

Chinese Online Teaching and Learning: The CMU OLI Chinese Online Program (网上中文教与学: CMU OLI 网上中文课程)

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Abstract: This paper introduces and describes the design of the Online Chinese curriculum developed for the Open Learning Initiative (OLI) platform at Carnegie Mellon University. The course addresses the four skills of speaking, listening, reading and writing, and also includes culture learning components for beginning Chinese. It will provide detailed information on the curriculum design, scope and sequence, content and online tutor exercise modules. It will also showcase the behavior data and assessment outcomes collected by the system and discuss how to effectively incorporate them into a pedagogically effective and efficient Chinese online curriculum.

摘要: 本文介绍描述美国卡内基梅隆大学在网上开放学习计画 (OLI) 平台里所开发的网上中文课程。此网上初级中文课程一共为期两个学期, 课程内容包括听说读写四大技能及文化重点信息。文中将详细地介绍此网上中文课程的范围与顺序, 学习内容及网上的人机互动练习平台等等。文中也将展示一些由 OLI 电脑系统所收集到的学习者的学习行为, 情况及测试评量等数据, 并讨论如何将此学习数据有效地回馈给教师及研究者, 并帮助教师如何把这些学习数据有效地应用到课堂教学里, 以此提供一个更具效用与效率的网上中文教学课程。

Keywords: Open learning resources, Chinese online, technology and Chinese teaching

关键词: 开放学习资源、网上中文、科技与汉语教学

1. Introduction

The Open Learning Initiative (OLI; <https://oli.cmu.edu>) is an open educational resource project at Carnegie Mellon University (CMU). The OLI provides a technological platform for developing, delivering, and assessing learning outcomes in

online courses and activities. It supports the creation of high-quality online courses and learning materials that are open and freely available for anyone to use. As students work through an OLI course, real-time data on their interactions with the learning materials is collected. This data may be used by instructors, course developers or researchers to monitor student learning, test theories of learning, or to inform future improvements to the learning materials.

The Chinese online course was originally developed with the support of a grant from the Pittsburgh Science of Learning Center (PSLC, supported by the NSF; <https://learnlab.org>),¹. It was developed to serve two purposes: (1) help beginning students of Chinese who need a more flexible approach to language learning develop communicative competence in the four basic skills of listening, speaking, reading, and writing Chinese, as well as competence in Chinese culture, and (2) function as the Chinese LearnLab course for the PSLC, facilitating the collection of rich data on student learning and enabling *in vivo* research studies of the learning process, which are studies that take place within the context of the regular course curriculum. It has been offered as a course at CMU for several years now, and has been structured as a hybrid course, with one required class meeting per week and one individual tutor session per week in addition to the online learning exercises. The course is also suitable for use as a fully-online course (Wu et al., 2011; Wu, 2007).

Some challenges were overcome in the design and implementation of the Chinese online course. In particular, successful language study requires students to interact with each other and with their instructor. The high level of transactional distance in a completely online course makes it difficult to provide the instructor-student dialogue necessary to support the learning process (Moore, 1993). This paper also describes how the course is delivered in a hybrid format to help solve these challenges.

2. Chinese Online Content

An Elementary Chinese online course was developed from scratch at CMU from 2004-2006.¹ It was first offered to students in 2006 and is being delivered in a hybrid online/face-to-face format at CMU. A Hybrid (blended) teaching model is a mixture of classroom and online instruction (Martyn, 2003). It is different from the “completely online teaching model” in which teachers and students rarely, if ever, see each other. At CMU, students have a weekly one-hour class, as well as a weekly 20-minute one-on-one instruction session. Thus, we categorize the online Chinese course at CMU as a “hybrid model” of teaching and learning.

The course content is designed according to the 5 Cs principles of the National Standards for Foreign Language Education for the 21st Century - Communication, Cultures, Comparisons, Connections and Communities (ACTFL, 1999; Wu et al., 2005). It is designed to support a two-semester course. At CMU the first-semester course, Elementary Chinese I online, covers units 1 – 8 of the online content, and the second-semester course, Elementary Chinese II online, covers units 9 – 18. Each unit takes from

1.5 to 2 weeks to cover. Table 1 below details the overall scope of the two semesters of Elementary Chinese online.

Table 1: Chinese online curriculum scope and sequence

Elementary Chinese I Online (Units 1-8; first semester)	Elementary Chinese II Online (Units 9-18; second semester)
<ul style="list-style-type: none"> • Pinyin foundation • Main Vocabulary (181 items) • Characters (201) • Text Notes (28 items) • Grammar Points (32 points) • Culture Notes (8 items) • Unit Learning Outcome Assessment 	<ul style="list-style-type: none"> • Main Vocabulary (352 items) • Characters (307) • Text Notes (37 items) • Grammar Points (30 items) • Culture Notes (10 items) • Unit Learning Outcome Assessment

More detailed information on the scope and sequence of the Chinese Online curriculum is included in appendix A.

The online content in the course is delivered through a variety of integrated media, including text, audio and video. The student has many options to control the presentation of the content, for example by clicking on a word to hear its pronunciation, by selecting whether to listen to audio at slow or fast speed, or by selecting how many times to play audio and video elements. Interspersed throughout the content presentation are multimedia tutors that can be utilized for student practice, review or for assessment. These tutors, designed using components developed at CMU, provide students with audio, text, or image prompts. Students are then asked to select the correct answer or answers, or to drag components into the correct order. Like the prompts, the answers the students select from also may be presented as text, audio, or images. The tutors provide students with multiple levels of hints, and also provide feedback that can be customized to apply to distinct errors or types of errors. The tutors provide the ability to tie exercises to specific knowledge components (learning goals), and to provide context-dependent hints and immediate, context-dependent feedback. The Knowledge Components in the online course are organized around the grammatical structure of the Chinese language. Student interaction with course elements is logged in a centralized data repository, which may be accessed by both instructors and researchers. These logs provide data to help the instructor see how students are performing on various knowledge components, and may also be used to facilitate research studies within the course.

Each unit of the online content, with the exception of Unit 1 (the Pinyin unit), is organized in a similar fashion (please see appendix B for an outline). Each unit begins with a multimedia presentation of a main text, which is usually a dialogue. The text is presented first as a video. The videos were filmed in China with native-speaker actors and actresses speaking at natural speed. Figure 1 below shows an example of the video presentation.



Figure 1 An example video from the Chinese online materials

The video presentation is followed by multiple-choice questions to test students' basic understanding of the video. Since the video contains new vocabulary and grammar structures, students need to make inferences from context and language elements they have previously studied in order to answer the questions. The questions are delivered in a tutor format to facilitate hints and logging of student responses in the centralized data repository. This design helps students learn how to pick things they can understand out of a dialogue that also contains elements that they may not understand. Practicing this helps them to feel comfortable engaging with language that contains some elements they have not studied yet.

Following the video, the main text is also presented as written text in Chinese characters. This text is accompanied by the video's audio component, spoken at natural speed. There is also a presentation of the main text in Pinyin, with English translation. This Pinyin text with translation is also accompanied by audio, but this version of the audio is at a speed significantly slower than the speed of the video. This provides more time for learners to imitate the speaker as they repeat after the sound files.

The presentation of the main text is followed by explanatory notes. Chinese words and phrases in the notes have linked audio, so students may click on them to hear their correct pronunciation. Next, new vocabulary is presented. Traditional and simplified character forms, Pinyin, part of speech, and meaning are all presented for each vocabulary item. In addition, clicking on the Pinyin for each item will play audio of that item's pronunciation. This integration of multimedia makes it easy for students to control presentation of the content more easily. First, vocabulary items can be accessed individually without searching through a sound file. Second, the student has control over

whether or not to play the audio for each item, and how many times to play the audio for each item.

The presentation of the new vocabulary items is followed by some multiple-choice tutors testing students' understanding of the main video.

The next section of each online unit focuses on listening skills. Several different types of listening exercises are delivered via multimedia tutors. First, there are Pinyin recognition exercises in which the student must listen to a prompt and select the correct Pinyin representation. Next, there are a variety of exercises in which the prompt, the answer choices, or both are presented as audio. These include both translation exercises and listening comprehension exercises.

The listening skills section of each unit is followed by a grammar section. The grammar section begins with grammar notes presented as English text with Chinese examples. All Chinese in the grammar notes may be clicked on for an audio pronunciation. Each grammar note is followed by several examples, presented in characters and in translation, which can also be clicked on to access audio of the example. The grammar notes are followed by grammar exercises delivered by multimedia tutors that allow students to drag and drop characters or blocks of text into order in response to a text or audio prompt. We use this type of tutor for two types of exercises that allow students to practice character recognition and listening skills, and to reinforce the grammatical structures studied. In one type of exercise the student listens to audio of a sentence pronounced by a native Chinese speaker. The student then drags and drops characters into order to represent the sentence. In the second type of exercise the student is presented with blocks containing phrases or sentences written in Chinese characters. The student must drag the blocks into correct order. There are some instructional hints available for students to click to get some help on the questions. Figure 2 below shows an example of the second type of drag-and-drop tutor.

Module 17 / Dialogue Jumble Exercise

Drag and drop the lines into an appropriate dialogue. Start with "Bingbing, let's go eat together after class on Friday, OK?"

- 冰冰，星期五下課以後我們一起去吃飯，好嗎？ |
- 好極了！ |
- 我想吃韓國菜或者日本菜。 |
- 好。我們吃中餐還是西餐？ |
- 聽說韓國飯館的炒飯好吃極了。我們去那兒吃，怎麼樣？ |

Check My Answer

← 好吃極了[hǎochī jíle] means "extremely delicious" → ×





Reset this Activity

Figure 2 An example online drag-and-drop tutor

Grammar exercises are followed by reading comprehension exercises in which students read a text with similar vocabulary and theme to the unit's main text and then answer multiple-choice questions. These reading comprehension exercises are followed by consolidation exercises, which encapsulate listening skills, character recognition, vocabulary knowledge and grammar skills all in the same tutor exercise. These consolidation exercises present students with an image and then ask them questions related to the image. The questions can be multiple choice or multiple select, and they can include either text or audio prompts and responses. Figure 3 below shows an example of one of these consolidation exercises.



Listen to the question, then select the most appropriate response

-  Listen
-  Listen
-  Listen
-  Listen

 大杯 means "large-size cup."

 Correct!



Figure 3 An example online tutor (picture description)

The units end with a culture section designed to help learners better understand how phenomena from Chinese society and the Chinese language reflect Chinese culture. The culture section includes a culturally-related dialogue video, reading, multiple-choice

exercises and culture reflection writing based on the dialogue or reading, along with explanatory information related to the dialogue or reading. The multiple-choice questions and the reflection writing exercises are designed to encourage learners to observe, be aware of and compare cultural differences. Figure 4 below shows an example of one of the culture dialogue videos.

I. Cultural Reading



- 人物: 媽媽和孩子
- 地點: 在飯廳
- 劇情大概: 媽媽和孩子在朋友家做客, 吃飯的時候飯桌上有一條魚。孩子看到一側魚肉要吃完了, 想把與翻到有肉的一面。媽媽制止了孩子, 動手把魚骨頭夾走了。
- Characters: A mother, her child and the host
- Location: In the dining room
- Summary: A mother and her child were invited to a friend's house. During dinner, there's a fish on the table. The child sees that one side of the fish has already been finished, and wants to flip the fish over to eat the other side. The mother stops the child and takes the bone away so the other side of the fish is accessible.

Figure 4 An example online tutor (culture note video and reading)

Figure 5 below shows an example of one of these culture reflection writing exercises.

Question 2: Write appropriate responses: Preferences

28 responses

Write down your answer

Are there any specific food used for specific purposes or occasions in your culture?

Response
We eat certain glutinous cakes to celebrate certain times of the year (I'm not sure what). We also eat moon cakes on Mid-Autumn Festival and noodles for birthdays (for longevity).
There are various kinds of foods used for different purposes and occasions. Especially during ancestral rituals, we use specific types of food.
Not to my knowledge
seaweed soup is for birthdays
Noodles are meant to be eaten on your birthday since the length of the noodle represents long life.
Black eyed peas on Memorial Day
Turkey for thanksgiving.
Suckling pig is eaten during festivities.
Yes. Ricecake soup for new years.
Yes, many korean holidays require specific foods that bring good luck.

Figure 5: An example online tutor (culture reflection responses)

3. Chinese Online Assessment Content

There are test pool modules developed for each unit to be used for assessment of learning outcomes of the OLI Chinese online program. There are 18 units in the Elementary Chinese online program. Unit 1 is the Pinyin and Pronunciation unit, and the test pool developed for it focuses on recognition of and discrimination between fundamental Chinese phonetic units such as tones, initials, and finals. Units 2 through 18 share a similar testing format, with exercises covering listening comprehension, character and vocabulary recognition and use, grammar and word order, reading comprehension, consolidation of skills, and cultural knowledge. For each unit around 100 test items were created for the pools. Figure 6 (c.f., next page) shows an example of a unit test pool module, showing a learner's score, time spent on the test module and quick feedback after submission for review.

4. How to Access and Register for the OLI Chinese Online Program

The CMU OLI Chinese Online program provides innovative, flexible, and affordable options for students, independent learners, and instructors looking to enhance their Chinese language education.

Chinese 1 Unit 11 test

Schedule: [Update](#)
Available now.

Started: 12/19/2022 3:19:25 PM EST
Submitted: 12/19/2022 3:25:43 PM EST
Score: 78%
Points: 35 out of 45

Question 39

Read the passage and choose the correct answers. What I want to do for Daming's birthday?

✘ Points: 0 out of 1

我的室友叫李大明,他是法國(国)人,他很會(会)做飯(饭)。今天是我的生日,他為(为)我做了很多法國(国)菜,好吃極了。下個月是李大明的生日,我也要為(为)他做一些中國(国)菜。我要做一盤(盘)炒飯(饭)或者炒麵(面),一些餃(饺)子,還(还)有兩碗湯(汤)。

- A. I want to cook some Chinese dishes for him.
- B. I want to cook some French dishes for him.
- C. I want to cook some Japanese dishes for him.

[Feedback](#)

Incorrect

Figure 6 An example online assessment (Unit test pool module)

The OLI platform is open for registration and use at the OLI website <<https://oli.cmu.edu>>. Users can go to the website, create an account, and then access the content. There are several options available to support different uses:

- As a for-credit course offering – The OLI Chinese Online courses have been designed by language experts at CMU and the materials make an appropriate and effective base for online, face-to-face, and hybrid courses. Instructors first set up the course content by selecting the units, setting due dates if desired, giving the course a title, and creating a course key and a password if desired. Instructors then provide the course key to their students. Each student will create their own account on OLI and enter the course key to join the course. Each student will pay a \$25 key which covers the entire course content, as well as OLI technology updates and maintenance. Instructors and the teaching assistants use the course for free.
- For independent learners – There are two options for independent language learning through OLI at CMU: self-paced courses and instructor-led courses.
 - Self-paced courses – Independent learners may access and use an online language course for only \$10. The auto-graded Chinese Online courses are great

- opportunities for motivated learners looking to improve their Chinese skills. These users can make their own plan to pace themselves through the materials.
- Instructor-led courses – Students who select this option will be part of a language learning cohort community led by an instructor, which includes self-paced language study, 14-week course with auto-graded materials, weekly live class (60 minutes) on Zoom with an expert language instructor, weekly cohort emails with suggested pacing and links to external resources, access to an instructor via email for any questions you may have about grammar, vocabulary, and/or culture, and a certificate or certificate with distinction (based on your progress through the course) upon course completion. This option is planned to launch in Fall 2023 for Chinese online.

Through all these options, the OLI Chinese online language courses are great tools to help users take their Chinese language skills to the next level.

5. Concluding Remarks

We have made a great effort to develop a pioneering and innovative OLI Chinese Online curriculum, integrating the national 5Cs principles of foreign language learning, Content-based instruction (CBI), Technology-enhanced learning (TEL), and flipped classroom learning practices in its content and learning activities. We hope that OLI Chinese online can attract more users from other institutions and individual learners around the world.

Open learning educational resources can provide great benefits for both individuals and institutions. They give institutions an alternative to resource-intensive development of their own online courses, helping institutions meet the needs of students who need more flexibility in their time schedules and allowing them to serve a more geographically-distributed student pool. They also provide potential as a means of gathering data for learning-related research. For individuals they can provide a semi-structured approach to learning without the costs and restrictions associated with formal enrollment at a college or university.

The OLI Chinese course has been a successful experiment, and has enabled students with tight schedules to pursue Chinese study and achieve positive learning outcomes. Moreover, it has promoted interdisciplinary collaboration among professionals from different fields, such as language instructors, psychologists, psycho-linguists, human-computer interaction specialists, and computer tool developers. This collaboration has endeavored to bring about innovative teaching and robust learning, and to have a positive effect on learning research.

By sharing our experience of developing the Chinese online course on the OLI platform, we hope we have provided some useful observations on the nature of the OLI platform, on the benefits of open educational resources, and on the challenges of building a course as an open educational resource.

Note: The Chinese online course is one of the LearnLab courses supported by the Pittsburgh Science of Learning Center (PSLC, <http://www.learnlab.org>), which is funded by National Science Foundation award number SBE-0354420. The Chinese online program was migrated to the OLI platform in 2012. Sue-mei Wu was the leader of the PSLC Chinese LearnLab course. She is also the PI and coordinator of the OLI Chinese online project.

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Appendix A

SCOPE & SEQUENCE 范围和顺序 Unit topics and Communicative Objectives 单元主题, 教学目标 & 交际活动

Unit 1: Foundation: Pinyin introduction & basic expressions (第一单元: 拼音介绍 & 基本用语)	-Pinyin (Chinese phonetic transliteration system) -structure of Chinese syllables -Chinese tones and pronunciation -basic Chinese expressions
Unit 2: Greetings (第二单元: 问候)	-simple greetings -ask and respond to Yes/No questions -meet someone for the first time
Unit 3: Names (第三单元: 姓名)	-ask about names -find out who someone is -ask and respond to a simple inquiry

Unit 4: Nationality and languages (第四单元: 国家和语言)	-introduce people -talk about nationality and languages -talk about others
Unit 5: Talk about studies (第五单元: 谈学习)	-talk about majors in school -talk about what you like to study -find out what someone has
Unit 6 Talk about yourself and your family (第六单元: 自己和家庭)	-self-introduction -talk about family, occupations -discuss what you want to be in the future
Unit 7: Make phone calls (第七单元: 打电话)	-handle various phone situations -ask/tell what someone is doing -make and respond to a plan
Unit 8: Talk about daily schedule (第八单元: 日常时间表)	-describe a daily schedule -talk about your school life
Unit 9: Invitations (第九单元: 邀请)	-talk about ages and birthdays -make and accept an invitation
Unit 10: Requests (第十单元: 请求)	-make / reply to a request -express one's wishes
Unit 11: Order food (第十一单元: 点菜)	-order food at a restaurant -present/choose from alternatives
Unit 12: Shopping (第十二单元: 买东西)	-talk about price, money and currency -go shopping
Unit 13: Locations (第十三单元: 介绍处所)	-describe where something is located -show people around
Unit 14: Hobbies & Sports (第十四单元: 爱好和运动)	-talk about hobbies -describe how well an action is performed
Unit 15: Travel plans (第十五单元: 旅行计划)	-describe the four seasons and weather -talk about means of transportation -talk about travel plans
Unit 16: Illness (第十六单元: 生病)	-go to see a doctor -describe something that has happened
Unit 17: Rent an apartment (第十七单元: 租房)	-describe an event and its cause -rent an apartment
Unit 18: Future plans & wishes (第十八单元: 计划和祝福)	-future plans and expressing wishes

Appendix B

Sample Learning Materials: Each Unit (Units 2-18) contains the following main content and activities:

Scope and Sequence (Units 1-18) 范围和顺序

Elementary Chinese I Online will cover 8 units (Units 1-8). It will take about 2 weeks to finish a unit (including learning, practice, review, online web activities, group class meeting, individual instruction, Character Quiz and tests, etc.). Unit 1 is the Pinyin foundation, and Units 2-8 will cover: Main Vocabulary (生词 181 items), Characters in the Character Book (汉字 201), Text Notes (注解 28 items), Grammar Points (语法点 32 points), and Culture Notes (文化信息 8 items)

Elementary Chinese II Online will cover 10 units (Units 9-18). It will cover: Main Vocabulary (生词 352 items), Characters in the Character Book (汉字 307), Text Notes (注解 37 items), Grammar Points (语法点 30 points), and Culture Notes (文化信息 10 items)

OLI Learning materials: Unit 1 is the Pinyin Foundation and each Unit (Unit 2-8) generally contains the following main content and activities:

I. Main Content 主要学习内容:

- Objectives 目标;
- Main Video (+ questions) 视频和问题;
- Video Preview Exercises 视频课前问题;
- Text of the Video 视频文本 (情景课文/对话);
- Text Translation and Pinyin with Slower Audio 视频文本, 拼音, 英文和慢速录音音频; (***) this section is very important for users to master the main content of the unit: listen and repeat after the sound files)
- Text Notes 课文注解;
- Vocabulary Tables 生词表;
- Video Comprehension Exercises 视频综合理解练习

II. Listening 听力练习

- Pinyin and Vocabulary Recognition Exercise;
- True and False Exercise;
- Translation Exercise;
- Question Answering Exercise

III. Grammar 语法

- Grammar Notes;
- Sentence Jumble Exercise;
- Dialogue Jumble Exercise

IV. Reading Exercises 阅读识字练习

- Reading Comprehension

V. Consolidation Exercises 综合练习

- Picture Description Exercise 看图描述练习;
- Video Description Exercise: (with Video Segments) 视频练习;
- Video Description Exercise : (with Text Scripts) 视频与文本练习

VI. Culture Link 文化点滴

- Culture Video 文化视频;
- Culture Notes 文化信息;
- Culture Reflections Exercise 文化心得写作

VII. Assessment 学习评鉴: Online Test Module (around 100 test questions for each Unit, with computer-automated grading and feedback) 单元综合题库, 电脑随机抓取考题, 递交后即时反馈

VIII. Characters 汉字学习

Characters in the Character Book 写字簿 (繁/简体字) (both traditional and simplified versions are provided, with stroke order, radical meaning and sentences examples)