Optimized Application of the Mobile ICT-Based Mini Program to Note-Taking Training for Consecutive Interpreting

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Abstract. Note-taking is essential to consecutive interpreting as a means to support interpreters' memory of the source information. The present study aimed to probe into the effect of the optimized model of the mobile ICT-based mini program on student interpreters' note-taking competence for consecutive interpreting. An experiment was carried out among 70 students in two classes, with the experimental group and the control group performing the 21-day task of posting their daily note-taking exercise records on the mini program Xiaodaka with the optimized model and the default conventional model respectively. Both qualitative and quantitative data were collected, analyzed and discussed by means of questionnaires, SPSS and interviews. The results showed that the optimized model, compared with the conventional one, better facilitated the student interpreters' construction of a note-taking system, and mastery of some note-taking tactics. Pedagogical implications were discussed from the perspectives of assignment design and material selection.

Keywords: Mobile ICT · mini program · online learning · note-taking training · consecutive interpreting

1 Introduction

Professional conference interpreters are expected to deal with passages at various lengths in a consecutive interpreting (CI) task, ranging from very short CI of five to ten fragments, short CI of a few sentences at a time around 30 to 45 s, to medium-length CI of 45 to 90 s, and long or full CI of over two minutes, with very long CI of over five minutes being less common [1]. Even when chunks of one to two minutes have become the norm in traditional full consecutive settings, student interpreters are still encouraged to challenge themselves to segments as long as five to seven minutes for training purposes, which requires both good memory and a highly-developed note-taking technique. To achieve that end, consistent and deliberate practices are most needed for them to work progressively towards a sound and efficient note-taking system.

In the mobile digital era, mobile phone-toting students might prefer to incorporate new information and communication technology (ICT) into their learning toolkits. Xiaodaka, an ICT-based online learning platform where people can post their learning records

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in the forms of texts, images, audios and videos, is widely used as a useful teaching tool in China. However, the default conventional model of the mini program allows learners to lock and keep their posts private, which impairs the effect of the online learning community based on it.

Therefore, the present study aims to probe into the possibility and effect of optimizing the post sharing model of the mobile ICT-powered program in note-taking training for consecutive interpreting courses, which might shed some light on approaches to enhancing the efficiency of note-taking training in the CI course.

2 Literature Review

As Sylvia Kalina points out, even those who considered note-taking a side-product unworthy of scholarly attention still wrote about it, providing recommendations, warnings and instructions which were often passionately defended [2]. Now, few scholars deem note-taking as something trivial to CI. The academia and practitioners have reached consensus on the importance of note-taking to full CI in that it helps to "crystallize and imprint in memory a thought or an image, then at delivery, as reminder to support (not obstruct) a fluent rendition [1]." On such a basis, there are abundant previous studies on note-taking, which fall roughly into two categories in terms of their paradigms, prescriptive and descriptive.

With regard to prescriptive studies, scholars have put forward basic principles and suggestions for note-taking. The note-taking technique prevalent among most well-trained interpreters today can be traced back to the pioneers of the early 20th century, and can be found in publications by practitioners in the 1950s and 1960s, of which Rozan's is the most famous [3, 4]. Later, Matyssek has proposed another system based on more or less the same principles, but is much more elaborate and codified in terms of symbols and combinations of signs [5]. Professionals take Rozan's system as a "Standard Method" of note-taking for CI thanks to its organic principles conducive to adaptation to individual preferences and a great variety of speech types. By drawing on the strengths of the systems raised by previous scholars, Andrew Gillies has built a system of verticality composed of the following parts: diagonal notes, links, hierarchy of values, symbols and abbreviations [6].

Prescriptive studies based on hands-on experience have paved the way for the development of a sound note-taking system among professional interpreters, yet modern scholars want to pierce the veil of note-taking with descriptive studies, which mainly focus on the products and processes of note-taking.

In terms of the products of note-taking, previous studies strove to find out the relations between notes taken and interpreting performance. Dai and Xu carried out a study among six professional trainee interpreters (PTIs) and six non-professional interpreters (NPIs) with interpreting process video-recording, stimulated recall, interviews and scrutiny of real-time notes, which found that, as regards the quantity, the NPIs jotted down more notes of the source information than the PTIs did; as regards the form, the PTIs used fewer phrases, more single words and more symbols than the NPIs did; as regards the language, PTIs used less source language (Chinese) but more target language (English) than the NPIs did. The experiment also indicated that the relations between the features of the

notes and interpreting efficiency were complicated rather than linear and straightforward [7].

A similar study done by Liu has centered around the features of notes taken by high-score and low-score English majors in Chinese to English CI, specifically the quantity, form and language, which demonstrated that there was no significant difference between the two groups regarding quantity of notes, and there was no significant correlation between this parameter and interpreting scores. As regards the form, more symbols and clear separation marks were used by the high-score group, which were positively correlated with interpreting scores, and both groups tended to use more complete Chinese or English words and less English abbreviations and links. Concerning languages, no significant difference had been found between the two groups, but both groups tended to use more Chinese, the source language in their notes, and the language of the notes taken did not significantly correlate with interpreting scores [8].

Liu and Xu took a further step in their study of ten MTI freshmen, which revealed no significant correlations between the total quantity of notes and interpreting efficiency. The efficacy of total quantity of notes was higher than identifiable notes, while that of the latter was higher than effective notes. Faithfulness was more feasible than interpreting efficiency in studies of this kind [9].

Despite impressive findings from the studies above, products of note-taking are so static that they fail to reveal the dynamic process of note-taking. Some scholars have tried to represent the whole process by making full use of technologies, such as digital pens. Typically, Chen carried out an empirical study on the process of note-taking in CI with digital pens, in which the interpreters performed CI between Chinese (L1) and English (L2). In both directions of interpreting, the study found that the interpreters preferred using in their notes words to symbols and English to Chinese. Physical and temporal demands of symbol and abbreviation notes were lower than those of language and full-word notes, whereas the ear-pen span (EPS) of symbol notes was longer than that of language notes. Regarding the relations between note-taking and interpreting performance, a higher percentage of English notes was correlated with a worse performance in both directions of CI [10]. Another type of digital pen is Livescribe Smartpen, which can be used to record the sound and image of the whole process of note-taking in CI, vividly reproducing the process and probing into the cognitive process through note-taking analysis. Besides, it can improve the efficiency of the new interpreting mode ("consecutive-simultaneous" mode) as well as enhance the training framework and training efficiency of CI [11].

For more information about the difficulties perceived by professional trainee interpreters and non-professional interpreters, "stimulated recall" and post-task interviews were employed in the inquiry of Chinese-English note-taking, showing that the major challenges included deficits in memorizing the source information, inadequate recall of the source information when using notes as cues, improper format of notes and over-dependence on notes without preliminary processing of the source information, partially or wholly, resulting from the fact that the language structure of the source information was Chinese-specific and peculiarly complex, the propositions encompassed in the source information were fairly dense, the logical link between each proposition was not overt and therefore hard to process under time constraint, and the participants in the study

were unfamiliar with the genre and subject matter of the tested tasks, and they were not used to the delivery speed [12].

The COVID-19 pandemic has made video remote interpreting a new normal, presenting new challenges to interpreters apart from the above-mentioned difficulties in the traditional mode of CI. With Tobii eye-tracker and a Wacom digital pen, researchers conducted a study on professional and student interpreters and found that, firstly, an increase of perceived interpreting difficulty resulted in a decrease in the overt visual attention and physical effort invested in note-taking and a longer time to make note-taking decisions; secondly, in spite of a similar level of interpreting difficulty, professional interpreters were able to devote more overt visual attention and physical effort to completing note-taking; and thirdly, the cognitive effort of note-taking was not impacted by the changes in source speech difficulty or work experience of interpreters [13].

In addition, the choice of language for note-taking has attracted much attention. Helle Dam proposed that the choice of language in interpreters' note-taking was mainly governed by the status of the language in the subjects' language combination, i.e. whether it is an A- or B-language, and much less by its status in the interpreting task, i.e. whether it functions as the source or the target language [14]. A study conducted by Csilla did not fully support such a finding in that interpreters with Hungarian as their A language and English, B, have a strong tendency to take notes in English, irrespective of the direction of interpreting [15].

Marta carried out an experiment on three groups of subjects with different levels of interpreting training and experience (beginners, advanced students and interpreters) for the analysis of their notes taken during a CI task from English to Spanish, the result of which showed a shift from the use of the source language towards the use of the target language [16]. Such a finding has been corroborated by another study carried out by Gao, which revealed that the source language was the dominant language for three cohorts of interpreters of Chinese (L1)-English (L2) combination, and the higher the interpreters' caliber, the more they tended to use the target language in their notes [17].

The aforementioned studies have managed to probe into both the products and processes of note-taking with either prescriptive or descriptive approaches via traditional or cutting-edge technologies. But few of them have tried to explore student interpreters' development of note-taking system via the mobile ICT-based learning community built on the mini program on mobile phones. The present study aims to shed some light on this particular aspect with a view to enhancing the efficiency of CI courses through an empirical study.

3 Research Design

3.1 Research Questions

This study aims to find out the answers to the following three research questions:

1) Compared with the default conventional one, is the optimized model of the ICT-based mini program more conducive to student interpreters' construction of a note-taking system?

2) In what ways can the optimized model benefit student interpreters' note-taking techniques with vertical notes as a benchmark?
3) Can the optimized model better solve the difficulties that student interpreters encounter in their note-taking training?

3.2 Hypothesis

The authors hypothesize that the optimized model of the ICT-powered mini program, which helps establish a totally open community for online learning, can better facilitate the student interpreters' development of a note-taking system and improve their note-taking techniques in terms of layout, utilization of symbols and abbreviations. Furthermore, it can better solve some students' difficulties of heightening the awareness of processing the source information before taking notes, and better balancing listening comprehension and note-taking.

3.3 Research Tools and Subjects

Questionnaires, SPSS and interviews are the main research tools used in this study for data collection and analysis.

As for the research subjects, firstly, the mobile ICT-based mini program named Xiaodaka available on WeChat (a dominant messaging and social media APP on China's mainland) is reset to find out the more effective online learning solution; secondly, a total of 70 junior undergraduate students majoring in English at Guangzhou Xinhua University form the experimental and control groups, each with 35 students, all novices of CI, with an average age of 21 years.

3.4 Research Procedures

1) A pre-experiment questionnaire: To avoid digital divide, a pre-experiment questionnaire was done to survey the electronic devices they used for note-taking exercises and the result, as shown in Fig. 1, revealed that there was no digital divide among the subjects since 100% of the students owned a cellphone and/or an iPad and both groups could join the learning community on Xiaodaka for the exercise post assignment.

2) The note-taking experiement: Both groups were assigned to post their note-taking exercise records on Xiaodaka on a daily basis for 21 days. The difference is that the experimental group adopted the optimized model to keep all their posts public (which could be viewed, liked and commented by anyone), while the control group just kept their posts all private under the default conventional model (which could be viewed, liked and commented only by the posters themselves and the tutors). After the 21-day experiment, an online questionnaire and interviews were conducted for more information about the influence of the two models on the students' development of a note-taking system. The exercise materials chosen for the two groups were the same, i.e. two speeches on tourism in Western Australia, which were divided into 21 segments. More information about the materials can be seen in Table 1.

3) A post-experiment online questionnaire: A questionnaire was conducted among both groups for more information about the benefits of such an assignment for their note-taking system construction and resolution of their difficulties.

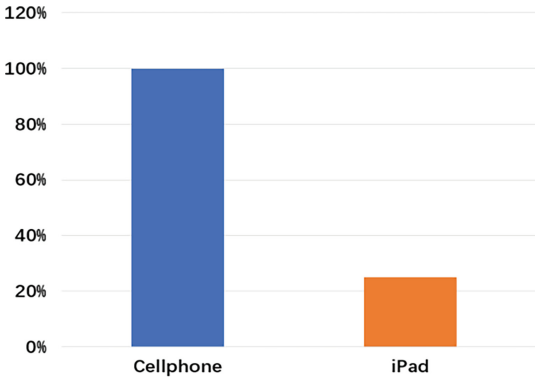

Fig. 1. Percentage of Students by Electronic Devices for Note-taking Exercises

Table 1. Information on each segment of materials chosen for the assignment

Length	*Words*	*Speed*	*Direction*
45-60s	about 100	120 w/m	E-C

4) Post-experiment Interviews: Six random students from the experimental group were interviewed for more insights into their comments on the optimized application model of Xiaodaka.

5) The final test: After the 21-day experiment of posting their note-taking training records under two different mobile ICT-based models, the two groups of subjects will participate in the final test of note-taking competence. Two veteran interpreters will be invited to grade their performances and the test results will be processed and analyzed with the help of SPSS.

4 Results

In this section, the results of the experiment will be presented by means of figures.

In the first place, the number of days both groups submitted their assignments can be found in Fig. 2.

Surprisingly, students who submitted all the assignments (21 days) in the control group outnumber those in the experimental group. However, when it comes to the submission days no less than 20 days, there is no significant difference between the two groups in that it is 27 students equally, and the days less than 19 days, 8 students in total.

Figure 3 shows the result of the online questionnaire among the subjects regarding the development of note-taking system with vertical notes as a benchmark as proposed by Gillies [6], which is composed of five major elements, namely, diagonal notes, links, hierarchy of values, symbols and abbreviations.

As shown in Fig. 3, almost all the students in the experimental group held that posting their learning records publicly in the online learning community under the optimized

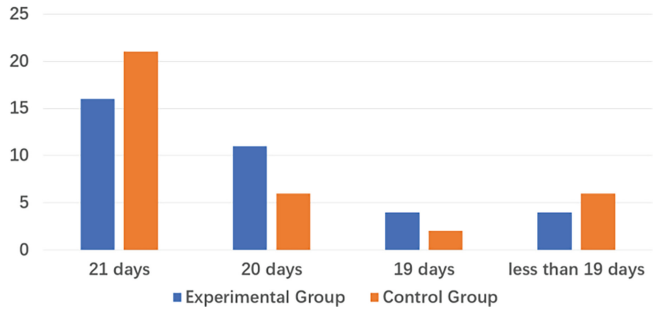

Fig. 2. Number of Students by Days of Submitting Assignments

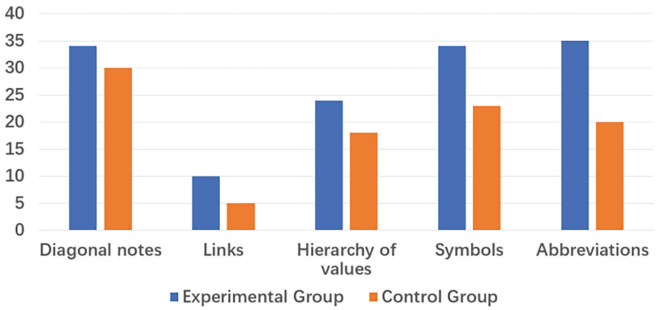

Fig. 3. Number of Students Making Progress with Each Element of a Note-taking System

model was conducive to their note-taking system construction with regard to diagonal notes, symbols and abbreviations. About 68.57% and 28.57% said it was helpful in terms of links and hierarchy of values respectively. Overall, there were more students in the experimental group than the control group who recognized the assignments had benefited their note-taking competence regarding the five elements of a note-taking system, which might be the result of the comments given by their fellow students and mutual learning in the learning community, as well as the peer pressure for better performances. For example, the students in the experimental group could share their notes with each other since their posts were open to all the community members, which enabled them to learn some useful symbols and abbreviations from each other, while the control group could not because their exercises were done privately. That probably explains why the experimental group outnumbers the control group in "symbols" and "abbreviations" by 11 students (nearly 31.43%) and 15 students (nearly 42.86%) respectively.

The online questionnaire also investigated how well both assignments served as a solution to the difficulties perceived by the student interpreters, as proposed by Xu and Chai in their studies, including deficits in memorizing the source information, inadequate recall of the source information when using notes as cues, improper format of notes and over-dependence on notes without preliminary processing of the source information, partially or wholly [12]. The results were presented with the following four parameters: memory, recall, format and dependence on notes (see Fig. 4).

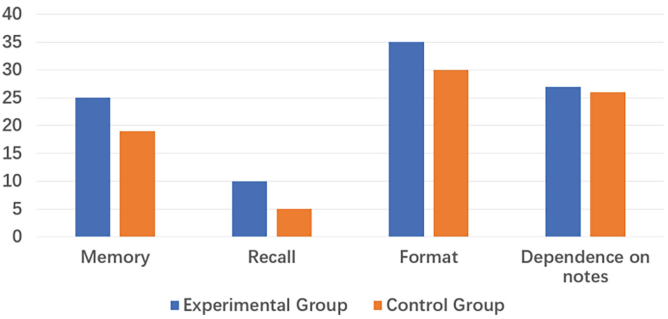

Fig. 4. Number of Students by the Note-taking Difficulties They Resolved After Completing the Assignments

Table 2. Descriptive statistics and t-test result of the final test

Groups	No.	Mean	Z	P
Experimental	35	14.83	-4.386	0.000
Control	35	11.36		

It can be seen from Fig. 4 that a majority of students in both groups believed that the assignments were helpful in their adoption of appropriate formats of notes and reduction of their over-dependence on notes without preliminary processing of the source information, while only around 23.43% in total thought so regarding the recall of the source information. On the whole, more students in the experimental group than the control group can reap such benefits from their assignments.

The final test results of the two groups have been processed with SPSS. Test of normality indicates an abnormal distribution of the scores, resulting in the choice of Mann-Whitney U test. As demonstrated in Table 2, the mean score for the experimental group is 14.83, which is 3.47 points more than that of the control group, i.e., 11.36. Besides, the z value is -4.386, with the p value being 0.000, which showcases a significant difference between the two groups (see Table 2).

5 Discussion

This section will focus on the effect of the optimized model of the mobile ICT-based mini program on the construction of note-taking system of the student interpreters in the experimental group, and hopefully offer some insights into the effects of such a model on solving the difficulties they have encountered in their note-taking process.

5.1 Stronger Motivations and More Mutual Learning Opportunities

The optimized model helped to establish an open interactive community for online learning, where the students could showcase their assignments and learn from each

other. The students interviewed revealed that they had been propelled to finish and post their assignments every day under the pressure from their instructor and fellow students in the community. Even though both groups were assigned the same exercises, the experimental group benefited more from the exercises since the comments and likes given by their peers encouraged, motivated and inspired them. In addition to the external pressure, they were also attracted to the assignment by the excellent performances of some outstanding students in the same group, from whom they learned a lot in terms of the layout of the notes and interpreting performances, which translated into their better mastery of notes with verticality. The better performance of note-taking by the experimental group in the final test can be seen from their higher mean scores than that of the control group. To quote some comments from the experimental group:

Student 1: "I would go and talk with the students who have taken standard notes, asking them how they were able to do so. I have learned how to improve my notes thanks to their suggestions."
Student 2: "I picked up some interesting and intuitive symbols from some notes taken by my classmates. I used to have trouble taking down some long phrases. But learning from their examples, I have improved my efficiency of taking notes."

Some students even mentioned that their momentum of practice would last, at least, until the end of the CI course even though they had already finished their assignments over the past 21 days.

5.2 Little Improvement in Mastery of Links and Hierarchy of Values

The students in both groups have admitted that they found it easier to master the formats of the notes, i.e. the diagonal layout of notes, and usage of symbols and abbreviations, but difficult to pick up links and hierarchy of values. Presumably, the reasons might lie in the necessity to process the information before links and hierarchy of values can be identified, which will then be translated into symbols or abbreviations or ever words in notes jotted down. Students, to some degree, are constrained by their listening comprehension skills, limited encyclopedic or domain knowledge, and a small vocabulary, which hinder their preliminary processing of the source information before they can take the notes. This probably explains the scarcity of links and hierarchy of values in their notes. When being approached with inquiry about their mastery of those two elements, some students interviewed gave answers as follows:

Student 3: "Links explain the logical relations between sentences or segments. Without truly understanding the source text, I cannot figure out the logical links, let alone taking them down in my notes."
Student 4: "I find it very hard to sort out hierarchy of values among ideas. Especially when the segment had a relatively higher speech rate, I could not cope with so much information, and I would be at a loss among the logical links, without any capacity to tell the value hierarchy of the information. So, I just jotted them down in a vertical order."
Student 5: "I didn't know how to figure out the links when I was listening to the passage. But I could do so clearly and easily when I was reading the scripts. I guess that is because of my poor listening comprehension skills."

5.3 Little Progress in Memory Capacity Expansion

Both groups of students haven't seen much help from the online learning community to their memory and recall of the source information with notes as cues. The reasons might be two folds: firstly, as beginners of note-taking, the students focused much of their attention on the format of the notes taken, thus failing to concentrate on listening comprehension and leaving themselves with notes illegible or even useless; secondly, memory capacity is hard to be expanded within 21 days, a relatively short period of time, which has been confirmed by the students interviewed:

Students 6: "I cannot see any improvement in my memory capacity after 21 days of assignment. I think that is because I had to mainly focus on the development of my note-taking system, without much time and effort left for short-term memory training. The 21-day period was not long enough for me to accomplish the extra task of memory expansion."

6 Teaching Implications

Based on the results of the experiment and questionnaire, pedagogical implications are proposed for instructors in terms of assignment design and material selection for CI note-taking training.

6.1 Assignment Design

The optimized model of the mobile ICT-based mini program Xiaodaka is desirable for note-taking assignments, because it plays a better role than the conventional model in building an interactive online learning community. When students are able to have access to the interpreting recordings and notes of their peers in an open community, they will be motivated to study harder due to peer pressure, and be able to learn from the excellent examples and constructive comments made by other community members.

6.2 Material Selection

Since beginners tend to struggle with what and how to jot down in the notepads, the difficulty and complexity of note-taking practice materials should be controlled to avoid distracting and discouraging them so that they can work progressively towards a sound and efficient system of note-taking. Therefore, it is advisable to offer students with materials of medium length in general topics rendered at a medium speech rate, without terms and terminologies, or a glossary should be provided otherwise, so that they are able to focus on the layout, links and value hierarchy of their notes.

7 Conclusion

In conclusion, the results of this experiment have demonstrated that the optimized model, compared with the conventional one, of the mobile ICT-based mini program Xiaodaka is more conducive to the student interpreters' construction of a note-taking system, and

mastery of diagonal notes, symbols and abbreviations, with little positive impact on their competence to sort out links and hierarchy of values in note-taking. Moreover, it helps to reduce their inappropriate formats of notes and over-dependence on notes, but has limited influence on their memory and recall of the source information with notes as cues.

When setting students note-taking assignments on the mini program, it is advisable to adopt the optimized model to create an interactive online learning community where they can be motivated by and learn from each other, and it is important to select practice materials with appropriate difficulty and complexity so that the trainees can focus on the gradual establishment of a note-taking system.

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