

(<http://csmatters.org/pd-new>) P - 01

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Teaching Methods

Unit Pedagogy

Revision Date: Sep 11, 2017

Duration: 60 50-minute sessions



Lesson Summary

Summary: This session focuses on a guided discussion among the teachers regarding various teaching strategies. Specifically, classroom management, journaling, paired programming, and classroom customization will be discussed. Additionally, teachers will work in teams on differentiation for different ability levels. They will also discuss pacing guidelines for implementing the curriculum.

Objectives: Teachers will

- Understand the various challenges in managing a computer science classroom.
- Discuss various strategies for managing classes and encouraging good performance from students.

Outcomes:

1. Guided Discussion - 120 min

Learning Objectives

Teacher Resources

Teaching Methods Folder (<https://drive.google.com/open?id=0B5vAY-fhOT-iYzFELWc0SktWVVE>)

Lesson Plan

TOTAL: 120 minutes

The instructor should use the PoerPoint in "Teacher Resources" to guide this lesson.

Guided Discussion (120 min)

Introduction

Introduce the 7 main topics for contemplation:

How do we manage...

1. Instruction
2. Behavior
3. Lab equipment
4. Feedback
5. Differentiated instruction
6. Paired programming
7. Journaling

Instruction

Go over two techniques: circle time and grouping.

Behavior

Remind teachers that no student is perfect. Go over 7 targets for helping student behavior.

Lab Management

Talk about three main components of lab management: decor, rules/procedures, and equipment.

Decor: With respect to decor, include a picture wall developed by students, as well as motivational sayings and pictures. Remind teachers to build a learning environment together with all of their students! This means that the pictures put up should not make students feel excluded in the classroom. A good example of this is the study done by the University of Washington on 270 high school students which demonstrates that three times as many girls were interested in enrolling in a computer science class if the classroom was redesigned to be less "geeky" and more inviting. Classroom design matters! It can transmit stereotypes to students about who does and does not belong in computer science. Make sure that your classroom is sending the right message! Article is in the folder.

Rules/ Procedures: With respect to rules/procedures, keep the rules and consequences visible. Another idea is to keep reminders taped to desk. Acceptable use policy.

Equipment: There are two components of managing lab equipment: storage and procedures. Go over good equipment practice with respect to both components.

In general, make sure that the lab management is consistent and accessible!

Feedback

In general, make sure that feedback is timely and relevant!

There are two types of feedback: students to teacher and teachers to students.

Differentiated Instruction

When thinking about the method of teaching students to new material, consider the material being learned. For example, you would not expect a new learner to learn a dance based solely on verbal instruction! You also wouldn't expect someone to learn how to play the piano by watching myriad videos. This is why we have you do the teach-outs: even if it is frustrating, you are still learning through practicing the way you would deliver the lesson to a classroom!

Furthermore, there is evidence that novices learn better through studying examples, whereas more experienced students learn better from solving the problems themselves. Additionally, there is evidence that most students learn better by combining activities, like drawing along with a passive study. Both articles are in the folder.

Time Management

Go over the different ways to assist students with time management.

Other Ideas

Give some other ideas for differentiated instruction. Also, remind teachers that they should feel free to modify the curriculum to address student needs. Make sure the materials are accessible for students with physical and learning disabilities. Check if the examples are accessible to students from all backgrounds. Consider any implicit or explicit biases in the material and modify as needed. You can also contact AccessCS10K (<http://uw.edu/accesscomputing/accessCS10K>) for more ideas/ help!

Paired Programming Revisited

Go over techniques to use while students are programming in pairs.

Sharing Strategies

The teachers will brainstorm and write classroom management tricks that work for them on a Post-It note. *(Note: Be careful about this because what one teacher might think works well in their classroom may actually not be the technique that is benefiting the students. May actually be the effect of something else.)* They will then discuss strategies with their elbow partner. After that, they will reflect and one person from each table will place all Post-It notes on poster labeled "Teacher Bag of Tricks".

Journaling Revisited

Why and How

Go over why and how journals are used. (NOTE: *It is stated without citation that students are more likely to remember essential knowledge when they really reflect on a topic and make a personal connection. If this is true, it needs to be cited before including it in the lesson.*)

Types

Go over the three different types of journals we can use: online, brain book, and physical notebooks.

Maintenance

To keep or not to keep... that is the question! Go over ways to manage and organize journals.

If you decide to have a procedure of one student getting/ putting away notebooks for the table group, make sure you have a fair system for rotating between the students. The fear is that one student may default to being the "retriever".

Pacing Guide

Have the teachers get into groups with others that teach similar class schedules to look through the pacing guide, make notes, and discuss their feedback with their group. They should write their feedback on a Post-It note.

Questions!

Evidence of Learning

Summative Assessment

Teachers can demonstrate knowledge learned here during the Teach Out sessions.



(<http://www.umbc.edu/>)



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