# Rwandans Studying Chinese A Case Study at the University of Rwanda - Confucius Institute 

${ }^{1}$ Kong Lingyuan; ${ }^{2}$ Yanzigiye Beatrice; ${ }^{3}$ Stambach Amy<br>${ }^{1}$ Chongqing Normal University, China; ${ }^{2}$ University of Rwanda - College of Education; ${ }^{3}$ Oxford University


#### Abstract

This paper explores Rwandan students' reasons for learning Chinese. To date, most research on modern language use and acquisition has focused on European languages. This study in contrast focuses on Chinese as a modern foreign language that is gaining uptake in Rwanda. Based on survey data gathered from 46 students enrolled in Confucius Institute language programs, and on selected classroom observations, this study illustrates that most students surveyed learn Chinese in order to advance their own economic and social prospects. The study adds to current research on modern foreign language instruction in two ways. First, whereas a body of research suggests a decline in learners' interests in foreign language learning, this study suggests that Rwandan students are highly motivated to learn a foreign language. Second, where many studies propose greater use of the targeted language in order to improve students' interest in foreign languages, this study illustrates that Chinese language teachers are already actively using the targeted language of Chinese to teach Rwandan students.


Keywords: Chinese, Language acquisition, language pedagogy, Rwanda, comparative education

## Introduction

Researchers, students, and policymakers alike often regard the teaching and learning of modern foreign languages (MFLs) as important for at least three reasons. The first is to expand students' general knowledge of the world, for reasons that intercultural dialogue and communication are often seen as important skills that students should develop (Kushner, 2007). The second reason is to improve students' self-confidence, personal horizons, and interest in learning: Studying the structure, use and idioms of multiple languages positively correlates in some settings with students' attitudes toward themselves and toward education (Bartram, 2010; Ushioda, 2009). The third reason, and the one in which students appear to be most interested (HerrandoRodrigo, 2015; Yeh 2014), is for developing new technical skills that they can use on the job; language in this regard is seen as a practical skill that may be converted into salaries (Gardner, 1985 and Ely, 1986 as discussed in Lin 2013, pp. 18-19).

In theory, researchers' focus on modern foreign language should examine all languages around the world. But in practice, research on modern foreign languages tends to focus on students' reasons for studying French and English, sometimes Spanish, in Europe and parts of North America. This narrow focus overlooks that Chinese is widely spoken around the world. It is also flawed to ignore the teaching of modern languages in the complex, multi-linguistic regions of parts of Africa.

To fill this gap, and to understand more fully students' reasons for studying languages other than Romance Languages, this paper focuses on students' uptake of Chinese in Rwanda. Confucius Institute programs in Rwanda are interesting loci for addressing this subject. The Confucius Institute at the University of Rwanda College of Education offers courses at the beginning through advanced levels. Evening classes are held during term at Remera campus, a neighborhood within Kigali. Additionally, language instruction is offered as an elective or option at four secondary schools: Inyange Girls' School and Kiyanza Secondary School, in Northern

Province; Model Secondary School in Eastern Province; and Indatwa and Inkesha Secondary School in Southern Province. Confucius Institute programming began in 2005, the same year that the Rwandan Ministry of Education and Culture authorized English as the official language of primary through tertiary education. A survey and study of Chinese language learning among university and secondary school learners in Rwanda thus provides an opportunity to move beyond narrow configurations of MFLs as European.

Indeed, Rwandans' use of and familiarity with multiple languages is broad and remarkable by any standard. Kinyarwanda, the most widely spoken language, is complemented by widespread knowledge of French, English, and Kiswahili. Additionally, some people speak other regional languages including Luo and Luhya, which are spoken mainly in western Kenya and South Sudan, and Luganda and Kirundi, spoken mainly in Uganda and Burundi, respectively. The mix of languages within Rwanda reflects a history of migration and trade as well as of colonial languages introduced within a country primarily characterized by Kinyarwanda. Rwandans' complex multi-linguality provides a key context for broadening scholars' and international policymakers' narrow focus on European foreign language teaching.

Before we present the design and data from this study, a brief review of three MFL bodies of literature will help to contextualize our findings. The first concerns learners' interests in foreign language learning.

## Are students interested in learning a foreign language?

Although the number of programs and courses for foreign languages may, in certain countries, be increasing, some research indicates that students' enthusiasm for learning a foreign language may be waning. One area concerns students' personal engagement with modern foreign languages. Graham (2004), Macaro and Erler (2008) and others have found that, at least among UK-based English language speakers choosing to study French, fewer students are enrolling and, of those who do, proficiency scores are falling.

A more general literature on second language learning suggests that student disaffection with second language learning is not only confined to English language students studying French in Britain. Ellis (2005, 2010), for instance, has summarized a body of work linking motivation for second language learning and students' abilities to decode and use foreign language (see also Erler \& Macaro, 2011; Graham, 2002). A related literature on foreign language learning in the U.S. and Canada indicates a similar phenomenon of students' lack of language study (Draper, 2002 and National Geographic-Roper, 2006 in Longview Foundation, 2008).

In contrast however, and as our data will illustrate below, students in Rwanda do indeed seem to be very interested in learning Chinese as a modern foreign language. We will offer some explanations as to why, in our discussion section.

## Why do students learn a second language?

Another body of research indicates that students study a second language for a variety of reasons, but typically for either instrumental reasons (a job) or for what Piquemal and Renaud (2006) call 'personal' factors having to do with languages that their friends and/or families speak. Among UK students studying German, for example, Busse and Williams (2010) found that students chose to study languages in secondary school, at a
time when they believed languages were a 'pathway' to employment but, as they matriculated, fewer students were interested in continuing. Many felt that English was sufficient for achieving personal and employment goals.

At the same time, other research indicates that, among students who do continue to study a second language at university, most do so because they have specific academic or professional reasons. Such seems to be the case with regard to UK students studying Zulu. According to Marten and Mostert (2012, p. 101), students "studied Zulu for personal, academic, and professional reasons and their motivation was integrative as well as instrumental." In other words, research suggests that students at university learn a second language when that language enables them to meet not only personal goals (which is more the reason for students' learning at lower levels) but also specific academic and instrumental goals that they are pursuing for life-long purposes. As we elaborate in our discussion, Rwandan students of Chinese seem to have professional goals at the university level and personal and exploratory goals at the secondary level.

## Do teachers teach by using the foreign language of study?

The third body of MFL literature that helps to contextualize our findings concerns research about teachers' use of the targeted language to teach a foreign language. Many studies suggest that students' lack of engagement with modern foreign languages might be remedied by teachers' more deliberate use of the foreign language in foreign language instruction. Such use of the foreign language as the language of instruction is crucial. While most researchers appear to agree that enhancing students' own sense of success is an important aspect influencing proficiency (see literature review in Lin, 2013), some researchers focus on details of the curriculum as a way of improving fluency (Evans and Fisher, 2009) while others stress the importance of improving pupils' efficacy through teachers' use of the target language. That is, this latter body of research indicates a need for students to be taught in the language they are learning.

What is interesting regarding our own research about Rwandan students' study of Chinese, however, is that Confucius Institute teachers do indeed use Chinese to teach beginner Chinese language students, at least to a very large extent. We will provide examples of this use of the target language as the medium of instruction in our "unexpected findings" section; and we will consider some of the implications of this finding for other studies, in our section on "discussion."

## Aim and Methodology of this study

Initially this study aimed to know whether speakers of many languages had an easier time than monolingual students in learning Chinese. The research was initially guided by the following research questions, later modified in view of collected data.

1. Does multilinguality impact Chinese learning?
2. Do multilingual speakers have more difficulty than monolingual speakers in learning Chinese?
3. Are monolingual students more successful than multilingual speakers in learning Chinese?

We initially hypothesized that multilingual speakers have more difficulty learning Chinese than do monolingual speakers, and that Kinyarwanda and Kiswahili-only speakers have more difficulty learning the
language than do French or English-only speakers In the course of conducting the research. However, early in the course of our study, we became aware that these questions would not be testable given (a) the relatively small size of our sample population and (b) the design of our survey instrument, which was in English and thus in a manner failed to adequately control our object of study. Nonetheless, we found that aspects of the survey revealed potentially interesting information. We constructed the survey in two parts, and we augmented the survey with class observations. Part 1 of the survey asked respondents to indicate age, highest level of formal schooling, languages that they (and in some cases their parents) speak, months of Chinese language study, and reasons for studying Chinese. Part 2 consisted of a two-part knowledge test. Six questions required students to translate Chinese into English; five questions asked them to translate English to Chinese. Pinyin and Hanzi were provided, and either or both as responses were acceptable.

We administered the survey to73students total: to 45 students enrolled in Confucius Institute classes held at the Remera campus of the University of Rwanda and to 28 students enrolled in an after-school Chinese class at secondary schools elsewhere. We received 46 responses total. Most students at the Remera campus were University students however a handful were non-university adults living and working in the area. All of the students at the secondary school were themselves secondary school-going children. All respondents' answers to Part 2 were marked and scored according to the number of correct responses provided. Scores ranged from a perfect 22 out of 22 to the one score of zero. Using Excel 14.3.8, we entered survey data into a spreadsheet. We applied function tests to correlate Part 2 language test results against students' length of Chinese study. We ran these tests separately for secondary students and for university enrollees.

Regarding languages spoken by participants and their parents, we labeled the languages numerically in the order students reported them. Although we did not ask participants to rank their most to least proficient language, we inferred from their ordering a general degree of language familiarity. We also applied this assumption about numerically ranking the most to least well-spoken language to a numbering of reports of parents' spoken languages.

Between 25 March and 3 April, we also observed teachers' and students' interactions at Confucius Institute university classrooms and, on one particular day, at the secondary school. Observation enabled us to see the context within which students learned and studied Chinese and to observe the context in which students completed our survey. Students worked in groups of two to five to answer Part 2 questions of the survey, and they spoke in Kinyarwanda among themselves to collaboratively translate between Chinese and English. Thus our observations revealed to us a flaw in our survey administration and design, and to recognize that the survey we administered currently tests for English-to-Chinese translatability, not for the impact of multilinguality on Chinese learning. Administration of the survey could have been more deliberately proctored, in order to ensure that one completed survey reflected, literally, one respondent's thoughts. Nonetheless, our survey results, combined with classroom observations, reveal some interesting as well as unexpected findings.

## Research findings

Raw data from the survey are indicated in Chart 1. Noteworthy is the finding that all surveyed students selfidentify as multi-lingual. Such information immediately requires that we modify the premises of our hypotheses, and also allows that we are now able to report specifically on the breadth of languages these students speak. The range of languages is impressive and includes Kinyarwanda, English, French, Swahili, Chinese, Latin, Luhya and Luo. The high number of Kinyarwanda respondents and their parents indicates that most students are, by implication, likely born of two Rwandan parents, although some students-and one in particular at the university-are from the region more generally, not from Kigali or Rwanda specifically. The mention of Latin may reflect a Catholic-focused education rather than the literal language spoken every day.

Data in Chart 1 also indicate that most students are young adults between the ages of 28 and 17 years. The youngest and oldest participants (aged 10 and 44, respectively) are exceptions among their peers. Most have had more than 10 years' formal schooling, although interestingly, two adult students in the university classes, which are open to the general public and not only to university students appear to have had only a primary-level or partial secondary school level experience (see the Advanced 5 and the Beginner 2 participants).

A third survey finding concerns the relation of length of study to proficiency. Importantly, there appears to be no statistically significant correlation between months of Chinese study and proficiency on our two-part test for Secondary School Beginners and for University Advanced students. ${ }^{10}$ The graphic labeled UniversityAdvanced indicates a large range between points indicating months of study and points indicating test score. In statistical terms, the correlation between points on the x and y axes is known as the regression line. R -square is a calculation that describes the closeness of points to the regression line. A perfect correlation of one-to-one would result in a forty-five degree angle regression line, and in an R-square of 1.0 . As is, the University Advanced regression line is nearly flat, and the R -square number is close to zero. Therefore, there is virtually no correlation within these responses between length of study and test score. Moreover, the perfect score ( $\mathrm{n}=22$ ) of the first and last $x$-axis indicator suggests perhaps these students worked together in completing the survey.

Similarly, regarding the graphics labeled Secondary School Beginners and Second Additional School Intermediate, the R-square values are close to zero. Even though the lines of regression are closer to forty-five degrees than to zero, the weak R-square numbers indicate that proficiency is not significantly linked to study length in these populations. Yet in contrast, the chart labeled Additional School Intermediate reveals a relatively strong correlation between months' study and test score. The R-square of 0.64 is closer than half way to a perfect $R$-square of 1.0 ; and the slope of the line is approximately forty-degrees, only five degrees short of a line that would show linear correlation.

[^0]


## Unexpected findings from this research

In view that multilingualism and length of study were predicted to correlate positively with test score our findings are expected. However, more interestingly in regard to the two bodies of literature introduced above, findings from this research indicate two points of potential research contribution.

The first is that students studying Chinese in Rwanda are in fact very interested in learning Chinese as a modern foreign language. This finding is derived from participants' responses to an open-ended survey question, which asked them, "Why are you learning Chinese?" Answers included the following:

Because I want to travel to China (10)
Because I like Chinese and other languages (10)
For business purposes (5 respondents)
To know Chinese history, language and culture (6)
To cooperate with China (3)
I have a target to speak at least 4 international languages (1)
Because I want to start a consulting firm (1)



As Chart 1 in the Annex indicates, not all students received the same version of the survey. Beginners 1-7 and Intermediates 1-6 not only were not asked to report their months of Chinese study but they also were not asked to respond why they want to learn Chinese. Thus the answers given immediately above reflect 20 of the total 33 respondents' points of view. In addition, some of these 20 respondents offered more than one reason, and their responses have been tallied twice.

Going into the study, we did not anticipate a response as specific as "because I want to start a consulting firm" or "because I have a target language to speak at least 4 international languages." Such specific and highly motivated responses, we believe, indicate a high degree of specificity in students' reasons for studying the language. Additionally, the goal of traveling to China and studying Chinese for business purposes indicates a much higher degree of focus and goal-setting among these students than most UK or North American-based students studying foreign languages such as French or Spanish, as reported in literature cited above.

The second unexpected finding from this work is that Confucius Institute teachers do indeed use Chinese to teach beginner Chinese language students. This finding comes from our university classroom observations. Beginner and Advanced classes were observed for a total of seven hours across this two-week interval. Both were held at the University of Rwanda, in one or the other of the two Confucius Institute classrooms. Particularly in the Beginner class, though certainly in the other, the Chinese language teacher (in both classes, a Chinese-born, first-language Chinese speaker) began the lesson using the target language of Chinese. Despite both classes students' have studied only for a minimal time-in the case of Beginners, only for approximately 8 weeks-students and teachers interacted to a very high degree in the target language.

The Beginning Level teacher was particularly diligent in repeating and contextualizing Chinese as a medium for instruction. Through hand and face gestures, and through close eye contact with Beginning students, the Chinese language teacher communicated more than half of the content (based on general but not systematic observation) in the target language of instruction.

To be sure, the level of conversation in both the Beginning and the advanced classes involved direct speech and simple grammar. However, such language forms were entirely in keeping with the language levels of students in all four language areas: speaking, reading, writing, and listening.

Equally impressive was the degree to which teachers in both the Beginning and the advanced classes used Hanzi script (characters) rather than the Latin alphabet (pinyin) to write and ask students to read Chinese. Students at both levels grasped the relationship between Hanzi as an image, and Chinese as a spoken form-a connection that is particularly difficult for speakers whether of Kinyarwanda or of, for example, French or English, who are used to a particular phonetic relationship between script and speech.

Overall then, participants' responses to the open ended question, combined with teachers and students interactions as understood through observations, revealed two unexpected findings: one, that students in the Rwandan university settings were highly, and personally, extremely well motivated to study Chinese; two, that Confucius Institute teachers in this setting did an impressively fine job of using the target language as the
language of instruction. Both findings add to current research on modern foreign language teaching in two ways, both of which we elaborate in the following "discussion and implications" section.

## Discussion and implications

Unexpected findings move current research on modern foreign languages further in two ways. One, these findings indicate that students of Chinese studying in Rwanda regard Chinese as a specifically modern foreign language. They see Chinese as offering specific outcomes that are relevant to the current and future lives. Namely, they take a pragmatic and instrumental approach to studying Chinese in order to expand their horizons and opportunities. One of the implicit associates of the idea of being modern that is embedded in the idea of modern foreign language study is that the language of communication is connected with students' improvement. This research on Rwandan students' use of Chinese to improve their own prospects for the future expands on conventional and embedded, if not directly Eurocentric, visions of modernity as related to European (French, Spanish, English) language learning. African students' study of Chinese is an important new area for research. With such a complex language field in multi-lingual Africa, and with such a growing presence of Chinese language taught worldwide, specifically through Confucius Institutes, it is important and indeed essential that scholars and researchers of modern foreign languages look further into Chinese languages used and taught in Africa.

Second, these findings carry implications for assertions about target language use in teaching. Contrary to a body of research that holds that early language-level teaching is conducted in students' first language, rather than in the target language itself, this study indicates that Chinese language learning in these classes is effectively being conducted to a high extent in Chinese. But this finding calls for further research. Are Confucius Institute teachers of Chinese especially well trained in using the target language for modern language teaching? Or are these two classes-particularly the beginning level class-staffed with teachers who are particularly talented in using Chinese to teach Chinese, at early levels? Our preliminary sense is that both are the case: that Chinese pedagogy as provided by trainers of Confucius Institute instructors is especially successful at using the target language; and, that the beginning level language teacher observed in our study was an especially engaging and effective teacher.

Finally, our findings indicate that contrary to what scholars have found of languages in other parts of the world (mainly North America, Europe and the UK; see again Graham 2004, Macaro and Erler 2008, Draper 2002, and National Geographic-Roper 2006), there is no lack of interest in foreign language study, at least when it comes to learning Chinese. Students in Rwanda do indeed seem to be interested in studying Chinese as a modern foreign language, although we should emphasize that our sample is itself selective. Of these students, those enrolled at the University (including adults from the community) appear to have highly specific reasons and goals for participating. Much as others have found regarding English and Spanish learning in other settings (Herrando-Rodrigo, 2015; Yeh, 2014), our study suggests that adult-aged students in Rwanda are most interested in studying Chinese to develop technical skills they can use for work. In contrast, students at the secondary level seem to be learning the language for exploratory, even personally enjoyable reasons. Put
another way, responses to the open-ended part of our survey suggest that Rwandans study Chinese for many of the reasons people elsewhere study a second or foreign language: for personal, academic, and instrumental reasons as well as, among post-secondary students, to advance their professional goals (cf. Piquemal and Renaud, 2006; Marten and Mostert, 2012).

Regarding each of these three points above-that students in Rwanda are highly motivated to study Chinese as a modern foreign language, that their reasons for language study seem to vary by educational and professional development levels, and that Chinese teachers are well trained in using the target language for instruction-our research calls for further study of the relation between students' motivation and teachers use of target language. Thus our study, while differing in detail from works reviewed above, follows in the spirit of seeking to improve and expand the study of modern foreign language teaching worldwide.

## Conclusion

In response, then, to our article's title-Why do Rwandans Study Chinese?-our research study offers the main reply that students do so to advance their own economic and social prospects. Although we do not find a correlation between multilingualism and students Chinese language success, and although we are clear in recognizing that our design and instrument may not have well tested for this, we do, through this research, find a suggested relation between students' engagement and interest in learning Chinese with teachers' use of the language in the classroom. A positive feedback loop develops to connect students' motivation with teachers' use of the language. The former brings the students to the classrooms, the latter keeps students well engaged.

## References

Bartram, B. (2010). Attitudes to modern foreign language learning: Insights from comparative education. Continuum International Publishing Group.
Busse, V. (2010). Why German? Motivation of students studying German at English universities. Language Learning Journal 38(1):67-85.

Cushner, K. and S. Brennan, ed. (2007).Intercultural student teaching: A bridge to global competence. Lanham, MD: Rowman\& Littlefield.
Draper, J. B. and J. H. Hicks. (2002). Foreign language enrollments in secondary schools, fall 2000in. American Council on the Teaching of Foreign Languages, Washington, D.C.
Ellis, R. (2005). Principles of instructed language learning.Asian EFL Journal, 7:3. Available at http://www.asian-efl-journal.com/sept_05_re.pdf
Ellis, R. (2010). Second language acquisition, teacher education and language pedagogy.Language Teaching, 43, 182-201.

Ely, C. M. (1986). Language learning motivation: A descriptive and causal analysis. The Modern Language Journal 70: 28-35.

Gardner, R. C. (1985). Social psychology and second language learning: The role of attitudes and motivation. London: Edward Arnold.

Graham, S (2004). Giving up on modern foreign languages? Students' perceptions of learning French. The Modern Language Journal 88, 171-191.

Graham, S. (2002). Experiences of learning French: A snapshot at Years 11, 12, and 13. Language Learning Journal 25, 15-20.

Herrando-Rodrigo, Isabel. (2015). Attitudes and discourse: Spanish practitioners' and undergraduates' survey results. PROFILE: Issues in Teachers' Professional Development 17(1):55-72.
Longview Foundation. (2008). Teacher preparation for the global age: The imperative for change. Longview Foundation: Washington, D. C.

Lin, Yue. (2013). A socio-cultural approach to the study of motivation and attitudes towards the learning of Mandarin Chinese $n$ the U.S.: Secondary school students' perceptions. Doctoral dissertation. Columbia University.
Macaro, E. and Erler, L. (2008).Raising the achievement of young-beginner readers of French through strategy instruction.Applied Linguistics 29, 90-119.
Manchon, R. M. (2008). Taking strategies to the classroom. Where are we now in theory and research? IRAL, 46(4), 221-243.

Marten, L. and Mostert, C. (2012). Background languages, learner motivation and self-assessed progress in learning Zulu a an additional language in the UK. International Journal of Multilingualism 9(1): 101-128.
National Geographic-Roper.(2006). Geographic literacy study.In Longview Foundation Report, 2008.
Piquemal, N. and R. Renaud. (2006). University students' beliefs and attitudes regarding foreign language learning in France.TESL Canada Journal 24(1): 113-133.
Ushioda, E. (2009).A person-in-context relationship view of emergent motivation, self and identity.In Z. Dornyei and E. Ushioda (eds.), Motivation, language identity, and the L2 self. Clevedon, UK: Multilingual Matters, pp. 215-228.

Yeh, Chun-Chun. (2014). Taiwanese students' experiences and attitudes towards English-medium courses in tertiary education. RELC Journal: A Journal of Language Teaching and Research. 45(3):305-319.

## Annex：Chart 1．Raw data from survey

|  |  |  |  |  |  |  |  |  | $\mid$ |  |  |  |  |  | 壹 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 豪 |  | $$ |  |  |  |  | $$ | $\begin{array}{\|l} \text { 営 } \\ \text { 总 } \end{array}$ |  | $\begin{aligned} & \text { 空 } \\ & \text { 总 } \\ & \text { 害 } \end{aligned}$ | 镸 | $\begin{array}{\|l\|} \hline \text { 空 } \\ \text { 喜 } \\ \text { 空 } \end{array}$ | 镸 | 镸 | $\begin{aligned} & \text { 票 } \\ & \text { 営 } \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 空 | E <br> es | m <br> 돈 | $\leq x$ E | $\begin{aligned} & \because=1 \\ & \Rightarrow=1 \end{aligned}$ |  |  | $\begin{array}{l\|} \hline \because \\ B \end{array}$ | $\begin{aligned} & \because \\ & \because \\ & \because \end{aligned}$ |  | E3 B． | ［s | $\begin{array}{l\|} \mathrm{m} \\ \mathrm{~B} \end{array}$ | $\begin{aligned} & \mathrm{m} \\ & \mathrm{E} \end{aligned}$ | E \％ | $=\sim$ $=\sim$ | $\begin{aligned} & E= \\ & E S \end{aligned}$ | $\because$ | $\begin{aligned} & \Rightarrow=2 \\ & \Leftrightarrow \end{aligned}$ | $\begin{aligned} & \because \Rightarrow \\ & \because= \end{aligned}$ | $\begin{aligned} & \Leftrightarrow \\ & \Leftrightarrow \end{aligned}$ | rs <br> 방 | $\because$ |  | $\approx$ ૬ | $\begin{aligned} & \mathrm{s} \\ & E \end{aligned}$ | $\begin{aligned} & \because \\ & \ddot{\omega} \end{aligned}$ | $\begin{aligned} & \mathrm{ra} \\ & \equiv \end{aligned}$ | ses $\vDash$ | c $=$ | $\begin{aligned} & s=3 \\ & \approx \end{aligned}$ | $\begin{aligned} & \because \\ & \because \end{aligned}$ | $=$ | $\begin{aligned} & \approx \\ & \approx \end{aligned}$ | $\begin{aligned} & \Leftrightarrow \\ & \Leftrightarrow \end{aligned}$ | $\begin{aligned} & = \\ & = \end{aligned}$ | $=$ | $\begin{aligned} & \because \\ & \therefore=1 \end{aligned}$ | $\begin{aligned} & \approx \\ & F \end{aligned}$ | $\begin{aligned} & 8 \\ & = \end{aligned}$ | -1 -1 | $\circ$ $\%$ | $\therefore$ | F | $=1$ $=$ | 二－ F－ |
|  |  |  |  |  |  |  |  |  |  |  |  |  | $\stackrel{H}{ }$ | $\because$ | 5 | － | $\leqslant$ | $E$ | － | $\infty$ | $\infty$ | $\infty$ |  | － | $\cdots$ | $\infty$ | $\cdots$ | $\infty$ | $=$ | $\infty$ | $\sim$ | － | $\infty$ | $\infty$ | $\cdots$ | Iz | E | 5 | is | ¢ | $\infty$ | F | F | $\approx$ | $\square$ |
| 5 | E | is | ז | $\Sigma$ | $=$ | ＋－ | $\because$ | － | $=$ | ■ | $\cdots$ | $\cdots$ | ＝ | ᄃ | Fs | rs | E | F | ： | $\pm$ | Is | rs | Is | F | F | $=$ | 5 | I | ＝ | $\pm$ | $E$ | E | $=$ | － | $\cdots$ | $\approx$ | $\checkmark$ | $: \%$ | Es | 8 | r－ | こ | ： | $\cdots$ | r－ |
| - - | $\cdots$ | $\stackrel{-}{n-}$ | － | ${ }_{-}^{\infty}$ | $\begin{aligned} & -\infty \\ & - \end{aligned}$ |  | $\cdots$ |  | … |  |  |  | $\cdots$ | $\ldots$ |  | $\cdots$ |  | $\cdots$ | － | $\ldots$ | $\cdots$ | $\ldots$ |  |  |  |  |  |  |  | $\omega$ | - $\ldots$ | － | $\cdots$ |  | $\cdots$ | $\ldots$ | $\cdots$ | $\cdots$ | $\cdots$ | $\ldots$ | $\cdots$ | $\cdots$ | $\cdots$ | - $\cdots$ | $\sim$ |
|  | － |  |  | ～ | $\cdots$ |  |  | $\cdots$ |  | $\cdots$ | $\cdots$ |  | $\cdots$ | － | ： | － | － | $\cdots$ |  | $\cdots$ | －－ | $\cdots$ |  |  | $\cdots$ | $\cdots$ | $\sim$ | $\sim$ |  | $\sim$ | $\cdots$ |  | $\cdots$ | － | $\cdots$ | $1-$ | $\cdots$ |  | $\cdots$ | $\cdots$ |  | $\cdots$ |  | － | $\cdots$ |
|  | ＋ |  |  |  |  |  |  | ＋ |  |  | － |  |  | ．- | $\cdots$ | － |  |  | $\cdots$ |  |  |  |  |  | － |  |  |  |  | － |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  | $\cdots$ |  | － |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ＋ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ | $\cdots$ | － | $\cdots$ |  | $\cdots$ |  | $\cdots$ | － | $\cdots$ |  | － | － | － | $\cdots$ | $\omega$ |  | $\cdots$ | $\cdots$ | $\cdots$ | － | － | $\cdots$ | － | $\cdots$ | － | － | － | $\sim$ | － | $\cdots$ | － | $\sim$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － |  | $\cdots$ |  |  |  |  |  |  | － |  | $\cdots$ |  |  |  | － | $\cdots$ | $\cdots$ |  |  |  | $\cdots$ | $\cdots$ |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  | － |  |  |  | $\cdots$ | $\sim$ |  |  |  |  | $\sim$ | $\sim$ |  | $\omega$ |  |  |  | $\sim$ | $\sim$ | $\sim$ | － |  | $\sim$ | － | － | $\sim$ |  | － | － |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  | $\cdots$ |  | $\cdots$ |  |  |  |  |  | $\cdots$ |  |  |  |  | $\cdots$ |  |  |  | cs |  |  |  |  |  |  | $\pm$ |  |  |  | ， |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  | － | $\cdots$ | － | － | － |  |  | - | $-$ |  |  | － | $\cdots$ | － | － | $\ldots$ |  |  |  |  | － | $\ldots$ | $-$ | - | $-$ | － | $\cdots$ | $\cdots$ | $\cdots$ |  |  | － | $\cdots$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  | － |  |  |  | $\rightarrow$ |  |  |  | － |  | $\cdots$ | $\cdots$ |  | c． |  | $\sim$ |  | ．${ }^{\text {a }}$ | $\cdots$ | $\cdots$ | $\cdots$ |  | $\rightarrow$ | $\cdots$ | $\cdots$ |  |  |  | $\bullet$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\stackrel{-}{ }$ |  |  |  | $\begin{aligned} & \cdots \\ & \infty \end{aligned}$ |  |  |  |  | $\omega$ |  |  |  |  |  | $\cdots$ |  |  |  |  |  |  |  |  |  |  | $\cdots$ |  |  | $\cdots$ | $\cdots$ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ＋ |  |  |  |  |


[^0]:    ${ }^{10}$ Some students' survey forms excluded the question about the number of months they studied Chinese. That is why the raw data chart shows rows 35 through 47 Column E as blank.

