Programming Formative Assessment

Course: Information Technology
Title: Computer Programming
Grade: 12
Topic: Arrays, Files, and Searching

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"Be the one you love, do what you love."

How this assessment could improve the learning process

1. **What is the purpose of your assessment?**
   This assessment will evaluate students' ability to recognize situations that need to be addressed with Array.
2. **Identify the content (goals/outcomes) that are going to be assessed by this formative assessment.**
   The assessment will focus on recognizing the gap between students in the first place, such that we would be able to group them based on their knowledge level and use the peer learning process and students' communication to improve individuals who need assistance. The outcome would be reducing the gap between students and using the capability of anyone in the classroom.

   The second goal is to find out the most effective teaching method and also the issues with the lesson plan to make it more personalized for each student.
3. **What factors did you consider when designing your assessment?**
   a) Questions should focus on the concept of Array, not how they can be used in different languages.
   b) There should be different questions covering all possible usages of Array. Hints are needed because sometimes questions are unclear for students and the lack of clarity should not be interpreted as "not enough knowledge".
4. **Outline the procedures and responsibilities of both the students and the teacher.**
   Students should stick with the concepts and not use the language-specific ideas for using Array. They need to be creative and use trial/error techniques instead of only following the existing material.
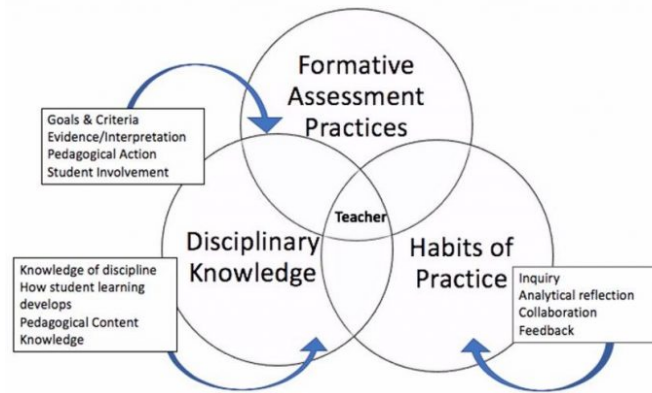
   Teachers are required to give some hints during the process. It is recommended not to leave students during the exam. Sometimes, they refuse to answer a question, not because of their level of knowledge but because either they did not understand the question clearly or they have a lack of self-confidence to examine their own way of tackling the problem.

5. Outline how your formative assessment will support student learning.

The teacher can improve and make students' learning process more personalized after the assessment and find and take care of missing parts in the lesson plan if needed.
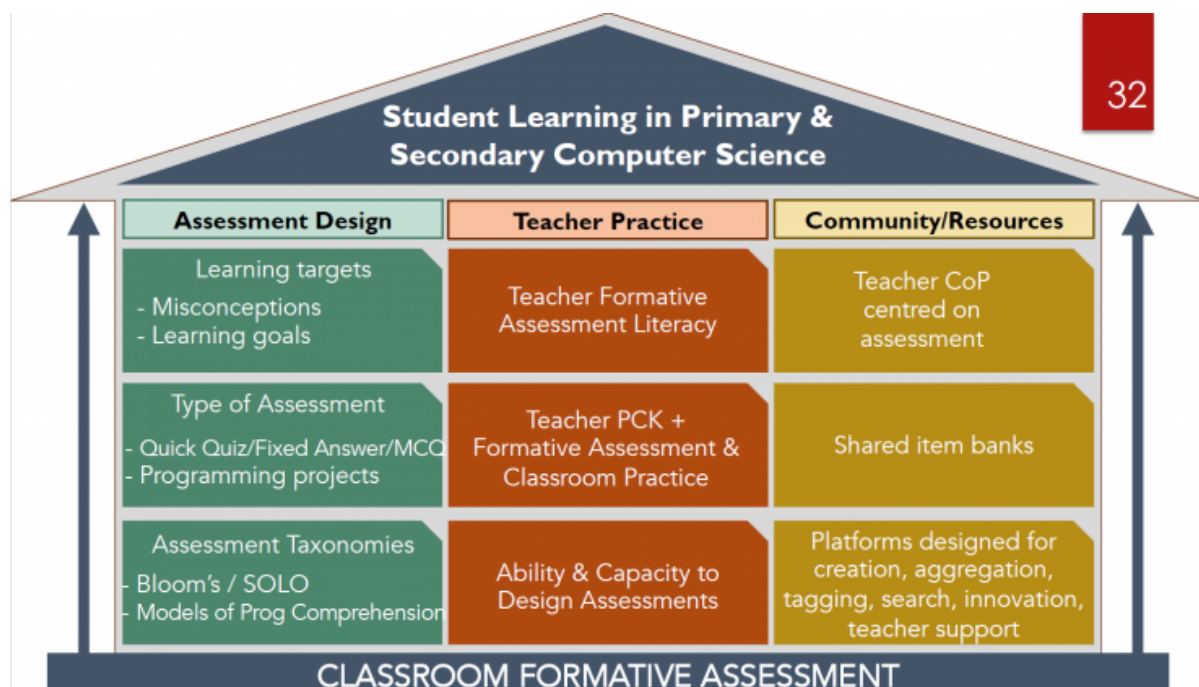
Also, students would know about the gaps in their learning process.

Note: Through formative assessment, teachers seek to find out where students are at to use that information to direct their preparation for the following teaching activities and give students helpful feedback to help them progress. Formative assessment can be used to surface misconceptions (or alternate conceptions) and for diagnosing student difficulties.

Heritage & Wylie, 2018

Dr. Shuchi Grover described her research on this topic, including a framework she developed for formative assessment.

Grover. S. (2021. March). Toward A Framework for Formative Assessment of Conceptual Learning in K-12 Computer Science Classrooms. In Proceedings of the 52nd SIGCSE Technical Symposium. ACM.

Array, File and Search assessment

A) Write a flow of the below application:

A program for a coffee ordering machine that stores the data of each customer throughout the day, along with their orders. Customers' orders should be processed according to the priority they give as input.

1. Design the model and properties for each order.
2. Use files, arrays and sorting functions to solve the problem.

Hints:
1. The device has limited storage capacity, so consider a way to clean up the device based on the machine specialist's request.
2. You can use one or multiple files to store the order data, and the flow would be different depending on the way you choose, the flow would be different.

B) At the end of the day, the machine specialist should be able to see the list of customers and their orders.

Be creative and try to optimize the flow by reducing repetitive steps.

C) Which capability of Array should be used for a delete flow?
D) What capability of the Operating System should be used to add a new item to the order list?

References

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