

Educational Report of Programming Language Dolittle for Foreign Students

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Abstract

We introduce the educational situation of Japanese programming language “Dolittle” for foreign students in the first time. We also explain that such programming is effective to study Japanese.

Keywords: Foreign Students, Dolittle, Programming Language

1. Introduction

Dolittle is one of the programs designed for education, which is being developed by Susumu Kanemune of Osaka Electro-Communication University [1]. It is developed for online version, Windows version and Linux version by Java programming. The original meaning of the name of “Dolittle” is “do a little bit” in English. As a simply introductory programming, Dolittle uses an object named “Turtle” to express all of the programs in the same words at the editing screen. For example, Japanese is only available language in the one of Japanese version. As this future, it is not only helpful to understand the rules and principles of other programming languages, but also possible to learn and review the basic Japanese grammar and words.

In this paper, we make an introduction about the educational situation of Japanese programming language “Dolittle”. In Section 2, we describe the situation of the class, such as the composition of students and content of the class. The result of lesson practice and questionnaire results will be given in Section 3. Finally, we make some comments in Section 4. This paper is also presented at a research presentation meeting of Information Processing Society of Japan [2].

2. Actual Situation of the Class

The students of this course are special research students who concentrate on Japanese study and entrance to the graduate school. 72 students of two classes most of whom just have started to learn Japanese take 15 lectures once a week. According to Fig 1, the students are mostly composed of those coming from China, yet the number of students coming from Vietnam is tending to rise.

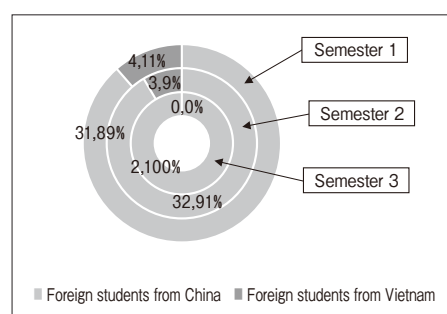


Fig 1. The composition of students

2-1 Syllabus of the Class

In this class, we use “Learning Programming by Dolittle” as the textbook written by the developer Susumu Kanemune and Yasushi Kuno. “Learning programming in 5 hours: Dolittle” [3, 4] shared by Yasushi Kuno on internet is one of our main reference. As a first class for Dolittle, we only introduce the first 5 chapters in the textbook. The concrete contents are as follows.

・ Objective of class: By study Dolittle, to grasp the drawing of graphics, creation of game and music, and communication with the network; to understand the basic rule and principle of general programming; to go over the basic Japanese grammar.

・ Lesson Plan :

Module 1: Learning programming for the first time

Module 2: Let's paint the color to the painted pictures

Module 3: Let's make a paint software

Module 4: Animation

Module 5: Treasure picking up game

Module 6: Ping-pong game

Module 7: Shooting game

Module 8: Playing music

Module 9: Let's enjoy music

Module 10: Let's communicate with the network

Module 11: Let's make a chart

Module 12: Let's exchange our music

Module 13: Exercise 1

Module 14: Exercise 2

Module 15: Final test

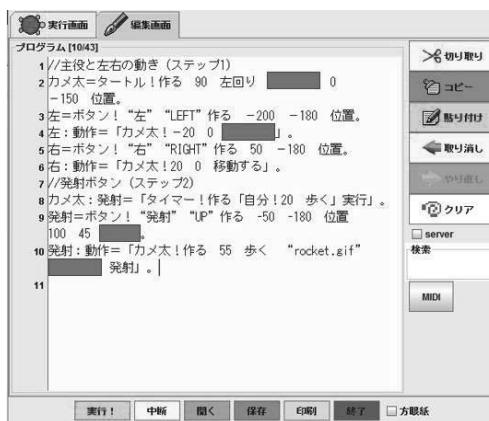


Fig 2. An example of teaching materials

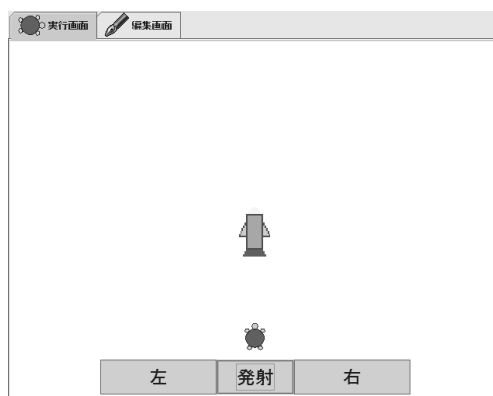


Fig 3. An example of teaching materials

2-2 State of the class

In each module, the class is composed of explaining programming source code and exercises usually. First, the contents of class, especially the programming codes in edit screen are explained precisely for students. Secondly, students practice to input and run the codes by themselves. Finally, we leave some assignments for students to review the contents they have learned. The assignments need to be uploaded in KING-LMS in a given period of time.

2-3 Teaching Materials Samples

In this section, we show some examples about how to use the teaching materials.

Usually, we hide some parts of the programming codes to help students to review the contents they have already learned, as shown in Fig 2. The result of execution is presented at run screen, as shown in Fig 3.

3. Results of Lesson Practice

3-1 Final Test and the Records

The records of the class is composed of attendance (30%), assignments (30%), and final test (40%). Most questions in final test are selected from the exercise collections given in Module 13 and Module 14. The contents of questions in final test are focused on those about the drawing of graphics and creation of game. We also refer to some questions in [5].

The distributions of final test are listed as follows.

Table. Distribution of Final Test

Range of score	Number of students
0 ~ 60	2
60 ~ 70	6
70 ~ 80	28
80 ~ 90	14
90 ~ 100	22

Vertical bar graph of scores in 10-point increments is shown in Fig 4 as follows.

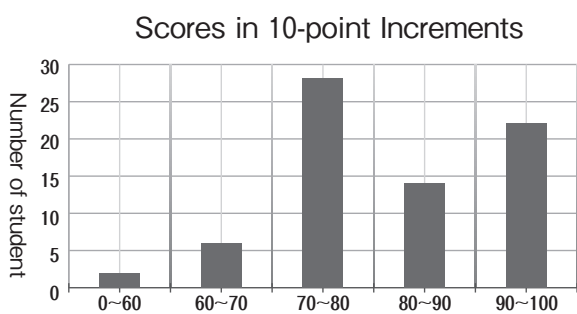


Fig 4. Histogram of the distribution of final test

By the above results, most students have grasped the basic programming ability to draw graphics and create some games and music.

3-2 Questionnaire Results

In order to investigate the education effect, especially that on the help to Japanese study and improve the results, a questionnaire survey with the following two questions were conducted after the final test.

- Q1. Do you think that programming is interesting by taking the Dolittle class?
- Q2. Do you think that Dolittle programming is helpful to learn Japanese?

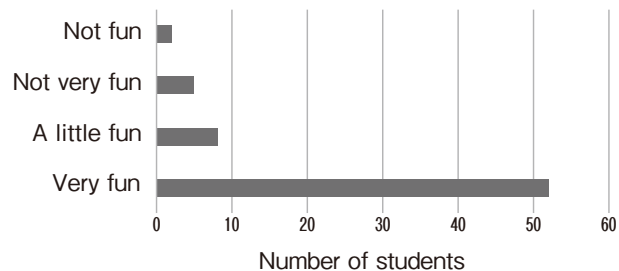
According to the questionnaire results, as shown in Graph5, we can see that for about 90% of students the interest to learn programming has been born by taking the class of Dolittle. This may also give them some confidence when learning other programming. For foreign students who begin to study Japanese, the programming language expressed in Japanese completely like Dolittle provide a new platform to learn and practice Japanese. As shown by data, about 88% of students think that it is effective for their Japanese study.

3-3 Something Noticed in the Class

In this subsection, we introduce something noticed in the class as follows.

1. The programming codes are explained by following the basic rule that “Object” and “Method” are expressed by noun and verb, respectively. Yet,

Q1.Do you think that programming is interesting by taking the Dolittle class?



Q2.Do you think that Dolittle programming is helpful to learn Japanese?

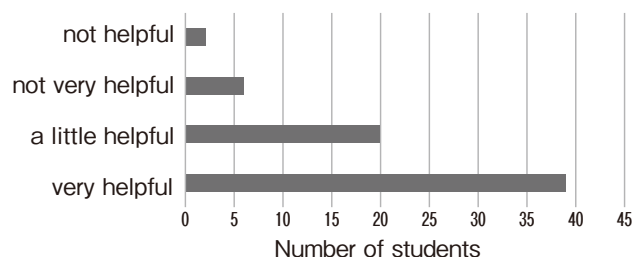


Fig 5. Questionnaire results

foreign students have felt much confused about Method 「左回り」 as shown by source codes in Fig 6 and results of implementation in Fig 7, since they don't know as a nominalized word, it is natural expression of verb 「左回る」. The another similar example is Method 「位置」.

2. As another basic rule, symbol “!” is explained as Japanese word 「を」. Yet it is still a little difficult for foreign students to understand the meaning of “!”, since as we have known that



Fig 6. Method of 「作る」 and 「左回り」

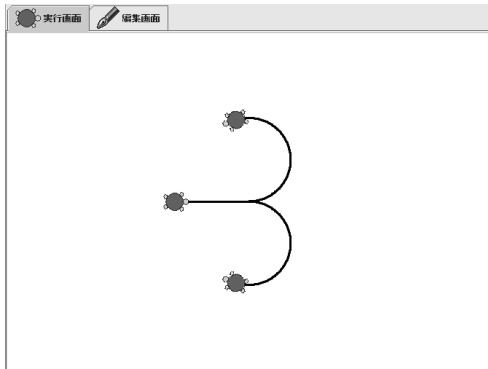


Fig 7. Results of implementation

Vietnamese or Chinese follows VO structure, that is to say, the verb is followed by an object of noun directly with any word like 「を」 in Japanese.

3. Some words are easily spelled wrong for foreign students from China due to the pronunciation of Chinese. For example, 「ボタン」 is easily spelled by 「ポタン」.

4. For some words depending on Japanese culture deeply, it also lets foreign students to understand their meaning, such as 「カメ太」 or 「カメ吉」.

5. There are some different for the name of colors used by Japanese and Chinese. For example, the color 「青」 in Japanese is blue, yet it is Cyan in Chinese as shown in Fig 8.

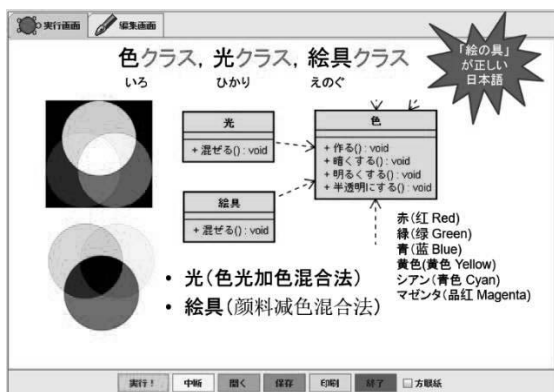


Fig 8. Name of colors

6. For Chinese students, it takes too much effort to study the part of “Playing Music”. One of the biggest difficulty is to understand staff, since the basic music education is taught by numbered music notation only.

4. Conclusion

Dolittle is a very interesting educational programming language and easy to learn. For the students who have no any experience of programming, it can exclude the worry to the difficulty of programming and help them to learn other programming language further. It is also expected to become a new platform of Japanese study, duo to the particular character that codes can be written by Japanese.

【References】

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