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## **Exploring the Design and Application of an Intelligent French Dictation Platform**

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### **Summary:**

Dictation is considered as an efficient exercise for testing FFL learners' language proficiency. However, the traditional "class-based" approach to dictation entails many constraints due to the inherent complexity in the way this exercise is designed, materialized and conducted. To remedy this, this study adopts a design-based research approach and tries to design, develop and apply an intelligent French dictation platform, tested by fifty undergraduate FFL learners after class. Through an examination of learners' feedback, this study identifies advantages such as time-space flexibility, instant correction and possibility to repeat exercises; but also disadvantages, such as inconvenience of typing text, impossibility to promptly ask teacher questions and absence of collective learning and supervision. Crucially, this study makes an encouraging step in classifying frequent errors committed by Chinese learners. The result is the starting point of the development of a more advanced dictation platform in the future, which will provide an automatized error classification.

### **Résumé :**

La dictée est considérée comme un exercice efficace pour tester les compétences linguistiques des apprenants de FLE. Cependant, la dictée telle qu'elle est traditionnellement pratiquée en classe implique de nombreuses contraintes en raison de la complexité inhérente à la façon dont l'exercice est conçu, matérialisé et mené. Pour y remédier, cette étude adopte l'approche basée sur le design et tente de concevoir, développer et appliquer une plateforme intelligente pour la dictée en français, testée ensuite en autodidacte par cinquante étudiants apprenant le français. En examinant leurs retours, cette étude identifie des avantages tels que la flexibilité temporelle et spatiale, la correction immédiate et la possibilité de répéter les exercices ; mais

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également des défauts tels que la praticabilité peu satisfaisante de taper du texte, l'impossibilité de poser une question à l'enseignant de vive voix et l'absence d'apprentissage collectif et de supervision. Crucialement, cette étude marque un pas encourageant dans la classification des erreurs récurrentes chez les apprenants chinois. Ce résultat est le point de départ pour le développement d'une plateforme de dictée plus avancée dans le futur, qui proposera une classification automatisée des erreurs.

**Keywords:**

French dictation; design approach; learner autonomy; immediate feedback; error analysis; computer-assisted language learning

**Mots-clés :**

dictée en français ; approche basée sur le design; autonomie des apprenants ; correction immédiate ; analyse d'erreur ; apprentissage des langues assisté par ordinateur

**Introduction**

In the context of intelligent learning, using information technologies to build an intelligent and data-based foreign language teaching paradigm is a decisive trend in foreign language education (Miller & Wu, 2022). Meanwhile, the human resource need of high-quality multilingual students has never stopped to increase, especially in China, which attaches great importance to the training of such students. This being said, information technology is mainly integrated with English language education in China and a gap in research is quite noticeable of technology-enhanced teaching of other languages such as French, official language in numerous countries and international organizations, whose importance leads not only to its popularity in Chinese universities, and by the same token, also to the necessity of filling this gap.

A computer-assisted learning tool is a good candidate to open new perspectives for French language teaching, because given the great challenge posed to Chinese learners by its phonological features intertwining with verb conjugation, gender/number agreement and orthography, a learner corpus exploitable by computer will considerably help teachers to capture generalizations.

This study focuses on computer-assisted French dictation, which is a prized exercise in FFL (French as a Foreign Language) learning due to its holistic reflection of learners' language proficiency by simultaneously assessing learners' listening comprehension and written production (Oual & Abadi, 2022). These linguistic skills are precisely linked to the above said French learning difficulties. However, the traditional way of conducting paper-based dictations presents many shortcomings, such as the time-consuming correction and the burdensome, if not unrealizable, systematic analysis of learners' errors by teacher on one hand and learners' self-correction being not conducive to teachers' grasp of the learning progress on the other. These problems weaken the efficiency both in learners' practice and teachers' feedback, which partially explains learners' low performance in dictation.

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Aiming to alleviate the above problems, this study departs from a design-based approach (Sandoval & Bell, 2004) to design, develop and apply an intelligent dictation platform for FFL learners in China. Through pilot experiments, it seeks to answer the following questions:

- 1) What do learners perceive as advantages and disadvantages of practicing dictation on this platform? Especially when compared to the paper-based dictation conducted in classroom?
- 2) What do learners suggest to develop a more advanced dictation platform?
- 3) What are the frequent errors committed by Chinese learners in French dictation? And what might have been the cause?

### **Theoretical Framework**

The theoretical framework of this study is based on Error Analysis (Corder, 1967, 1981). An error is a systematic deviation made by learners who have not yet absorbed the rules of the target language. Errors are reflective of learners' current stage of development or underlying competence and they cannot be self-detected or corrected by learners. Rather than simply being ill-formed occurrences to be prevented, errors are signs that learners are actively engaged in hypothesis testing which would ultimately lead to acquisition of the target language rules (Larsen-Freeman & Long, 2014). Under this definition, error analysis can be conceived and carried out to find out to what extent learners have mastered a language and to investigate their common difficulties.

In the literature, the following procedures have been proposed for conducting error analysis (Corder, 1975): identifying errors in a sample from learners' production, describing and explaining errors, then evaluating errors to optimize teaching strategy in a principled fashion. Dictation requires the learner to replicate, under listening stimuli, the source text as faithfully as possible. This is quite different from essay writing, where there are often multiple possibilities to reconstruct a learner error. Therefore, it's easier to leverage information technologies to automatically identify errors in learners' dictations. Compared to the paper-based dictation which involves laborious manual error correction, the platform developed in this study allows teachers to directly focus on describing, explaining and evaluating errors. Based on the data collected through the platform, this study will be able to present frequent errors committed by Chinese learners in French dictation, and try to explain the possible causes in a formalized way.

### **Research Methodology**

The present study follows a design-based approach (Sandoval & Bell, 2004), which means in order to solve real-life educational problems, researchers continuously improve the design based on users' feedback from practice in a real and natural context, until all flaws are eliminated and a maximally reliable and effective design is achieved. The study is composed of two phases: 1) Needs analysis, design and development; 2) Pilot experiments. A brief description is given below:

- 1) Needs analysis, design and development

Through classroom observation and communication with FFL learners and teachers at Beijing Foreign Studies University (hereafter BFSU), the study perceives inconveniences of

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practicing dictation in the traditional teaching environment. After designing a prototype which takes users' needs into consideration, we collaborate, for the full development<sup>1</sup>, with Beijing Waiyan Online Digital Technology Co., Ltd who had developed the BFSU E-Class platform into which the dictation platform could be further implemented.

## 2) Pilot experiments

When the development was finished, pilot experiments were conducted with fifty FFL learners and two French teachers, all coming from BFSU. Learners perform dictations on the platform following teachers' weekly assignment or at their own pace.

We gathered users' feedback all along the experiments to assure an iterative optimization. One year after the first utilization, we distributed questionnaires to investigate learners' perspectives and suggestions towards the platform.

For now, the first 50 learners are still using the platform and more FFL learners at BFSU have been given access to it.

## Platform description

Before designing the prototype, we analyzed several existing dictation platforms, such as Huijiang<sup>2</sup>, Aboboo<sup>3</sup>, Shanbay<sup>4</sup> and TV5 Monde Dictée<sup>5</sup>. More specifically, Huijiang supports dictations for multiple languages, including English, Japanese, French, German, etc; Aboboo and Shanbay are designed solely for English dictation; and TV5 Monde Dictée provides French dictations of various themes. These platforms all provide immediate and automatic correction for learners' electronic input but lack, crucially, the functions conceived to enable error exploitation by human teachers.

In sum, the platform design in this study takes into consideration needs from both learners and teachers, expecting to improve the efficiency in exercise practicing for the former and error analyzing for the latter. The platform can be used on laptop or tablet PC. Internet access is required for both the learner and the teacher ends. The main functions of the platform are described as follows.

## Learner end

On learner end, the main functions include (i) choosing exercises (ii) playing audio and entering text online (iii) checking the feedback upon submission and (iv) receiving scores and remarks from teachers. After logging in, learners can see a dictation syllabus composed of 126 exercises from a widely used reference *Progresser en dictée (niveau élémentaire)* (Li, 2009). Another syllabus contains exercises provided by teachers from Faculty of French and Francophone Studies of BFSU (10 exercises at present), which correspond to the learning progress of their classes (cf. Figure 1).

Figure 1. Interface for choosing syllabus

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<sup>1</sup> To the best of our knowledge, no platform as designed in this study existed in China before.

<sup>2</sup> <http://ting.hujiang.com/fr/>

<sup>3</sup> <http://www.aboboo.com/g/#/home>

<sup>4</sup> <https://www.shanbay.com/m/intro/?app=listen>

<sup>5</sup> <https://dictee.tv5monde.com/>



By clicking an exercise, one gets access to the answering interface. To simulate the dictation condition in real-time class, the whole audio only plays once (the text being read four times) and the playing progress isn't adjustable. However, learners can click on the play button for a pause. Learners need to finish the exercise within a time limit fixed by teacher (e.g. 30 minutes), but they can redo the exercise until the upper limit is reached (e.g. 10 times). Since we didn't find any French handwriting OCR tool meeting our expectations, the platform can't analyze learners' manuscript. Instead, they need to enter text by keyboard or Apple Pencil connected to an iPad. Thanks to iPadOS, French alphabet written with Apple Pencil can be instantly recognized and converted into electronic text. To facilitate the input, an image of a physical French keyboard is provided as visual reference, along with virtual buttons for quickly entering letters with diacritics (à, é, ï, etc.).

Upon submission, the platform automatically checks learners' input against the source text and immediately displays the result. This process relies on a language-independent and open-sourced text comparison algorithm<sup>6</sup> and web technologies such as HTML, CSS and Javascript. To make the comparison more intuitively understandable, erroneous input (in red) and source text (in green) are displayed side-by-side, as shown in figure 2. At this step, learners can freely replay the audio.

Figure 2. Platform's immediate feedback

Vincent cherche une idée de cadeau pour le départ de **çasa** collègue de bureau. Il ne la connaît pas bien, alors il demande à **sixses autreautres** collègues. Ils **sontont** beaucoup d'idées. **Ilils** lui **proposeproposent** d'acheter des fleurs.

In this way, learners don't need to wait for teachers' manual correction or to proceed to self-correction, hence an improvement in terms of the feedback efficiency. After teachers' review, the page will show the final score and remarks. Learners can review this page at any time, while traditional dictation sheet can easily get lost through time.

### Teacher end

The teacher end is destined to manage dictation syllabus, review learners' exercises and retrieve errors from the error database for systematic error analysis. After logging in, teachers can see the dictation syllabi previously created and modify the exercises contained in them. To create a new exercise, teachers need to provide materials and related information such as audio file, source text, time limit, total score, point to deduct per error, maximum times

<sup>6</sup> <https://github.com/kpdecker/jsdiff>

allowed for redoing the exercise, etc.

During the review, exercises can be filtered by defining exercise name and/or learner name. In the reviewing interface, the discrepancy between the learner's replication and the source text is highlighted, which helps teachers to quickly locate the errors. The platform also calculates a score based on the number of the errors and teachers can revise it if necessary. Remarks are given at this step (cf. Figure 3).

Figure 3. Teachers' reviewing interface

1、听写题，对应《你好！法语》第22课。输入时请不要换行，请用下划线代替不会写的单词。

Céline, elle est d'âge de 35 ans. Elle d\_en\_. Elle sait parler anglais et espagnole. Elle veut travailler avec des étrangers et elle peut par fois travailler le week-end. Elle cherche un travail de réceptionniste dans un hôtel.

Céline, elle est d'âgeagée de 35 ans. Elle d\_ene est \_au chômage en ce moment. Elle sait parler anglais et espagnoleespagnol. Elle veut travailler avec des étrangers et elle peut parparfois fois travailler le week-end. Elle cherche un travail de réceptionniste dans un hôtel.

分值: 10分, 每错一处扣0.5分

得分: 5.5

批注:

est âgé de ... ans 某人几岁。要和主语进行阴性配合。  
est âgé 之间进行了联通  
est au chômage 处于失业状态，也有联通  
en ce moment 目前  
espagnol 末尾没有e  
parfois 是一个副词，不能被分开

Most importantly, the error database is updated upon each submission, and the system stores the “incorrect form-correct form” pair into the database, such as “ça-sa, six-ses, autre-autres” in figure 2. Teachers can filter the data by syllabus, exercise and/or learner name. The data can be exported in an Excel file, which allows teachers to conduct detailed error analysis. For example, teachers can sort the Excel file by the column named “correct text”. This operation will show, for every single word in a chosen source text, all its erroneous forms. In figure 4, given the word “chômage”, the database has collected “(void), chomage, chaumage, choumage” and so on.

Figure 4. Error sorting in Excel

Student name	Syllabus name	Exercise name	Erroneous input	Correct text
S1	课堂法语听写练习	《你好！法语》22课听写		chômage
S2	课堂法语听写练习	《你好！法语》22课听写	chaumage	chômage
S3	课堂法语听写练习	《你好！法语》22课听写	chaumage	chômage
S4	课堂法语听写练习	《你好！法语》22课听写	chaumage	chômage
S5	课堂法语听写练习	《你好！法语》22课听写	chaumage	chômage
S6	课堂法语听写练习	《你好！法语》22课听写	chaumage	chômage
S7	课堂法语听写练习	《你好！法语》22课听写	chemage	chômage
S8	课堂法语听写练习	《你好！法语》22课听写	chemage	chômage
S9	课堂法语听写练习	《你好！法语》22课听写	chemage	chômage
S10	课堂法语听写练习	《你好！法语》22课听写	chomage	chômage
S11	课堂法语听写练习	《你好！法语》22课听写	chomage	chômage
S12	课堂法语听写练习	《你好！法语》22课听写	chomage	chômage
S13	课堂法语听写练习	《你好！法语》22课听写	chomage	chômage
S14	课堂法语听写练习	《你好！法语》22课听写	chomage	chômage
S15	课堂法语听写练习	《你好！法语》22课听写	choumage	chômage
S16	课堂法语听写练习	《你好！法语》22课听写	chromage	chômage
S17	课堂法语听写练习	《你好！法语》22课听写	mage	chômage

## Pilot experiments

We started pilot experiments in May 2021, date by which the platform was available, to investigate learners' using experiences, opinions and suggestions, as well as summarize and explain learners' frequent errors through the automatically collected data.

Fifty Chinese FFL learners and their two teachers, all from BFSU, have participated in this study. Group 1 is composed of 27 undergraduate students (22 females and 5 males) and group 2 of 23 undergraduate students (22 females and 1 male). Learners' average age was 20. These learners were not majoring in foreign languages (International business, Law, Computer science, etc.) and studied French from scratch as a second foreign language. They had been learning English for 10 to 13 years. Their French level corresponded approximately to CEFR A1 or A2<sup>7</sup>. Group 1 started to learn French one year earlier than Group 2 and they began to use the platform 7 months earlier than Group 2. The two French teachers are Chinese and one of them teaches the two groups.

The students learn French according to the conventional syllabus (six hours per week in class) and practice dictation on the platform after class following teachers' weekly assignment or at their own pace. We provided detailed usage instructions for all the participants. During the experiments, dictation exercises of the two groups were gradually shifted from "class based" to "online based". Until May 24<sup>th</sup>, 2022, the 50 learners have submitted 610 dictations on the platform (mean=12, std=14). The highest number of submissions by a same learner is 87 and the lowest is 0.

During the experiments, we gathered feedback through regular communication with users and iteratively optimized the platform. The main updates include: 1) fixing bugs reported by users; 2) adding a French keyboard image at the text-entering interface; 3) integrating the dictation platform into the BFSU E-Class APP to better support tablet PC users. Especially the iPad users can thus enter text by Apple Pencil, which brings a handwriting-like feeling.

<sup>7</sup> This simply corresponded to the level of the textbook that they used.

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One year after the first utilization, questionnaires were distributed to collect learners' feedback and 31 valid copies were retrieved (18 from Group 1 and 13 from Group 2). The questionnaire contained 12 open-ended questions and the responses amount to 6479 Chinese characters in total. We conducted thematic analysis on the survey data through inductive coding with the software NVivo (Bazeley & Jackson, 2013). The steps included preparing and organizing data, reading through data, data coding, theme mining, result presentation and data interpretation (Creswell, 2013). The qualitative analysis result is presented below.

### **Qualitative analysis of learners' feedback**

First of all, we were interested in learners' motivation of practicing dictation. The survey showed that all the respondents recognize the importance of dictation skills in French learning and the main reasons are: 1) dictation helps to improve the listening comprehension ability, which is of vital importance in communication<sup>8</sup>; 2) dictation is a comprehensive exercise which combines well the listening comprehension and the written production, hence it helps to sharpen learners' attentiveness to phonological phenomena such as liaison, and by the same token, to spelling in French language. In terms of practice frequency, most respondents reported 1 or 2 times per week. With regards to the preferred topics of dictation materials, the most popular three ones are: 1) daily life and communication (15 learners, 48%); 2) culture (e.g. lyrics, trip, local customs) (9 learners, 29%); 3) content related to the topics covered in class (6 learners, 19%).

Secondly, we investigated how learners enter text on the platform and whether they can adapt themselves to this change. For those who frequently use the platform on a laptop, 16 learners (52%) directly type text while listening to the audio and 15 learners (48%) first write on a sheet, then start to type their text when the audio stops playing. For users of tablet PC, 8 learners (26%) write with Apple Pencil, 8 learners (26%) first write on paper before typing the text and 8 learners (26%) type text simultaneously with the audio being played. The above distribution suggested that learners prefer handwriting than typing whenever it's possible. Concerning the mastering of French keyboard, only two learners (6%) reported that they type French as quickly as typing English, thus they are able to type text while listening to the audio. Other learners reported downgraded proficiency when typing in French and half of the respondents stated that they were willing to practice more to reach full mastery. Thirteen learners (42%) explicitly expressed their preference for handwriting, because writing is more fluent and quicker than typing hence makes them feel more at ease. On the other hand, four learners (13%) pointed out that it's easier to modify the electronic text than handwriting. Almost all the respondents agreed that they were adapted to entering text by keyboard or Apple Pencil except for two learners of Group 2, who found it inconvenient.

Thirdly, we analyzed learners' opinions about the advantages and disadvantages of the platform and whether it helped them to improve dictation skills. The three most prominent advantages are: 1) immediate correction upon submission; 2) possibility to redo the exercise;

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<sup>8</sup> One could be wondering in what way dictation differs from listening comprehension exercise in improving listening accuracy. According to the respondents, dictation requires their attention to be maximally concentrated since it demands a faithful replication. This acuity is absent when they do listening comprehension exercises, whose goal is to get general ideas or limited details from time to time.



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3) flexibility compared to “class-based” approach in terms of time and space. Learners also indicated that they can hear the audio more clearly and they feel less nervous when practicing online. It’s also reported that the platform saves precious teaching time in class and gives access to more dictation materials. In contrast, the four most prominent disadvantages include: 1) challenge posed by typing rather than writing; 2) absence of collective learning and feel of being challenged in a real-time evaluation situation; 3) slackness due to the lack of supervision; 4) impossibility to ask questions as in class. All the respondents agreed that the platform contributed to improve their dictation skills and the main reasons are as follows: 1) the platform allows for more practice after class, which guarantees a steady input and output ratio in language learning; 2) more practice improves their familiarity with French pronunciation, grammar and vocabulary; 3) the immediate feedback helps to quickly identify their flaws.

Finally, we solicited learners’ suggestions for developing a more advanced dictation platform. The first advice, suggested by 7 learners (23%), consisted in removing constraints on audio playing, namely permitting rewinding and play-speed adjusting. The suggestion was accepted and realized as it favored the dictation efficiency. Secondly, learners would have preferred materials of diverse forms (e.g. dialogue, interview, news) and specific grammar components (e.g. past participle, noun-adjective agreement) integrated in these materials. Three learners (10%) also mentioned that video-based materials would be more interesting than common audio materials. Finally, learners hope to see their errors automatically classified and a distribution graph of frequent error types. This idea, echoed by the two teacher participants, is what we are currently working on, by modifying an automatic grammatical error annotation toolkit (Bryant et al., 2017) along with a rudimentary error categorization model which is presented below.

### **Frequent dictation errors and preliminary analyses**

Our investigation of the challenges faced by Chinese learners in French dictation is grounded on the platform’s error database.

Until now, the 610 dictations submitted correspond to 69 different exercises (words per exercise: min=35, max=169, mean=127). For the error analysis, we chose as sample from 22 learners, each of which has submitted more than 10 dictations (sum=470, mean=21, std=17). Constrained by manpower, we chose a subset of these 470 samples to proceed to a manual error analyzing, but ensuring that the samples covered all the 69 exercises. For each exercise, we analyzed a certain number of samples until no new error type emerged. Finally, the subset choosing criteria was to maximally discover new error types and we ended up with 820 “incorrect form-correct form” pairs<sup>9</sup>. To sort these pairs, the present study advances an error categorization model based on phoneme and grapheme pairs, which is explained as follows.

A phoneme pair denotes a pair of two phonemes where one is misheard and mistaken (i.e. the “correct sound form”) to be the other (the “incorrect sound form”). It can be minimal or nonminimal. In a minimal phoneme pair, the two phonemes share articulatory-acoustic

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<sup>9</sup> Considering that each learner participating in this study has completed a different range of exercises, we will present the main error types without statistical distribution, since it won’t be significant for the purpose of our ongoing research.

resemblance to a considerable extent<sup>10</sup>. Some minimal pairs exist both in French and Chinese (e.g. close-mid vs open-mid front unrounded vowels: [e] vs [ɛ]); while others only in French but not in Chinese (e.g. voiced vs voiceless consonants). In a nonminimal phoneme pair, the two phonemes normally do not share prominent phonetic features.

A grapheme pair stands for a pair of two graphemes (or bigram/trigram, even words in a more loosened sense) where one is miswritten and mistaken to be the other. The two share identical pronunciation by spelling rules. It can also be minimal or nonminimal. In a minimal grapheme pair, the two graphemes contrast one against the other only by one orthographic or lexico-syntactic feature<sup>11</sup>; while in a nonminimal grapheme pair, the two graphemes contrast with each other by more than one orthographic or lexico-syntactic feature.

Furthermore, both the phoneme and grapheme pairs can be or not be lexico-syntactically (hereafter L-S) related. By “L-S related”, we mean that learners could have solicited either lexical or syntactical model in their language knowledge to exclude the erroneous form.

Table 1. Phoneme pair errors

	Minimal	Nonminimal
L-S related	1. il joué (→jouait) au foot 2. prendre une touche (→douche) 3. le goût (→coût) de la vie y est plus élevé 4. me laver et me baigner (→peigner) en dix minutes 5. mon travail est (de) téléphoner aux clients 6. vivent dans villes (→en ville) 7. elle (l')a remercié avec 8. pour (l')inviter	12. pour leur (→les) remercier 13. je le (→lui) promet de 14. au bord de (→du) fleuve 15. devant la (→le) téléviseur 16. je suis certainement (→certain) que
L-S unrelated	9. vivre en Provence (→province) 10. acheter → acheter 11. spetacle → spectacle	

<sup>10</sup> This definition is given as such to ensure that the two phonemes in all minimal pairs can be formally opposed but with a certain flexibility to take into account differences between L1 and L2 phonological systems. For example, following a strict minimal pair definition, [e] contrasts with [ɛ] for both being unrounded vowels, the former is close-mid and the latter open-mid; on the other hand, [œ] minimally contrasts with all other rounded vowels such as [o] or [ɔ] simply by the fact that they are not [œ]. Chinese learners do often mishear these three vowels because Mandarin Chinese does not have [œ].

<sup>11</sup> Again, a malleability is needed in the definition. While an orthographic feature can be defined as a letter, lexical and syntactic features are more difficult to be formalized. An example of the former would be “au port” vs “au porc” and the opposition between “cette été” vs “cet été” (cf. sample 22 in table 2) can substantiate the latter. A refined and more formalizable feature system will lead to an optimized error categorization. This part of the research is ongoing.

Table 2. Grapheme pair errors

	Minimal	Nonminimal
L-S related	17. je ne les (→l'ai) pas encore visité 18. elle accueil (→accueille) les clients 19. pas assez d'espace vert (→espaces verts) 20. peu de passant (→passants) 21. faire de bon (→bons) choix 22. cette (→cet) été 23. elle s'est séchée (→séché) les cheveux 24. comment s'est passé (→passée) ton inscription 25. goûter les biscuits que sa mère a préparé (→préparés) 26. les prix sont attribué (→attribués) 27. les plats ne coûte (→coûtent) pas cher 28. nous nous reverront (→reverrons) 29. je ne les voie (→vois) pas	34. vous n'avez pas apprendre (→à prendre) l'autobus 35. j'espère quel sera (→qu'elle) tout heureuse 36. une armoire pour mettre mes à faire (→affaires) 37. la distance apart courir (→à parcourir)
L-S unrelated	30. project → projet 31. dialect → dialecte, frai → frais, environs → environ 32. pardonner → pardonner 33. restaurent → restaurant, chaumage → chômage	

Table 1 and 2 show the error classification matrix by deploying this model. From our perspective, this rudimentary formalized categorization system captures several generalizations observed in FFL dictation among Chinese learners. Firstly, most of the errors are L-S related. Given that learners have much time to examine their output after the audio is played within the time limit, this suggests that the what underlyingly poses problem in a poorly performed dictation is the non-mastery of vocabulary and grammar.

Consider the minimal L-S related phoneme and grapheme pairs: on one hand, the abundance of open syllables in word formation (samples 1, 3-8) and in particular the monosyllabicity of functional words (samples 5-8) considerably diminish the recognizability of the words in question, and the mishearing is aggravated by the fact that many minimal phoneme pairs contain inexistent phonemes in Chinese such as [œ], [ø] or voiced consonants like [b], [d] and [g] (sample 2); on the other hand, grammatical features such as verb endings (samples 17, 18,

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27-29), gender and number agreement (samples 19-26) are often silent or homonymic, therefore the misspelling is often related to the inaccuracy in these features. In the case of nonminimal L-S related phoneme and grapheme pairs (samples 12-16, 34-37), the errors are somehow less expected since the divergence between the wrong and the correct forms is not minimal.

All this being said, an ideal learner, who has perfectly memorized the vocabulary and assimilated grammatical rules, could have overcome these hazards by adopting a “top down” approach in listening comprehension in the sense of Field (2009). Many learners do occasionally show some ability to vanquish the intimidating French phonology and its seemingly opaque orthographic rules, but most of the times they succumb under the inherent intensity of the dictation exercise.

Regarding L-S unrelated phoneme and grapheme pairs, errors are always minimally biased from the correct form. Their cause can be attributed to phonological (i.e. opposition between [ẽ] and [ã] in sample 9, which is inexistent in many Chinese dialects; schwa in sample 10; consonant dissimilation in sample 11) or orthographic idiosyncrasies (samples 30-33)<sup>12</sup>. At the same time, L-S unrelated nonminimal errors are statistically the most improbable (they have zero occurrence in table 1 and 2), this is supposedly because learners’ vocabulary or grammar knowledge could exclude an error too patent. Such errors are not impossible, but should be less recurrent according to our prediction.

The descriptive power of our model is not limited to types of examples presented in table 1 and 2, because pairs can coexist to form clusters. One fascinating error of this order is “ils sont un peu le (→en bonne) santé” which involves four minimal pairs: [ẽ] vs [ã], [p] vs [b], [ø] vs [ɔ] and [l] vs [n]<sup>13</sup>. Finally, nonminimal phoneme pair cluster can represent word-order errors, e.g. “tu n’as pas m’appelé → ne m’as-tu pas appelé”.

## Discussion

The study showed that a platform specifically designed and developed for French dictation is generally well accepted by our FFL learner and teacher participants. Although learners can not, due to the lack of an efficient French handwriting OCR tool, submit their manuscript, they are gradually getting adapted to entering text by keyboard or Apple Pencil. Learners benefit from the platform mainly for the immediate feedback and time-space flexibility. All the respondents report that the platform helps them to improve their dictation skills. The platform also frees the teachers from tedious manual correction and they can conduct the error analysis in an easier way than before.

The respondents pointed out that the collective learning atmosphere and teachers’ supervision are missing when practicing alone online. Therefore we suggest, for the sake of a better pedagogical outcome in general, that using this platform should not cast out traditional “class-based” dictation approach and that teachers should spare some time to answer learners’

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<sup>12</sup> By idiosyncrasy we mean the (quasi-)impossibility for beginners to predict where to put a silent letter or diacritics, or to choose between bigrams such as “en” and “an”. It is worth noting that when they do make a prediction, they often do so with the English orthography in mind.

<sup>13</sup> The learner in question acoustically parsed the phonemes as “ils-son-tun-peule-santé” (to compare with “ils-son-ten-bonne-santé”).

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questions about dictations or give comments on learners' performance in the latest dictation assignment completed online.

The main challenge at present is to further refine our error classification model by adding fine-grained tags, for example SPELL, PRON, VERB-FORM, NOUN-NUM, PHONETICS and so on. To achieve this goal, we are currently adapting an automatic grammatical error annotation toolkit (Bryant et al., 2017), which is rule-based and relies solely on POS tagging, dependency parsing, lemmatization and stemming information. Once this system is fully developed, we will try to integrate it into the platform, hoping to provide more teacher-like tutoring.

## Conclusion

The application of the French dictation platform designed and developed in this study has highlighted its usefulness in French learning, and equally identified the challenges that need to be addressed in the future work. Learners' preference should be taken into consideration for preparing dictation materials and the error categorization model built upon phoneme-grapheme pairs shall be further refined in future work. Designers and developers shall continue to work on automatic dictation error categorization and to collect users' feedback for further optimization of the platform.

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