Subject: Mathematics

Topic: Quadratic Equation

Level: S4

Learning objective:
At the end of this activity, students will be able to:
1. describe orally the relationship between the sign of the discriminant and the number of roots in a quadratic equation by using the following sentence pattern to indicate a reason.
Since the discriminant is greater than zero, the equation has two distinct real roots.
1. Content:
Activity 1
Calculations
Answering questions in complete sentences
Oral work

2. Language:
Speaking (This activity will be conducted during at the third lesson of the unit plan.)
The teacher models for the students how to use the language feature 'since' to signal a reason

Name:_____ No:_____ Class:_____Date:_____

Activity 1

At the beginning of this activity, students will follow a short dialogue between an imaginary teacher and a class of students. Delete the resat of this sentence

Teacher: Students! We have leamt the relationship between the sign of the discriminant and the number of roots of a quadratic equation. Now, I want to revise this with me.
(Teacher shows the following question on the screen "Find the number of roots of the equation, $x^1 + 2x + 1 = 0$.") OK! Who can give me the answer <u>to</u> this question?

Students: One

Teacher: Good! The equation has one real root. (Teacher repeats and reformulates the students' answer)

Teacher: Can someone tell me the reason for this answer?
William, can you try it?

Student: "Delta" is equals to zero. ("Delta" is the pronunciation of the symbol "A" and it means the discriminant)

Teacher: Right! The discriminant is equal to zero.
(*Again, teacher repeats and reformulates the student's answe*r)
Now I want to show you how to express this orally
Firstly, you can begin this sentence with the word 'since' to signal   you are going to provide a cause for something being true after the comma.

*(Teacher shows the sentence "**Since the discriminant is equal to zero,**" on the screen*)
And then…you can give the result after the comma, the consequence after the comma

(Teacher shows the sentence begins with the word 'since' to signal that you are going to provide a cause for the consequence that comes after the comma, "the equation has 1 real toot." on the screen.)

The sentence begins with the word "Since" to to signal that you are going to provide cause and then immediately after the comma you provide the consequence.

So you can just say **"Since the discriminant is equal to zero, the equation has 1 real root."**

(Teacher points on the screen.)
OK! Everyone please repeat with me,   "Since the discriminant is equal to zero, the equation has 1 real root…….."

How about this one? Now let's try another example
(*Teacher shows the following question on the screen "Find the number of roots of the equation x~ + 3x +1 = 0 ."*)…

Teacher: Firstly, What is the discriminant?

Student: Five

Teacher: That means......the **discriminant is,……..**
(*teacher is cuing the students*)

Student: The discriminant is greater than **zero**
Teacher: Very good!
Then, how many real roots does this **equation** have?

Student: Two real roots.

Teacher: Yes! We say "The equation has **two distinct** real roots.
If we use the same sentence pattern like the last question, then we will say
"**Since** the discriminant_____zero, the equation
(*Teacher shows the sentence   on the screen*
has_____")

Student: The discriminant is greater than zero, the equation has two distinct real roots.

Teacher: Excellent!

> (*Teacher shows the complete sentence on the screen "Since the discriminan.is greater than zero, the equation has two distinct real roots,")*
> Repeat what I just said'.
>
> .

Student: Since the discriminant is greater than zero, the equation has two distinct real roots.

Teacher: How about this question?

> (*Teacher shows the following question on the screen "Find the number of roots of the equation $X^2 + 2x + 3 = 0$.")*
> This time, I want you to give me the answer by using the above sentence pattern.
> Who wants to try it?

Student: Since the discriminant is less than zero, the equation has no real roots.

Teacher: Excellent!

> *(Teacher shows the sentence on the screen "Since the discriminant is less than zero, the equation has no real roots.")*
> OK! Everyone please repeat what is on the screen.

Student: Since the discriminant is less than zero, the equation has no real roots.

Teacher: OK! Now... you should pair up with a classmate. One of you will be "Student A"
> and the other will be "Student B".
> And I will and I will give each group one work sheet.
> Please read the instructions before doing the task!
> You will be given 5 minutes to complete the task!

(Teacher distributes the worksheets to the students)