. Learners today go through a guided process where they select lessons and task sequences for completion during a given period of time. This guidance may lead learners in the institution to adopt performance goal orientation which may then prove to be maladaptive. One possible line of inquiry could be to try and adapt this process to work in conjunction with the goal setting steps outlined in the intervention, to promote the adoption of learning-oriented achievement. In this way, the potential benefits of what Gollwitzer and colleagues referred to as supporting goal-pursuit behaviour through the development of implementation intentions could be addressed in the scope of the design (Gollwitzer & Sheeran, 2006; Oettingen & Gollwitzer, 2009). Evidence suggests that implementation intentions play an important role in promoting the execution of volitional behaviour required to complete the thought-to-action chain following the establishment of learning goals in language learning contexts (Tseng et al., 2015).

The application of artificial intelligence in education is an emerging field of research that could potentially provide several interesting avenues to explore in the ongoing development of this intervention. Large language models that are deployed through products such as chat GPT are already being incorporated into successful educational contexts such as Duolingo and Khanmigo of Khan academy (Duolingo Team, 2023; Khan Academy, 2023). Of particular interest is the ‘coaching’ design of the Khanmigo AI assistant which aims to provide guidance and support for learners, as opposed to simply answering difficult questions. This has obvious implications for the design and scalability of the coaching meta dialogues, for example, a feature

of the intervention deployed in this research. The current design, which is seen as useful, is impractical to deploy at the scale required in this organization. Powered by AI, however, perhaps this feature could be usefully included to the benefit of learners and the development of adaptive, self-regulated learning.

Personal Reflections

I began the research with the intention of addressing a challenge that many of the adult learners in the language training organization face regularly. Supporting self-regulation has been an important avenue of classroom-based research in the language learning literature, however, little seems to have been published indicating how these ideas could be usefully adapted for the challenges of supporting learning at scale. I was excited to explore this opportunity together with the potential affordances of a digital learning environment.

Though employing DBR as a methodology posed some limitations and required a substantial investment of time, I believe it did provide a rich setting in which to begin exploring the research problem. The initial phase of analysis was important for challenging some of my assumptions as well shaping initial principles that would be used to guide the early design decisions. The identification of the limits to the data infrastructure of the institution while disappointing was also a key constraint to clarify before proceeding with development of the app as the initial ambition was to lean more heavily into the collection and visualization of data. This plan did not materialize during this initial phase of the research, but the institution has responded well to the request, and I am optimistic about future iterations of the intervention design and the ability to derive useful insights from the data to positively impact learning.

While I was unable to evaluate the intervention as intended, I believe the focus on the participants who demonstrated persistence in overcoming covid19-related disruptions proved

useful. Each of them demonstrated interesting similarities and strengths which will be used to improve the intervention design. Their experience learning in the institution was an asset that I had not previously considered and their insights into how best to support new and inexperienced learners was invaluable. I look forward to the next round of design and development to the benefit of future adult language learners in China.

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Appendix A: Demographic Survey

1. What is your age?

2. With what gender do you identify?

3. What is your previous educational experience?

a. High School

b. Completed Undergraduate Level University program

c. Completed Master's Level University program or above

d. Other _____

4. What is your highest English language qualification/evaluation?

a. CET4

b. CET6

c. TEM

d. Other (IELTS, TOEFL, etc.) _____

5. How many years have you been learning English?

6. If you have had any additional language-related learning experience, please describe it.

7. Do you use English at work?

a. Yes

b. No

8. How long have you been a student at this language training school?

9. What is your current English level?

10. How much time do you spend studying English?

- a. Less than 1 hour/week
- b. 1-3 hours/week
- c. 3-5 hours/week
- d. More than 5 hours/week

11. Please list the main learning tools or classes that you use or take or part in. (E.g. Lifeclub, English Environment, Digital Vocabulary Flashcards, etc.)

12. Please describe your English learning goals.

Appendix B: Focus Group Interview Protocol

Time of the interview

Date:

Place:

Interviewer: William Dekker

Participants:

Notes to the interviewer in brackets.

[Setup: Recording device, laptop for taking field notes, ethics review form]

Preamble:

1. *Turn on digital recorder.*
2. *Introduce myself, and the translator as representing the research project.*
3. *Show the ethics review form (translated into Chinese) to the participants.*
4. *Describe that the focus group interview is intended to explore their experience during the learner training session in order to make revisions for the next round of training and use.*
5. *Indicate that the interview will not last longer than 60 min.*
6. *Describe that the recording is for review purposes only – that the participants will remain anonymous and to the best of my ability any information will remain non-identifiable.*
7. *State “you can decline to answer any questions at any time today, or any point in the 7 days following the interview”.*
8. *Ask “do you have any questions before we start?”*
9. *Confirm participants’ names (out loud for recording)*

Questions:

[General]

1. Please describe, in general terms, your experience in the learner training session today.
 - a. Was it helpful? Please explain.
 - b. Would you recommend this experience to a friend?

[Perceived Usefulness]

2. Which information presented was most useful/relevant for you? Please explain.
 - a. Is there any information missing that you would like to see? Please explain.
3. Which visualizations did you find most helpful/useful for you? Please explain.
 - a. Is there another way to display information that you would like to see? Please explain.

[Degree of Understanding]

4. How difficult is it to understand the information provided in the app? Please explain.
5. Was the training helpful in understanding the information? Please explain.
 - a. Do you have any suggestions for how this could be made more effective?
6. Which actions would you recommend or plan for as a result of reviewing the information?
7. Was the training helpful in identifying and prioritizing different actions that could be taken in response to the feedback in the app? Please explain.
 - a. Do you have any suggestions for how this could be made more effective?

[Conformity] in Meso-cycle 2 only

8. Does the data in the app match your expectations? Please explain.
 - a. Are there any elements that you disagree with?

Appendix C: Observation Protocol

Setting: Learner Training Sessions [Stage 2]

Observer: William Dekker [Researcher] Instructor

Role of Observer: Non-participant

Date of Observation:

Time:

Length of Observation:

Guiding Questions for research: *1. How do participants respond to the information in the dashboard? 2. What actions do they propose in response? How do they respond to the learner training?*

Descriptive Notes				
<i>Time</i>	<i>Actions (taken by instructor)</i>	<i>Time</i>	<i>Actions (taken by participants)</i>	<i>Reflective Notes</i>

Appendix D: Interview Protocol

Time of the interview

Date:

Place:

Interviewer: William Dekker

Interviewee:

Notes to the interviewer in brackets.

[Setup: Recording device, laptop for taking field notes, ethics review form]

Preamble:

1. *Turn on digital recorder.*
2. *Introduce myself, and the translator as representing the research project.*
3. *Show the ethics review form (translated into Chinese) to the participant.*
4. *Describe that the interview is intended to explore their experience during the learner training sessions and using the analytics dashboard in order to make future revisions.*
5. *Indicate that the interview will not last longer than 60 min.*
6. *Describe that the recording is for review purposes only – that the participant will remain anonymous and to the best of my ability any information will remain non-identifiable.*
7. *State” you can decline to answer any questions at any time today, or any point in the 7 days following the interview”.*
8. *Ask “do I have permission to follow up, by phone or email, should I have any questions following this interview?”*
9. *Ask “do you have any questions before we start?”*
10. *Confirm participant’s name (out loud for recording), confirm English level (out loud for recording)*

Questions:

[General]

1. Tell me a little about why you are studying English. What do you want to achieve?

2. Describe your language learning background.
3. How is your studying in this course progressing?
 - a. Please explain.
 - b. On what basis do you gauge your progress?
4. How do you define success in language learning?
5. What do you consider are the characteristics of a good language learner?
6. Do you consider yourself a good language learner? Why or why not?
7. How do you study English?
8. How do you organize your time to study English?

[Intervention – Overall Satisfaction]

9. Please describe, in general terms, your experience using the app.
 - a. Did it include the information you wanted to know? Please explain.
 - b. Was the suggested information useful for learning? Please explain.
 - c. Were the visualizations easy to understand? Please explain.
 - d. Was the visualized information delivered effectively? Please explain.

[Intervention – Interpretation and Behavioural Changes]

10. Please describe, in general terms, how you modified your learning behaviour as a result of using the app.
 - a. Did the app have any impact on your learning motivation? Please explain.
 - b. How did you monitor the information in the app?
 - c. Was the personal goal setting function effective? Please explain.
 - d. Was the data provided helpful for planning your study time? Please explain.
 - e. Was the instructor feedback helpful? Please explain.
 - f. Was the self-assessment function effective? Please explain.
 - g.

[Thanks participants for their generosity in sharing their time and perspectives in this study. Assure them of the confidentiality of their responses].

Appendix E: Concept Sketches for App Design

1

Which activities are most important to you?

— Show how you use your study time

— Help you to set personal study goals and give you time

— Check you to be doing them at what it is needed

— Show you what is important to study

— Show you what study you of resources can be used

— Help you measure your progress

— Help you to see how you compare to other students

2

Studying – Student report

That's not important to me

That's important to me

Level 4, Unit 1: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

3

What resources will you use?

Level 4, Unit 3: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

4

What resources will you use? – Recommendations

Level 4, Unit 3: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

5

Tracking your use of resources – Recommendations

Recommended time

Level 4, Unit 3: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

6

Comparing to other students

Recommended time

Level 4, Unit 3: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

7

Monitoring progress & what is important to study – Recommendations

Recommended time

Level 4, Unit 1: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

8

Aug 19 – 23rd

Monday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Tuesday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Wednesday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Thursday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Friday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Saturday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Sunday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

9

Aug 19 – 23rd

Monday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Tuesday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Wednesday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Thursday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Friday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Saturday

Level 4, Unit 2: The past

Adding people about their day

Describing what you did on the weekend

Language for comparing

Listening to stories in English

Sunday

Level 4, Unit 2: The past

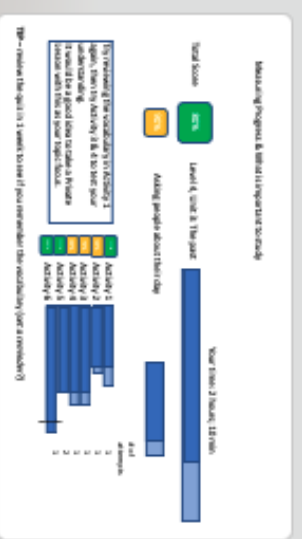
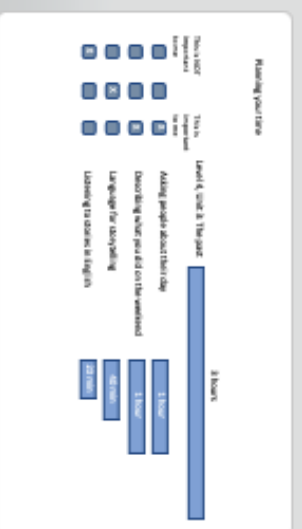
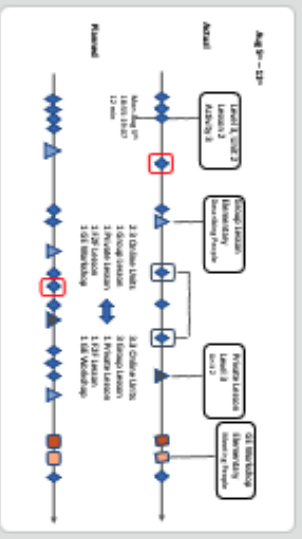
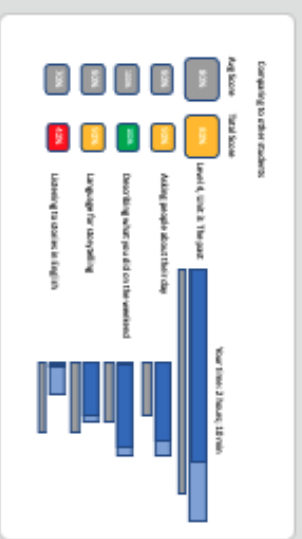
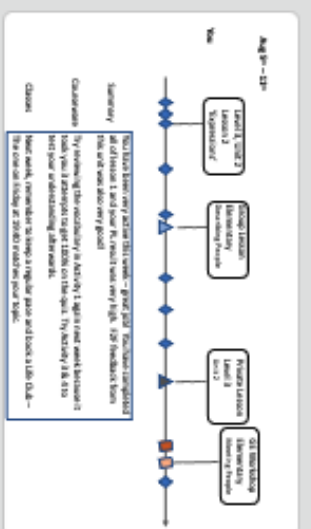
Adding people about their day

Describing what you did on the weekend

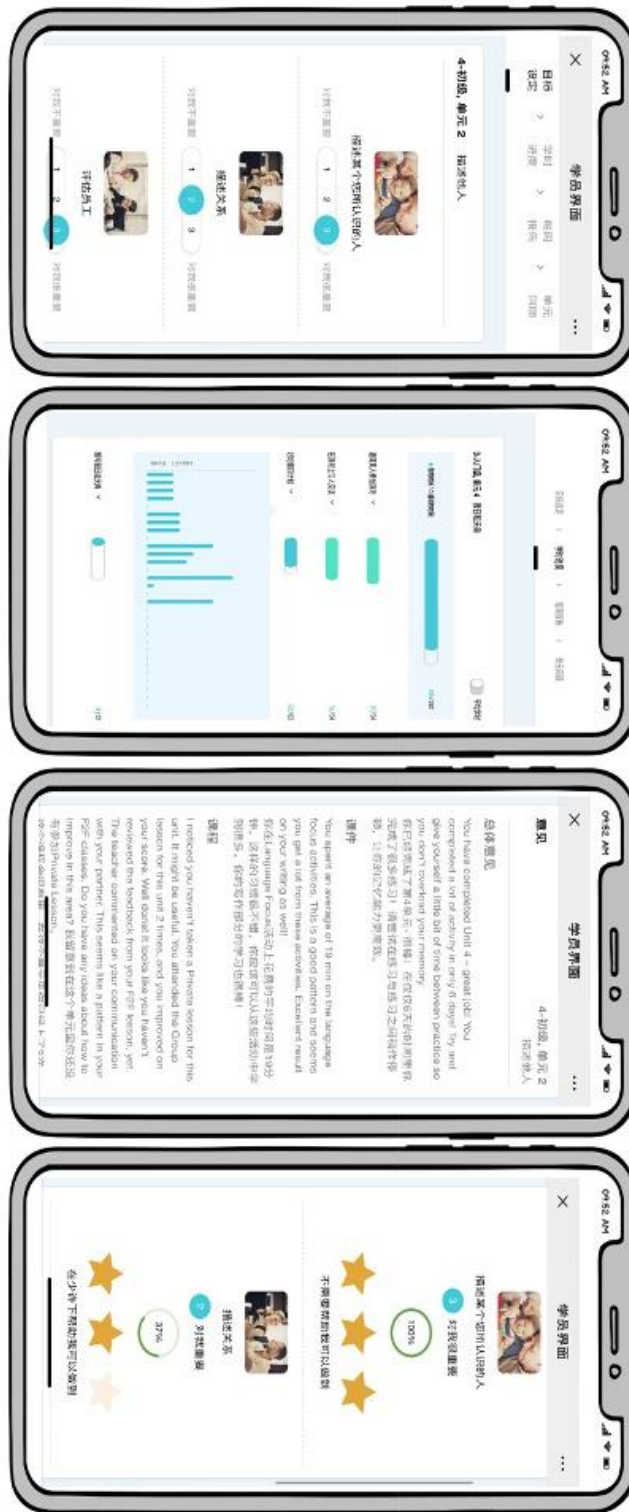
Language for comparing

Listening to stories in English

Concept sketches illustrating different app interface options in Stage 2.



Appendix G: App Screen



Five sections laid out across four screens in the app-based intervention in Stage 3.

Appendix H: Thematic Codes

Priori themes	Posteriori codes	Illustrative examples
Task Goal Setting	Communicative proficiency	"...bought the writing books to learn some writing structures, like email, how to write email, how to write the proposal, or invitation" "... we can record some grammar which is... when we make a test, we are wrong. So probably we can summarize this grammar point."
	Language system	"But now, today, I use it like I've finished it and I put the important or not important... like the 1, 2, 3 part so that I know was it important for me or not."
	Reactive	"I will want to know why I spent less time on one topic. Then I will think about this topic and decide if it is useful for me or not useful for me. If it is useful for me, then I will probably do it again."
	Reflection	"Some students, they have some foundation, but they're still Beginner or Elementary level. When they do the online lesson (courseware), they think, 'Oh, it's quite easy. Very, very easy. I only use 15 or 20 minutes. I can finish each one.'"
Time Management	Guidance	"I can probably do it by myself. I know how much time I need to spend to understand it"
	Unimportant	"So that will make you think 'Wow, for this. I haven't studied for a long time.' It will make you think... is that useful or is that really... not have time to study?"
	Procrastination	"I feel like you... know what I studied in that kind of part, the level or the unit, the whole thing like a summary for my study progress... It made me happy"
	Positive affect	"You will think for yourself: 'Did I agree?'"
Instructor Feedback	Reflection	"When I saw that, I think, 'yeah, in the low level I can review some new words but... maybe I wasted time.'"
	Action	"Most of the language in the course, I know it already... so I don't think I need to review the low levels. I can use the time to review the higher levels."
	Specificity	"I want to see the specific data such as which word that I hovered over and which sentence structure I paused over and which grammar point that took me a long time to understand. The data can be more specific."
	Language system	"I will try to apply the sentence patterns that the teacher has taught related to the particular task... And then decide whether I can do it or not."
Self-Assessment	Social comparison	"because I want to know how my abilities compare with others in my level [...] It will also help me feel we are connected."

Thematic codes applied to the evaluation of the intervention in Stage 3.