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Enhancing learner motivation by adapting strategies from the ARCS model: experience from Chinese online course design and teaching

Abstract: Compared with traditional language teaching in a face-to-face setting, online language teaching elicits new challenges that require instructors to adopt new strategies when designing and delivering online courses. One of the challenges, according to our literature review (Cull, S., Reed, D., & Kirk, K. (2010, June 23–25, 28–29). Student motivation and engagement in online courses [Workshop session]. In *Teaching geoscience online – a workshop for digital faculty, Virtual workshop.* https://serc.carleton.edu/NAGTWorkshops/online/motivation.html) and our instructors' observations of online Chinese courses, was that college students suffered from loss of learning motivation, which impacted their learning experiences and outcomes, resulting in a downhill, vicious cycle. This paper discusses various adaptations that we designed to improve learner motivation by applying Keller's ARCS model (Keller, J. M. (1983). Motivational design of instruction. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: An overview of their current status* (pp. 383–434). Lawrence Erlbaum Associates, Keller, J. M. (1984). The use of the ARCS model of motivation in teacher training. *Aspects of Educational Technology*, 17, 140–145, Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development*, 10(3), 2–10, Keller, J. M. (2010). *Motivational design for learning and performance.* Springer) during the process of (re)designing online Chinese courses from 2018 to 2020. Among many theories and models of learner motivation, Keller's ARCS model stands out with its focus on instructional design, with four main practical categories: attention; relevance; confidence and satisfaction. This model further provides detailed subcategories for improving learner motivation, e.g., increasing variations in course material layout to capture students' interest and providing real-time,

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encouraging feedback to enhance students' beliefs in their competence. Our contextualised discussion of the ARCS model will benefit teachers and course designers seeking to enhance learner motivation in their online courses.

Keywords: ARCS model; Chinese language; learner motivation; online teaching

1 Introduction

Online language learning elicits new challenges to language teaching and requires innovative teaching-learning designs (Cercone, 2008; Sims et al., 2002; Song, 2004). Students often display lower motivation to learn due to the absence of face-to-face human instruction. Both researchers and instructors have noted that students enrolled in online courses display differences in motivation level and type compared with similar courses conducted in completely face-to-face formats. On one hand, stronger intrinsic motivation has been found among students who opt to take online courses (Shroff et al., 2007, 2008) compared with peers enrolled in similar face-to-face courses. On the other hand, online learning may result in reduced learning motivation manifested by a higher attrition rate (Carr, 2000; Clark, 2003). However, Martens et al. (2004) found that higher intrinsic motivation alone does not yield better learning outcomes. Faced with the challenges of teaching college-level online Chinese courses in the summers of 2018, 2019, 2020 and the fall of 2020, we implemented tactics from the ARCS model, an instructional design model that Keller (1983, 1984, 1987, 2010) formulated. This paper shares details from the model's motivational design features and various adaptations in our practices while designing and redesigning with teachers and course designers.

2 Context

Online learning poses challenges to teachers and course designers on how to maintain students' motivation in an online classroom. Cull et al. (2010) listed the following challenges for university-level online courses:
– Without face-to-face contact, faculty cannot pick up nonverbal cues from students that can indicate that they are disengaged, frustrated or unenthusiastic.
– Faculty also cannot share their emotions easily and may find it more difficult to express enthusiasm, encouragement or concern.
– The online environment's quasi-anonymous atmosphere can make it easier for students to withdraw, participate minimally or completely disappear from the course.
– Students may enrol in online courses because they assume that they will be easier and require less of their time; therefore, before the course even begins, these students may be prone to disengagement.

When a language class takes place online, such challenges often are magnified. Language learning ought to be interactive and communicative (Canale & Swain, 1980;

Littlewood, 1981, 1984; Savignon, 1972, 1983; Widdowson, 1978), but online learning often lacks an "authentic" communicative environment, which leads to less learning motivation and, thus, worse performance.

We gained first-hand experience at a U.S. public university with the difficulties of online language teaching by offering online Chinese courses that were first developed in the spring of 2018, launched in the summer semester and revised over subsequent years. The courses used Integrated Chinese Levels 1 and 2 as textbooks. We incorporated a flipped classroom design, starting with asynchronous learning steps followed by synchronous meetings. In our own teaching experience, during online Chinese language courses, instructors constantly looked for strategies to motivate students. While some students were ready to be engaged in various learning activities, others suffered from lack of motivation, manifested as not showing up for the first few days of the semester, then disappearing; not purchasing the required textbooks/workbooks; not reading the syllabus even when the instructor sends notification emails beforehand; not comprehending course requirements; attending online courses unprepared and slacking off on assignments, among other behaviours.

While the instructor strives to increase learner motivation by applying motivation stimulation strategies in the course, the effects do not seem significant. Similar strategies are much more effective during regular face-to-face teaching. We investigated these motivational issues while considering instructional design before we revised the courses in the following respects: creating a course platform (course website, syllabus) and learning materials (videos, third-party website, apps); scaffolding activities; offering interaction assistance (online guests and TAs) and implementing a progress check and feedback mechanism. Our revisions were guided by the educational psychology theory of instruction design that Keller (1983, 1984, 1987, 2010) proposed based on his ARCS model. In the sections below, we examine this model's theoretical foundation before providing detailed rationale for our practical adaptations.

3 Pedagogical considerations: learner motivation and the ARCS model

Motivation is "the process whereby goal-directed activity is instigated and sustained" (Schunk et al., 2008, p. 4). It plays a pivotal role in learning and can influence what we learn, how we learn and when we choose to learn (Schunk & Usher, 2012). However, learner motivation is a different theoretical concept that has been studied in psychology, second-language acquisition and other related fields (see Dörnyei & Ushioda, 2011, for a summary), with various research foci on topics ranging from the definition of motivation, factors contributing to motivation, motivation's effects on learning, changes in motivation over time and motivation's interaction with other factors. Being a "difficult language," Chinese as L2 has received attention from

researchers who have investigated learner motivation (Chai et al., 2016; Rueda & Chen, 2005; Wen, 1997; Xie & Ke, 2011; Yu & Watkins, 2008), mostly using one or some of the frameworks mentioned above.

Our paper focusses on instructional design for online courses – not so much on the bigger social context, individual growth or multiple motivation factors' interactions – so we chose to adopt Keller's educational psychology model (Keller, 1983, 1984, 1987, 2010) as our methodology. As Dörnyei and Ushioda (2011, p. 69) pointed out, motivation is a complex phenomenon with many interacting factors, from social community and learner experience, to class environment, among other factors. We admit that focussing only on "course-specific motivation components" fails to address motivational aspects' complexity and interdependence. However, ARCS' narrow focus provides very detailed suggestions for key instructional components/content in promoting learner motivation, making it easy for course designers and teaching practitioners to follow. Keller's model points out four categories of instructional design that contribute to a learner's motivation and lists detailed recommendations in the Tactics Checklist for instructional design adjustments and manipulations for each aspect. Instructors and course designers can adjust and manipulate the instruction design factors accordingly.

The ARCS model has been used to design and evaluate instructional designs in many disciplines, including language and online teaching (Chang & Lehman, 2002; House, 2003; Means et al., 1997; Pivnick, 2003; Small et al., 2004; Song & Keller, 2001; Wongwiwatthananukit & Popovich, 2000). For example, Cook et al. (2009) applied the Instructional Materials Motivation Survey from the ARCS model and studied the medical online learning module. ChanLin (2009) used the tool to study motivation among students taking a web-based library and information science course. Huang et al. (2006) examined the ARCS model's validity by surveying an online tutoring tool's motivation effects.

Keller's ARCS model represents and measures learner motivation in four categories: Attention; Relevance; Confidence and Satisfaction. Attention requires that a course capture learners' interest by stimulating curiosity to learn. Relevance demands that the course meet learners' personal needs/goals to effect a positive attitude. Confidence refers to instructional design manipulations that help learners believe/feel that they will succeed and control their success. Finally, satisfaction is realised by reinforcing accomplishments with (internal and external) rewards.

4 Practice and rationale: course revisions, student feedback and future recommendations

In this section, we share our successful course design revisions and recommendations for future adaptations. Following the ARCS model's suggestions, particularly the Tactics

Checklist (Keller, 2010, pp. 286–291), we have been revising online Chinese courses for the past four years, responding to observed and student-reported motivation issues in each course. This process is interactive because sometimes the theory and suggestions from the model help us detect problems, while in other instances, problems lead us toward explanations and solutions. The most valuable lesson we have learnt is that motivating strategies work best when maximising the online environment's unique benefits, rather than trying to replicate the benefits of in-person, in-class instruction. The following subsections are organised based on the ARCS model's four key elements.

4.1 Attention

Keller (2010) noted that attention is necessary for both motivation and learning in the multimedia instruction era. He proposed three steps to create, increase and sustain attention: 1) Capture students' attention by using novel approaches and injecting personal and/or emotional material during classes; 2) increase attention by stimulating curiosity and generating inquiry; and 3) maintain attention through variation. For each step, Keller (2010) provided a list of tactics (see the Appendix for complete lists).

Based on these suggested tactics, we started revising the interactive course syllabus and website. In a traditional course, the syllabus often takes the form of a document with paragraphs and bullet points, listing the course objectives, logistics, requirements, assignments, grading, policies, resources and timetable. Students often do not read the whole document carefully, and the document becomes even less attractive in an online course in which the syllabus is an electronic Word or PDF file. To utilise the online platform fully, we integrated the syllabus with the course's website, in which the syllabus then included colourful flowcharts, infographics, hyperlinks, picture illustrations and embedded videos. For example, after the revision, the required course materials were shown as pictures of the books, and by clicking the images, students were taken to the publisher's website or the Amazon page for the books. Explanations of expected in-class behaviours were not paragraphs, but rather short, humorous videos. Assignment explanations were presented through hyperlinks that connected to grading rubrics and sample assignments. The improved online syllabus was an interactive roadmap connected to other online course content with visual and graphic illustrations.

The second area of improvement was to enrich the course's instructional videos and the PowerPoint slides used in the videos. In addition to adding more examples to illustrate abstract grammatical concepts, we replaced paragraphs with bullet points and diagrams. For instance, grammar explanations about word order were presented as shuffled blocks before each block falls into the correct position. Incorrect examples were shown to students with special visual and audio hints. Lesson

dialogues were presented not as linear texts, but rather as mind maps, in which chunks of dialogue were colour-coded and organised based on topic flow. In the videos, the instructor pretended that a conversation was occurring between the instructor and the reviewers by asking questions, allowing the viewers to think for a few seconds, then enthusiastically revealing the answers.

We also reconfigured the instructions for scaffolding activities to better capture students' attention. In a traditional, in-person classroom, an instructor often explains activities to students, whose responses allow the instructor to add further clarification or illustration. In online asynchronous or synchronous teaching, that teacher–student interaction often is delayed or even impossible. Nevertheless, students in an online setting have access to written explanations and video demonstrations, and can choose to reread or rewatch them, respectively. Therefore, any online activity's success depends on instruction and demonstration quality. We reformulated activity instructions as step-by-step flowcharts or checklists, side by side with examples of expected performance – sometimes written, other times as videos. These instructions were provided to students as Google Docs during Zoom breakout room sessions for group/pair work.

These tactics confirmed that our choice of a flipped design is suitable for an online classroom. The flipped design offers many advantages, one of which is to promote students' problem-solving and self-learning skills. In online language courses, personal touch and interaction are reduced no matter how hard instructors may try to reproduce the effects that they could achieve during in-person teaching. Non-instantaneous interaction may be viewed as a problem, but it also presents new opportunities – in this case, more time for students to explore the language and become engaged in problem-solving before participating in synchronous activities. We often presented learning content as questions during pre-Zoom learning activities. Large amounts of examples in various contexts were given to students, who then tried to make generalisations or conclusions. Then they could do follow-up, auto-graded, multiple-attempt quizzes to verify their answers.

Authentic tasks, which are always problem-solving in nature, were given to students to apply their new skills before or after Zoom class meetings. The online environment also provides fertile ground for creating authentic tasks in Chinese that otherwise are scarce in the physical world locally in the U.S. For example, students were asked to look for a piece of clothing they liked on Uniqlo.com, check available sizes and colours, and compare its price on the company's U.S. and Chinese websites. Posting and responding to blogs and video blogs was another example. These authentic tasks often took a long time and were not completed during short class meetings, making them more suitable for asynchronous online learning.

Virtual tours (Google Earth, NASA, museums, art galleries and aquariums) became more available during the COVID-19 pandemic, and we incorporated them into our curriculum to stimulate students' curiosity. For example, we used the

Forbidden City virtual tour for a Chinese *hanzi* (character) hunting activity, in which students were asked to find a particular Chinese character in one of the rooms in the Forbidden City. They were required to describe where they found the Chinese character using the newly learnt Chinese location expressions. This activity invoked curiosity and enhanced the cultural experience.

The recommended tactics for maintaining attention highlight creating variations from all aspects of course design and execution. With in-person teaching, instructors can develop variations by using their voices, body language and classroom space. In online teaching, we increased variation in other ways when such variations were unavailable, e.g., changing font, type size, background colour and layout on the course website and other course materials. We also alternated between texts, figures, tables, videos and pictures. In instruction videos and Zoom meetings, instructors appeared with different guests – sometimes with real people, other times with puppets or animated characters of various genders, ages and personalities who spoke with different tones.

The most significant variations that we added to the course were realised via an effective repertoire of technological tools during both asynchronous and synchronous class time. The tools include Zoom's polling and annotation tools, Google Suite tools, Kahoot, Socratic, StoryJumper, Book Creator, Quizlet, Edpuzzle, WordArt, Flip (formerly Flipgrid), WeChat and WhatsApp, among others. These tools work best when introduced at the beginning of the semester, to give students time to learn how to use them by starting with simple tasks. Students become more familiar with each tool as the semester progresses, and more complex and challenging tasks can be added to increase attention. For similar activities, instructors may use different tools at different times. For example, we used Book Creator at first for students to write captions for the pictures they saw on each page, followed by students' story creation. After they added their own voice on each page to create their own story, other students used these books for reading comprehension, commenting, summary writing and book review writing.

4.2 Relevance

In online instruction, motivation's relevance aspect suffers from a lack of interaction between the teacher and students. If teachers are unfamiliar with their students, they cannot understand students' goals, interests, learning styles, social values and needs or personal experiences. Keller proposed three sets of tactics to enhance relevance: goal orientation; interest and value matching; and connection with students' experience (see the Appendix for complete lists).

The first set of tactics for promoting relevance focusses on objectives within the course and those beyond the language course. We used ACTFL proficiency guidelines and performance descriptors in course planning to connect course objectives with

students' short-term and long-term learning goals. During the first class meeting, we gave the students a learning roadmap by introducing them to the ACTFL proficiency guidelines and performance descriptors, highlighting the course's learning objectives, as well as those of higher-level courses offered at our school. Backward design was employed to break down course objectives into lesson objectives, assessments and scaffolding activities. Instructors used the lesson plan template from the STARTALK programme as a guideline for lesson planning. One advantage of an online learning environment becomes helpful in this process: online sharing and interlinking. Lesson plans, student assignment submissions and summative assessments were shared on the course website and the Google folder for each class, where instructors provided feedback, and students responded to feedback interactively. One of these documents was an individual student progress check Google Sheet that was updated daily. On the spreadsheet, course objectives, in the form of "can-do" statements, were marked as "completed", "in progress" or "have not started". Students also have access to scores from each assignment and assessment, plus their overall grades for the course. We encouraged students to do self-evaluation and learning reflection constantly. The progress checklist had a column in which the students could comment on how well they believed they achieved each particular can-do and why. The progress checklist was shared with instructors and TAs so that they could provide feedback based on students' self-evaluations on a weekly basis. We found that student self-evaluation was more in line with teachers' assessments after a few weeks.

To match course objectives to students' college studying and career goals, we tried to connect the course to their courses in other disciplines in the form of authentic tasks. For example, in one authentic task, students examined their major/minor curricula and compared their four-year study plans with that of a Chinese international student at our university with the same major/minor. In another task, students tried to write a resume in Chinese using samples from Chinese job-hunting websites, e.g., 51job.com.

The recommended tactics above can be categorised into two types: The first one targets students' interests and feelings, and the second one promotes role models. Students' feelings include being cared about, recognised and viewed as excellent learners. We found that students responded more enthusiastically when instructors used encouraging words instead of prescriptive language during video recordings and Zoom meetings. We used expressions, e.g., "You will be able to say a very authentic sentence this way" to replace phrases such as, "You should say this; otherwise, you will form an incorrect sentence". At the beginning of each Zoom meeting, instructors used the poll function or Kahoot to ask about each student's feelings that day. We used Google Forms for many homework assignments, which displayed achievement statistics immediately after each submission with an encouraging comment from the teacher, e.g., "It is not easy, but you made it". In Google Forms – for quizzes, tests and

homework assignments – a progress bar was included on each page, giving the students a sense of achievement and control over their progress. The advantage of online teaching is that these statistical data are immediately available in some app/software or websites, and encouraging language can be embedded easily. Historical data are also easy to store for tracking, and teachers take full advantage of these functions. We included puzzles, games and problem-solving activities in the lesson planning to promote excitement over achievement. One example was that instructors created a set of short "detective stories" for reading and discussion. Each story described a mystery or crime, and students were asked to read the clues carefully and identify the culprit out of four suspects. Discussions were held in groups in which students discussed their varying views on the culprit's identity.

Online learning allowed us to bring role models into the classroom. In our class, we invited successful learners from our programme who had graduated and lived far away from our college to share their stories and learning strategies. Our Chinese programme produced five world-level finalists of Chinese Bridge (汉语桥), an annual worldwide Chinese speaking and performance competition in the past 10 years. Though they graduated, these students still used Chinese in their current studies or job positions. Students were thrilled when our graduates appeared during our Zoom class meeting as mystery guests and participated in our class activities. Interviews and Q&As with these role models allowed current students to use their newly learnt Chinese language skills as well. After the first meeting, they also connected via WeChat and other social media platforms. In addition to these guests, we recruited higher-level Chinese learning students as teaching assistants (TAs) who helped students daily.

The tactics for Step 2, Relevance, focus on previous experiences and individuality, allowing learners to establish connections between the new language and their existing knowledge. Every student in our class had previous foreign language/culture experience, and more than half the class comprised heritage learners of Chinese with experience in one or more Chinese dialects and cultures. We collected this information from a learner background survey at the beginning of the semester. For heritage-learner sessions, we designed assignments that encouraged students to compare similarities and differences between Mandarin expressions learnt in class and those that their family used at home. For example, when teaching the 了, students completed a survey with input from their parents that listed the counterpart of 了 in their dialects (most likely Cantonese, Shanghainese and Fuzhounese) using some sample sentences that the instructors provided. During the nonheritage learner sessions, most students previously had learnt some Spanish or French. These students were asked to compare the 了 with the Spanish and French simple past and past imperfect tenses. We then invited parents who spoke these Chinese dialects and Spanish/French native speakers to join us during the Zoom class meetings to discuss students' survey results and their opinions. After the discussion, a follow-up task was to post intriguing discoveries that they had made when working on assignments on students' social media accounts.

Therefore, the online learning environment brought distant experiences from the past and from others to the class, then provided opportunities for students to disseminate their new understandings of these experiences.

Online learning exerts a strong, positive effect on individualising learning experience, particularly during the synchronised learning time (Sun & Chen, 2016). To achieve this goal, we provided multiple choices for assignments, and a good mixture of tasks, including long-term and short-term projects, individual and group projects, competitive and collaborative tasks, one-time attempts and multiple attempts. Students had the autonomy to choose their own tasks and starting points. For every theme covered during the course, they could choose from different short-term projects. For example, for the family member theme, students could choose to interview each other, their parents (particularly for heritage speakers), a WeChat friend or a Chinese hero. During Zoom class meetings, individual and group activities in different communication modes were sequenced. In addition to Zoom, we also used an online social platform called Remo, in which students had the freedom to join different "tables" for various tasks and topics. Unlike in Zoom, students in Remo (Remo.co) were not restricted to the instructor's breakout room assignments. They could also switch "tables" from time to time.

4.3 Confidence

In the language learning context, confidence generally refers to students' expectancies for success in acquiring language proficiency. In the ARCS model, the strategies for promoting confidence are in three categories: clarifying learning requirements; building positive feedback gradually and delegating responsibility to students. Notably, online environments also elicit challenges to students' confidence on the technological level.

To increase students' confidence, we set out to clarify learning requirements. Making "clear requirements", as Keller suggested, entailed explaining course requirements in "everyday terms that students can understand" and emphasising what the students will be doing. This is particularly important in the online environment, which lacks interactive elements compared with a face-to-face setting. In our online courses, we simplified the process of perceiving course requirements further by using plain language and cutting long sentences into shorter ones. Meanwhile, listing requirements in several different places on the course website, which allowed students to access them at any given point, also reminded them constantly of what they needed to do. In this case, repetition was not redundant, but necessary, enabling students to focus their efforts towards success.

Keller also indicated that "students' confidence is likely to be even higher if they are allowed to develop at least some of their own goals and objectives". As a

differentiation strategy, allowing students to set up their personalised objectives/ goals will stimulate their interest and increase their knowledge application, thereby boosting their confidence. For example, when teaching means of transportation, the objective of mastering Chinese vocabulary for various vehicles can be based on where the students come from. As a large percentage of our students come from New York City, allowing them to figure out the most common types of public transportation in NYC, setting goals to master particular expressions (e.g., "坐地铁" ["taking the subway"] and, "坐公共汽车" ["riding the bus"]) and encouraging them to look up and use expressions that were not listed in the textbook (e.g., "打 Uber" ["taking an Uber"] or "拼车" ["car pool"]) could increase their application of the language more effectively. To help students reach their personalised objectives, our instructors provided guidance in using online dictionaries and translation tools in appropriate ways. We did not forbid students to use tools, e.g., Google Translate. Instead, we showed them when they were helpful and problematic. Students often also enjoyed reading funny mistaken translation examples that these tools produced.

We promoted and maintained students' technological confidence by acquainting them with new technological tools that allowed them to start with simple tasks. More importantly, we only selected tools with a simple registration process, e.g., in our online storytelling project, we chose digital tools in which learners could log in via Google over those that required a registration process and asked for students' personal information. Our university uses Google Suite, and logging in with a Google account provides convenience and security, so students were more likely to use these tools when learning Chinese than those taking extra steps.

The key to building confidence is to relate students' success to their efforts and to do so gradually. After clarifying learning requirements and rationalising them to the course's objectives and students' personal goals in the previous step, we gradually employed scaffolding activities to deliver positive results. Scaffolding needs to be built into synchronous and asynchronous components. In the asynchronous environment, instructors need to pay more attention to the difficulties in designing materials and tasks because students cannot ask questions and get instant answers or get hints from instructors. For example, in asynchronous listening activities, we started with background knowledge activation, then listened for general ideas, more details and finally comprehension with inference and predictions, following the order of functions and responses proposed by Lund (1990). Students were encouraged to follow along at their own pace, e.g., they were allowed to skip a step and start the next one. Scaffolding and sequencing of activities also were built between different components in the flipped course design, from pre-Zoom asynchronous learning to Zoom time class and post-Zoom asynchronous activities. We recommend that instructors use the listening material in a pre-Zoom activity for gist comprehension, as well as reuse the same material on Zoom for conversation practices based on understanding.

Instant feedback and self-evaluation tools are essential to building confidence. In asynchronous activities, autocorrection and encouraging messages were shown to the students on the website to reduce stress from uncertainty and to provide hints about the next exercise. We also adopted apps and software with autocorrect functions and allowed for multiple attempts if available. In synchronous online learning, instant feedback becomes more arduous when one instructor faces many students in different "windows". To tackle this problem, we created a secondary channel in the synchronous online class: a TA-student instant messaging connection via WhatsApp, in addition to the Zoom platform. When the instructor asked a question or initiated an activity via Zoom, every student responded in voice or text messages to the TA via WhatsApp and received instant feedback. It also applied to Zoom breakout room activities when pairs or groups of students worked on the tasks together, then individually sent their completed tasks as voice messages to their TA via WhatsApp to elicit instant feedback. This effectively reduced students' affective filter to help shy students avoid feeling embarrassed in front of the whole class among those who were less confident. We trained our TAs to use supportive language and positive corrections in their feedback accordingly.

4.4 Satisfaction

According to Keller, satisfaction is needed to maintain our interest in a goal. The ARCS model has a balanced position on intrinsic and extrinsic motivation to include strategies that promote both. The shortcoming is that this model does not concern itself with intricate interactions between these two. Keller (2010) noted the importance of the increased difficulty level in sustaining learners' interest and the role of positive feelings of extrinsic satisfaction in an individual's comparison between themselves and their peers. In language learning, this means that instructors should adjust rewards according to how challenging the task is and provide extrinsic rewards fairly. In an online course, instructors' efforts in providing rewards could be hindered or delayed, and the perception of one's performance and rewards in relation to peers could be distorted and vague. Therefore, we followed the tactics provided in the ARCS model below, with special attention paid to these two issues.

From Keller's Tactics Checklist (see Appendix I), we employed authentic tasks with multiple challenges and encouraged collaboration. In previous sections, we introduced authentic tasks designed for our online courses. Scholars have observed that children love to learn new tasks, but that their interest disappears once they master the skill. Computer game design maintains users' interest by increasing the difficulty level and introducing new situations. In designing authentic tasks, creating new challenge and situation levels helps maintain learners' intrinsic motivation for the same reason. Accordingly, differentiated positive verbal reinforcement should be

given to students when they accomplish tasks at different levels. For example, in an online task that entails ordering food through a restaurant's website, the challenge's first level is to order a dish, the second level requires special instructions for the chef and the third level requires that students resolve disputes, e.g., wrong coupon codes. If students are competent, instructors may add more bonus rounds, including more complicated situations, e.g., receiving the wrong dish or complaining about over-charged credit cards. In these tasks, collaboration is encouraged, and the grouping of students varies from time to time so that students can demonstrate their strengths in different groups and tasks by helping others. In online teaching, particularly in asynchronous learning, our teachers used different colours, font sizes, banner shapes and wordings to acknowledge students' accomplishments. Instructors used these signs or rewards during synchronous learning, e.g., Zoom meetings and public or private messages to students. When the instructors were busy managing the class during the Zoom meeting, our TAs helped send these signs to students.

Extrinsic rewards are beneficial, but lose their attraction when overused. In online courses, extrinsic rewards are difficult to deliver except for a few, e.g., grades, game points (or extra "lives") or certificates. According to Keller, extrinsic rewards should be used for tedious and difficult tasks, rather than those that are easy or intrinsically attractive to students. It is a well-accepted fact in the field of psychology, extrinsic rewards damage intrinsic motivation when the tasks are intrinsically motivating already. Thus, we opted to use bonus points, digital certificates and badges for Chinese character memorisation and tone pronunciation. Incidentally, these are lower-level language skills, and a good variety of online game tools can help. We used game tools such as Skritter and Chinese in Flow for character games and the Chinese Pinyin Game for pinyin learning. High scores from playing games were rewarded with bonus points or badges on each student's progress checklist.

To address the problem of vague perceptions of one's performance, we created the assessments in line with the course objectives through the application of backward design. Moreover, students' perceptions of their performance are tied to learning objectives as much as to fair treatment when they compare themselves to peers. In Keller's words, "if your perception is that someone else received a greater reward for the same or less accomplishment, then your satisfaction level will be adversely affected" (Keller, 2010, p. 192). In our online course, we created transparency when offering rewards. Criteria and rules for games were listed on the website and syllabus, and individual messages were sent to students to explain why and how they were rewarded based on class average and highest and lowest scores. With in-person instruction, this may be achieved through the teacher's verbal explanation and a well-balanced attitude toward each student, but with online teaching, clear writing and direct individual messages are essential.

5 Conclusions

Online courses offer a nascent learning experience to many instructors and students who never have experienced this teaching model before. One of the critical issues that instructors often face is how to maintain and increase learner motivation. While a student's intrinsic motivation is influenced heavily by myriad factors in their life (e.g., family values concerning education) and previous learning experiences, teachers face challenges in maintaining, let alone increasing, learner motivation level as they often have a limited number of options in instruction design and teaching practice. Keller's ARCS motivation model provides instructors with practical guidelines to increase learner motivation when designing online courses. We utilised this model to create and revamp our online Chinese courses, as well as illustrated practical suggestions based on the motivational Tactics Checklist and our experience from the perspectives of maintaining and increasing attention, making learning content relevant, fostering confidence and building satisfaction. The most illuminating conclusion we drew from the course design and revision process is that the online learning environment is fundamentally different from that of the traditional classroom. It is neither feasible nor necessary to try and recreate what works well with in-person courses in online courses. We contend that maximising an online digital environment's benefits is a more promising solution to many problems, including lack of learner motivation. Moving forward, we are committed to improving the online learning environment and exploring additional solutions further to enhance learner motivation in online Chinese courses.

Appendix I:
Tactics Checklist based on Keller (2010)

1)   Attention

Tactics for Step 1: Capture attention (Keller, 2010, p. 287):
a. Include references to specific people, rather than "mankind" or "people".
b. Illustrate general principles, ideas or other abstractions with concrete examples.
c. Make complex concepts or relationships among concepts more concrete through metaphors or analogies.
d. Present items in a series in a list format, rather than paragraph format.
e. Make step-by-step procedures or relationships among concepts more concrete by using flowcharts, storyboards, diagrams, cartoons or other visual aids.
f. Ensure that the instructor establishes eye contact and exhibits enthusiasm.

Tactics for Step 2: Increase attention (Keller, 2010, p. 287):
a. Introduce/develop a topic in a problem-solving way.
b. Stimulate students' curiosity by provoking mental conflict.
c. Evoke a sense of mystery by describing unresolved problems.
d. Use visuals to stimulate curiosity or create mystery.

Tactics for Step 3: Maintain attention (Keller, 2010, p. 287):
a. Use white space to separate blocks of information (text and/or illustrations).
b. Use a variety of typefaces to highlight titles, quotes, rules, keywords, etc.
c. Create variations in layout, types of material, writing function and tone.
d. Create variations in the sequence of the elements in the instruction.
e. Create variations between content presentations and active response events.

2) Relevance

Tactics for Step 1: Relate the instruction to the learner's goals (Keller, 2010, p. 288):
a. State the instruction's immediate benefit if it is not self-evident.
b. Include comments, anecdotes or examples that stress the personal and inherent satisfaction of the subject.
c. Include statements describing what the learner will be able to do after completing these instructional materials.
d. Ensure that at least some examples and exercises clearly are related to the knowledge and skills that students will need in the future.
e. Tell the student how accomplishing this instruction is related to future goals.
f. Tell the learner how this instruction will improve their general life-coping skills.
g. Encourage the learner to think of this instruction as contributing to the development of an intrinsically interesting area of study and development.

Tactics for Step 2: Link instruction to learning styles and personal interests (Keller, 2010, p. 288):
a. Use personal language to make the learner feel like they are being talked to as a person.
b. Provide examples that illustrate achievement striving and accomplishment.
c. Include statements or examples that illustrate the feelings associated with achievement.
d. Encourage the learner to visualise the process of achieving and succeeding, and the feelings associated with it.
e. Include exercises that allow for personal goal setting, recordkeeping and feedback.
f. Include exercises that require collaborative workgroups.
g. Include puzzles, games or simulations that stimulate problem-solving, achievement-striving behaviour.

h. In the exercises (including puzzles, games and simulations), encourage learners to compete against each other, themselves or a standard.
i. Use anecdotes about noteworthy people in the area of study, the obstacles they faced, their accomplishments and the consequences.
j. Use examples, testimonials, etc., from people who attained further goals after successfully completing the course of instruction.
k. Include references to, or quotations from, people who convincingly can describe the benefits of the particular skill/knowledge area.

Tactics for Step 3: Tie the instruction to the learner's experiences (Keller, 2010, p. 289):
a. Include explicit statements about how the instruction builds on existing skills or knowledge.
b. Use analogies or metaphors used to connect the present material to processes, skills and/or concepts with which the learner already is familiar.
c. Give learners choices on assignment content.
d. Give learners choices on assignment type.

3) Confidence

Tactics for Step 1: Make clear learning requirements (Keller, 2010, p. 289):
a. Make clear statements, in terms of observable behaviours, of what is expected of learners as evidence of successful learning.
b. Ensure that learners can write down their own learning goals or objectives.

Tactics for Step 2: Build positive consequences gradually (Keller, 2010, p. 290):
a. Organise content in a clear, easy-to-follow sequence.
b. Sequence tasks from simple to difficult within each segment of the materials.
c. Make the overall challenge level appropriate for students.
d. Ensure that materials are free of "trick" questions or excessively difficult questions or exercises.
e. Make exercises consistent with the objectives, content and examples.
f. Include methods for self-evaluation, e.g., answers to exercises.
g. Provide conformational feedback on acceptable responses, as well as corrective feedback on responses that do not meet criteria.

Tactics for Step 3: Delegate the responsibility of learning (Keller, 2010, p. 290):
a. Give learners choices in sequencing and allow learners to proceed at their own pace.
b. Give learners choices on how to demonstrate their competence.
c. Give learners opportunities to create their own exercises or methods to demonstrate their competence.
d. Give learners choices over the work environment.

e. Give learners opportunities to submit comments on how the materials could be improved or made more interesting.

4) Satisfaction

Tactics for Step 1: Increase intrinsic satisfaction (Keller, 2010, p. 290):
a. Create opportunities for students to use a newly acquired skill in a realistic setting.
b. Provide verbal reinforcement of the learner's intrinsic pride in accomplishing a difficult task.
c. Include positive, enthusiastic comments that reflect positive feelings about goal accomplishment in the materials.
d. Provide learners who have mastered a task the opportunity to help others.
e. Acknowledge actions and characteristics necessary for success.
f. Acknowledge any risks and challenges that were met.
g. Provide information about areas of related interest.
h. Ask and inform learners about how they might continue pursuing their interest in the topic.
i. Inform learners about new areas of application.

Tactics for Step 2: Provide extrinsic rewards (Keller, 2010, p. 291):
a. Include games with scoring systems to provide an extrinsic reward system for routine, boring tasks, e.g., drills and practice sessions.
b. Use extrinsic rewards to reinforce intrinsically interesting tasks in an unexpected, noncontrolling manner.
c. Include public congratulations for correct responses.
d. Give students personal attention during a task or after accomplishing a task successfully.
e. Use reinforcements frequently when learners are trying to master a new skill.
f. Use reinforcements more intermittently as learners become more competent at a task.
g. Avoid using threats and surveillance as means of obtaining task performance.
h. Use certificates or "symbolic" rewards to recognize success in individual or intergroup competitions, or at the end of a course.

Tactics for Step 3: Build learner perceptions of fair treatment (Keller, 2010, p. 291):
a. Ensure that the content and types of problem scenarios in the final exercises and posttests are consistent with the knowledge, skills and practice exercises in the materials.
b. Ensure that final exercises and posttests' difficulty levels are consistent with previous exercises.

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