ICT/ Computer Science Department

KS4/KS5 LESSON PLAN

Topic / area of study: Python

Class: Year 10 Computer Science

Ability: Mixed ability.

Date & period: 08/12/2017 Lesson 4

Learning aim:
Pupils will learn about else IF statements. They will be practicing their knowledge with various activities. There will be a test that follows.

Learning objectives/Success criteria:
All pupils will:
Complete the two else statement questions.
Complete two questions in exercise 3.
Attempt the test.
Most pupils will:
Complete all questions in exercise 3.
Complete the test to a B or C grade standard.
Some pupils will:
Finsh all questions with time to prepare for test.
Complete the test to an A or A* grade standard.

Lesson starter / activate the learner

5 minutes

The start of the lesson will be used to recap the previous lesson, specifically the exercises. The teacher will go through each question in exercise 2 quickly to refresh pupils' memory and clear up any problems they may have had. Solutions for the questions will be on the board. This will involve praising the class for their effort and progress in last lesson. It will be interactive with the teacher asking questions and allowing pupils to give answers. Lastly, if not focused on already reiterate the structure of an IF statement and how they allow the computer to make decisions since we will be using them again.

Main Activity

7 minutes = explaining Else IF statements and mini exercise for pupils

Explain IF statements with the addition of the else branch, refer pupils to [page 7] of the booklet as it provides some information on else IF statements. Demonstrate how they are very useful when there are only two possible conditions, using the example with the class from last lesson. However, this will be done hypothetically as year 10 pupils will not appreciate that a second time. Ask the class to look at [page 5] of their booklet, specifically at the diagram with Python code that checks if you are old enough to drive. It should be made clear that we can now easily inform users who cannot drive without creating a new IF. They will then fill out the two questions on [page 7], give the class a minute to complete. This will check if pupils understand the logic behind them as well as using them. The teacher will review the two questions asking pupils to contribute and give reasoning for their answers.

13 minutes = last exercise of the day with If statements including the else branch

The first question uses the question from exercise 2 on [page 5] with the exception of using the new else IF statement that is introduced. This will show pupils the difference and how else IF statements are more efficient when using two conditions. The second question is standard and will not cause many problems. The last one is slightly harder as it requires the "and" operator as the condition is between a range of numbers. The booklet advises to use it and there is a description for the "and" operator on the back page [page 8]. Refer the pupils to [page 8] as the question requires a new operator but does not require teaching. Observe if the pupils can work it out for themselves.

30 minutes = written test

The classroom environment for the test will be silent. Pupils will be spread out as much as possible and watched closely for looking at different screens. The teacher will not answer any questions relevant to the test. Question 1 focuses more on Python code whereas question 2 focuses more on theory. If pupils finish fast then they will be able to go on the computers but very quietly as other pupils will be sitting the test. There is nothing more for them to do. However, if the pupil is eager there are many options to suggest such as the two extension challenges from lesson 2 (checking for leap years or checking for even and odd numbers). Failing this, refer them to the online resource [2], this will direct them straight to loops in the form of tutorials. For any EAL or ALN pupils they should be given the extra five minutes until the end of the lesson. This test will be marked to see if how well pupils have successfully achieved the learning objectives. No calculators allowed for this test.

Plenary

5 minutes =

This plenary will depend on if there are any pupils needing the extra five minutes as any EAL and ALN pupils would be given the opportunity to have this. However if the entire class have finished then take time to review the learning and test taken place in the lesson. Ask specific questions such as "How did you find the else IF statements in Python?" or "How did you find the test?". The pupils will answer with either thumbs again following the same process which allows the teacher to have a rough idea of how they responded to it. Usually this is where the teacher would start to test the pupils to receive some feedback and ensure the knowledge remains in the pupils' memory. However, this is the last lesson and they have just sat a test so it will be relaxed last few minutes to praise the class as they have worked so hard over the last three lessons. In addition, to go over any last minute queries from pupils.

Content of preceding lesson (if applicable)

Advanced strings, input and basic IF statements.

Content of lesson to follow

No more lessons but the class are ready to advance their programming knowledge by moving onto loops in Python. While loops would be introduced first as they are slightly easier than for loops.

Essential/Key Skills covered

Digital competence:

Program and understand more advanced IF statements that include an else branch.

Writing skills from the test and receive an idea of how computer science exams are since they will have to sit them in the future.

Curriculum Cymreig:

Greetings and other commands in welsh, page numbers in the workbook have welsh next to the number.

Literacy:

The pupils are required to sit a written test.

Numeracy:

The pupils need to perform some calculations without a calculator such as Q1 c, which uses multiplication, and divide.

Additional information

Describe how the lesson addresses the progress and learning of the following groups of pupils:

EAL (English as an additional language)

The lesson provides a lot of visuals as well as verbal. Teacher will provide more support to them by repeating the instructions once the class are doing something practical, as well as reading out the exercise questions. Lastly, the teacher will make a conscious effort to speak clearly and slower, using basic key phrases and words to allow EAL pupils to have a better chance of understanding. Suggest the pupil sitting at the front in order to have a better chance of understanding. For the test, the teacher will check the pupil understands the questions. Extra care has been taken to not use any complicated words to minimise the chance of the pupil not being able to understand. They will be given the opportunity to receive an extra five minutes for the test.

ALN (Additional Learning Needs)

Provide as much support as possible. The lesson is planned with lots of different ways of learning in the hope that it will be useful for all groups of pupils. There are many questions to interact and engage with pupils as well as an interactive exercise with variables. There are live examples to demonstrate visually as well as verbally. Also, the questions are designed to suit all pupils and slowly progress. For the test, the teacher will check the pupil understands the questions. They will be given the opportunity to receive an extra five minutes for the test. The

MAT (More, Able and Talented)

These pupils will not receive much support and encourage to search online for any problems they have as it is a good skill to acquire. If pupils finish exercise 3 early on [page 7] then they will be encouraged to look over their work ready for the test such as their Python files, making sure everything is understood.

Additional Notes

The only resources required are the work booklets for the children to follow and answer in as well as computers for the pupils to program on. Lastly, a projector and board will be needed in order to demonstrate examples. For this lesson, the test sheets will also be required so the pupils can sit the test. In terms of health and safety, ensure the bags are under their tables before sitting at the computers in case pupils were to trip over a bag. Do not allow pupils to swing on their chairs and ensure the pupils do not put any liquids near the computers such as bottles of water. If a pupil is too close to the screen, ask them to sit back a little.

To enforce curriculum cymreig greeting at the beginning of the lesson should be in welsh. Also try to reiterate other commands such as "dim siarad" when asking for quiet in the classroom.

References

[1] “learnpython”, Variables and types, available at:
http://learnpython.org/en/Conditions
[2]”learnpython”, Loops, available at:
http://learnpython.org/en/Loops

Solutions for Exercise 3

Q1)

```
friend = raw_input("What is your friends name?")
friend = friend.lower()
if friend == "william":
    print("william loves Python")
else:
    print("william loves football!")
```

Q2)

```
num = input("Enter a number: ")
if num > 0:
    print("Positive")
else:
    print("Negative")
```

Q3)

```
name = input("What is your name?")
age = int(input("What is your age?"))

if age >= 15 and age <= 17:
    print(name + " is eligible to join the club!")
else:
    print("Sorry " + name + " you can not join the club!")
```