OBJECT-ORIENTED PROGRAMMING

Summary/Overview

Object-oriented programming, when compared to other programming styles, involves a focus more on objects and data rather than functions seen in other languages or styles. These objects, once organized, are then able to interact with each other on higher levels. Classes and methods are used concurrently with objects to essentially create folders within folders of each other, which in turn hides much of the data in the background. The data, being stored within these classes, can then be utilized throughout the rest of the program.

Typically, this style of programming is useful for more complex programs as it allows for a great deal of information to be stored and hidden rather than seen up front by a programmer attempting to modify the code used. Much of the functionality involved in OOP is still a new concept to me and often times a difficult task to utilize specifically because of the workflow, but is extremely useful for its organization and potential for collaboration.

Proposal for Assimilation in Current Curriculum

Currently, computer science is lacking in the current curriculum provided in my 7th/8th grade STEM classes, but has made improvements over the past year. The introduction of a new project in the Mobile Development unit alongside improved instructional methods for the Cybersecurity unit have been major focal points for curriculum development. These units had a minimal amount of computer science prior to improvements made, and the computer science concepts that were present often did not provide reasonable amounts of clarification and demonstration.

Perhaps the most useful area for utilization involves the Mobile Development unit, which involves a multi-class project using a program called App Lab (provided by Code.org). Students are required to make their first digital prototype of an app idea they developed from early conceptual stages. Since many mobile applications utilize object-oriented programming because it allows for easier updates, this would be an excellent opportunity to showcase to students how professionals in the field of app development organize their code. A requirement as simple as containing a sign-in option for the app that is able to collect information and store it could be a potential implementation.

Proposal for Instruction in Current Classroom

There is a high probability that students will struggle with object-oriented programming as it involves a great deal of organization that many of them are not used to having. Several students submit assignments in files that are not even named, and have a difficult time finding previous work unless the teacher is extremely organized and allocated their various assignments and projects into an easily accessible area. With the vast amount of data needed to make OOP work, students would get overwhelmed quickly (this speaks from experience as I too found myself confused with many of the core concepts of OOP, but these students have much less exposure to programming).

The instruction of these concepts, as a result, would involve increasing the number of class periods required to complete the "App Lab Project". The first step would have students learning the core concepts of OOP prior to even utilizing their app idea in the programming software, and instead would tackle defining objects, classes, and methods. This would then carry into building test code to understand how each component interacts with each other, and only then would the students apply their app ideas to their final prototype. Another benefit of using OOP for this project would be student collaboration since it involves a great deal of organization, planning, and coding.