The Application of Case Teaching in Excel
Lookup and Reference Functions

Xiao-yan CAI\textsuperscript{1,a,*}, Wei SHEN\textsuperscript{2,b}, Li-na LU\textsuperscript{3,c}, Cheng-wen ZHU\textsuperscript{4,d}, Chui-zhen ZENG\textsuperscript{5,e}, and Xian-yu MENG\textsuperscript{6,f}

\textsuperscript{1}Wuhan Ordnance Non-commissioned Officer Academy of PLA, Wuhan, Hubei, China
\textsuperscript{2}Powerchina Hubei Electric Engineering Corporation, Wuhan, Hubei, China
\textsuperscript{a}xycai1984@163.com, \textsuperscript{b}110621557@qq.com
\textsuperscript{*Corresponding author

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Abstract. This article embarks from the production of student card which combines the vlookup and index functions, and discusses the application of case teaching in Excel lookup and reference functions. Teachers guide students to analyze, discuss and practice the case in the process of teaching. And students take the initiative to explore and collaborate, so as to achieve the teaching goal and realize the teaching that benefits teachers as well as students.

Introduction

There are so many built-in functions in the Excel, such as the date and time functions, statistical functions, logic functions, lookup and reference functions and so on. It’s a matter of concern that how to add information of one table to another by built-in functions in the Excel. As a common function of data processing to achieve efficient data search, vlookup is usually regarded as a key function in the teaching. Parts of the students are less of enthusiasm as they do not know this function during the teaching process.

Aimed at applying the lookup and reference functions in Excel, a comprehensive case has been chosen in the teaching process. That’s the production of the student card, which can fully use vlookup, index and the match function to solve the actual problems, and make the complex daily office become simple and orderly.

1. Excel Lookup and Reference Functions

Lookup and reference functions can be used to search specific values in a data list or a table, or search a certain cell reference. The main feature of lookup function is to quickly identify and locate the needed information, and the searching is the main feature of this kind of function as well. According to the actual needs, it could get the information or data in a worksheet or several workbooks. The main feature of reference function is to label the cell or cell areas in worksheet, and specify the location of the data used in the formula. By reference, the data in different parts of the worksheet could be used in the formula, or the same cell value could be used in different formulas, even it could refer to the cell of different worksheets but same workbook, and the data of different workbook or other program.

There are eighteen lookup and reference functions in the Excel. Not all the functions are involved in actual teaching process, but rather through the learning of the common functions, such as: vlookup, index and match functions. By this way, the students can be familiar with the features of vlookup, index and match functions and mater the basic usages of the functions, and then these learning experience and methods will be expanded to the self-study of other functions.
2. The Concept and Characteristics of Case Teaching

Case teaching is a kind of teaching method, which chooses the matched case and then has a comprehensive analysis, adopts flexible and effective teaching method, inspires students to think independently and communicate with each other, and enlightens them to find solution to solve the problem. Meanwhile, the students can learn the new knowledge, improve the comprehensive quality, train the actual work ability, realize the effective combination of theory with practice and enhance the knowledge and ability rapidly [1].

Case teaching has three characteristics. The first one is the subjectivity, which embodies the transformation from teaching-centered to learning-centered. The students are the masters in the teaching process, and the teachers play a leading role [2]. The second one is the practicality. The case brings the students into specific situation, helps to realize the transformation from theory to practice and trains the students' ability to analyze and deal with practical problems through the analysis, discussion and solving of the case. The last one is the interactive. The case teaching pays much attention to the analysis between students and students, students and teachers, and builds an interactive teaching atmosphere. So the students can fully express their new ideas, and facilitate the communication of thinking with each other, inspire and complement each other.

3. The Organization and Implementation of Case Teaching

3.1 Introduction of Case—the Production of Student Card

Every student is required to wear their own student card, which is used for the identification, including name, gender, student ID, native place, date of birth, photo and so on. The finished product of student card is shown in Fig.1 below. You just need to enter the number in the student ID cell of student card template, and then the system will automatically extract the corresponding elements from student information sheet to inform the student card.

![Figure 1. The Finished Product of Student Card.](image)

3.2 Combined with the Case to Explain the Lookup and Reference Functions

3.2.1 Case Analysis

There are two sheets in the Excel. One is the student information sheet, which includes the various information of student. It’s shown in Fig.2 below. And the other is the student card template, which you can see in Fig.3 below. Each student ID is unique. Supposing the relative knowledge of Excel could be used for extracting the needed information of student from student information sheet, and associate it with the student card in the template. The task is done.
3.2.2 Case Discussion

Based on the case analysis, the teacher presents the following question: how to extract the needed information from the student information sheet in the student card template? Then organize the students to discuss and combine the case content with the relevant operational knowledge, and put forward the methods to solve the problem, naturally a new function is introduced—vlookup.

3.2.3 Case Implementation

The automatic filling of the information in the student card template is based on the student ID. This function could be realized by vlookup, which finds the corresponding information in the student information sheet and extracts it.

For example:

According to the specified student ID 20150001, find the name matched.

Enter the student ID 20150001 in student card template shown in Fig.3. Click the cell C6 once in the student card template, select “formula” to “insert function”, select “lookup and reference” in the “or select category” of the pop-up insert function window, then select the vlookup and click ok, and you can see the pop-up vlookup function parameter window.

\[
\text{Vlookup(Lookup_value, Table_array, Col_index_num, Range_lookup)}
\]

Teacher’s explanations:

Lookup_value is the value searched in the first column of table array. That’s the search target. It can be value or reference. The student ID is the search target in the template student card in Fig.3. Namely C8 is the reference cell.

Table_array is two or more columns of data. That’s the search range. It refers to the range or range name.

Table_array needs to meet the following two conditions.

Search target Lookup_value must be in the first column of search range Table_array. For example: according to the specified student ID 20150001 to find the matched name, the student ID column must be the first column of search range Table_array. In this case, the search range is the student information table! $A$4:$J$11.
The search range must contain the return values’ column. In this case, the value needs to return is the name, so the name column must be in the range of student information table! $A$4:$J$11.

Col_index_num is the column ordinal of matched value to be returned in Table_array. It is important to note that the column ordinal is not the column number in worksheet but the column number in search range Table_array. In the case we search the name which is matched with the student ID, and the name is in the second column of student information table! $A$4:$J$11.

Range_lookup is the logic value, which decides vlookup to find exact match value or approximate matching. If the specified value is 0 or false, representing the accurate search. If the specified value is 1 or true, representing fuzzy search, at this moment the value in the first column of table_array must be in ascending order. This case needs accurate search, namely Range_lookup value is set to 0.

Combined with the above explanation, the format of the vlookup function inserted in C6 cell is as follows:

C6=vlookup(Student card template!$C$8, Student information table!$A$4:$J$11,2,0)

After introducing the use of vlookup function through the case, the teacher let the students discuss the following questions: Whether the first and second parameters of the vlookup function must use absolute references? Whether mixed references and relative references could be used? After students’ discussion, the teacher let them practice to use the vlookup function to search the information from the student information sheet according to the student ID in the student card template. And the information includes gender, native place, date of birth, date of enrollment, department, major, class, training level and so on. Through discussion and practice of this case, students will soon be strengthened the prophase study of relative references, mixed references and absolute references, and have already learned the vlookup function.

3.2.4 Case Development

After the students master the vlookup function, the teacher puts forward the following problems: is the calling of text information the same as the calling of picture information? Supposing the student information sheet has already had the photo column and saved the corresponding photos of students, and we need search the corresponding photo from the student information sheet according to the student ID in the student card template. What function should be used and how to operate?

Next let students use Excel help to search for function one by one in the eighteen lookup and reference functions provided by Excel. Finally lock in the index and offset function. The teacher can provide ideas first (The first step is to display the “development tools” tab in the Excel function area, and the second step is to insert picture control in the photo cell of the student card template, and the third step is to use the index or offset function to insert photos), and then let the students practice, finally the teacher summarizes and evaluates again.

3.3 Conclusion and Evaluation

According to the case of student card provided by teacher, it is easy for the students to find a breakthrough point of the study and work and to study actively. Through case analysis, discussion and practice, students’ ability to analyze and solve the problems has been cultivated. After students complete the student card, they can not only apply knowledge to practice, but also realize the transfer of knowledge and arouse the interest of learning Excel formula and function, and draw inferences to complete the learning of other functions, and then play the leading role in the classroom.

Conclusions

In the teaching of lookup and reference functions, the author chooses the case of the production of student card to implement teaching. This case is combined vlookup and index function. Through the case study and practice, students can give full play to the subjective initiative of learning. Not only can the abilities of students be exercised which apply Excel lookup and reference functions to solve actual problems, but also improve the students’ ability of observation and operation skills, and
train their abilities of learning and digest what they have learnt. So as to achieve the teaching goal and realize the teaching that benefits teachers as well as students.

References

