

moodlemootTM

PHILIPPINES 2024

AI in Moodle: Transformative Teaching Technologies

CS Teacher VPL Tricks

Half your time checking student programs while doubling student engagement with Moodle VPL

Presented By:

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Teacher and I.T. Practitioner

I have had the privilege of teaching at various institutions, including the Institute of Electrical and Electronics Engineering (IEEE), the Department of Computer Science (DCS) and the Virata School of Business at the University of the Philippines Diliman (UPD). During my time at UPD, I actively contributed to the development of UPD's Moodle-based UVLe LMS as a Project Development Associate.

Currently, I am teaching at Philippine Science High School - Main Campus, where I served as the head of the Information Technology Unit (MIS) during the deployment of our Moodle-based Learning Management System called KHub.



Roy Canseco

CS Teacher , MIS - PSHS-MC

Talk Description

Join me as I share how our campus set up and leverages Moodle's Virtual Programming Laboratory (VPL), along with generative AI to heighten student engagement, while minimizing code checking time.

Discover how we have implemented these technologies to enhance the learning experience, while keeping server costs cheap and maintenance easy.

CS TEACHER VPL TRICKS

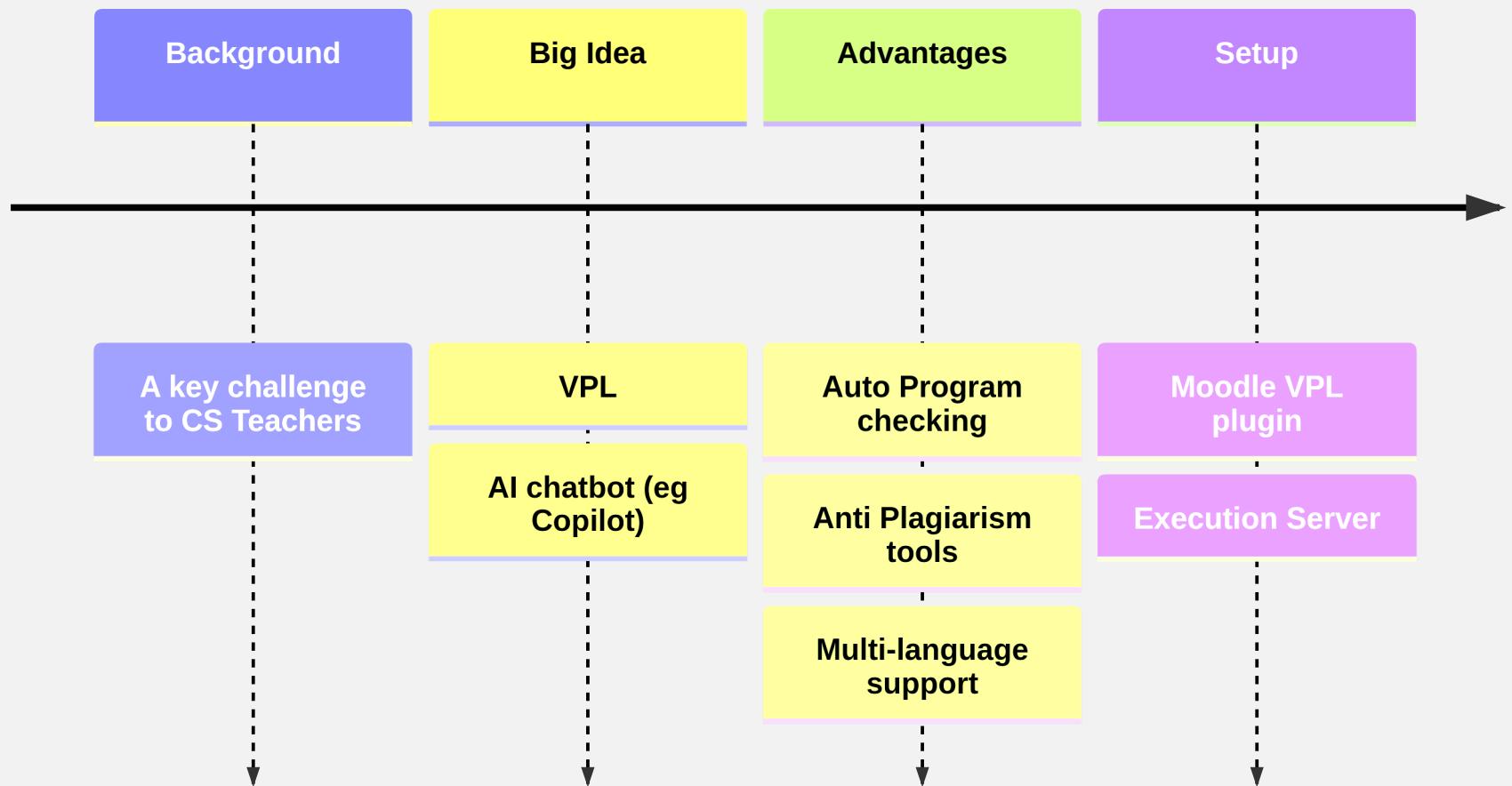
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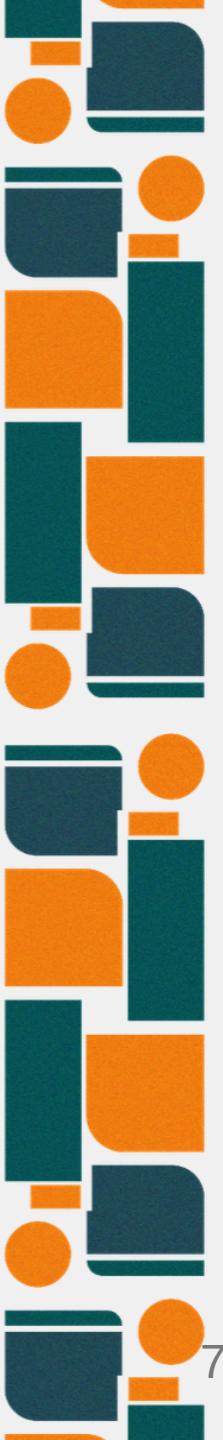
May 2024

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Talk Outline





According to a study funded by Google, under the direction of ACM, and in partnership with Microsoft:

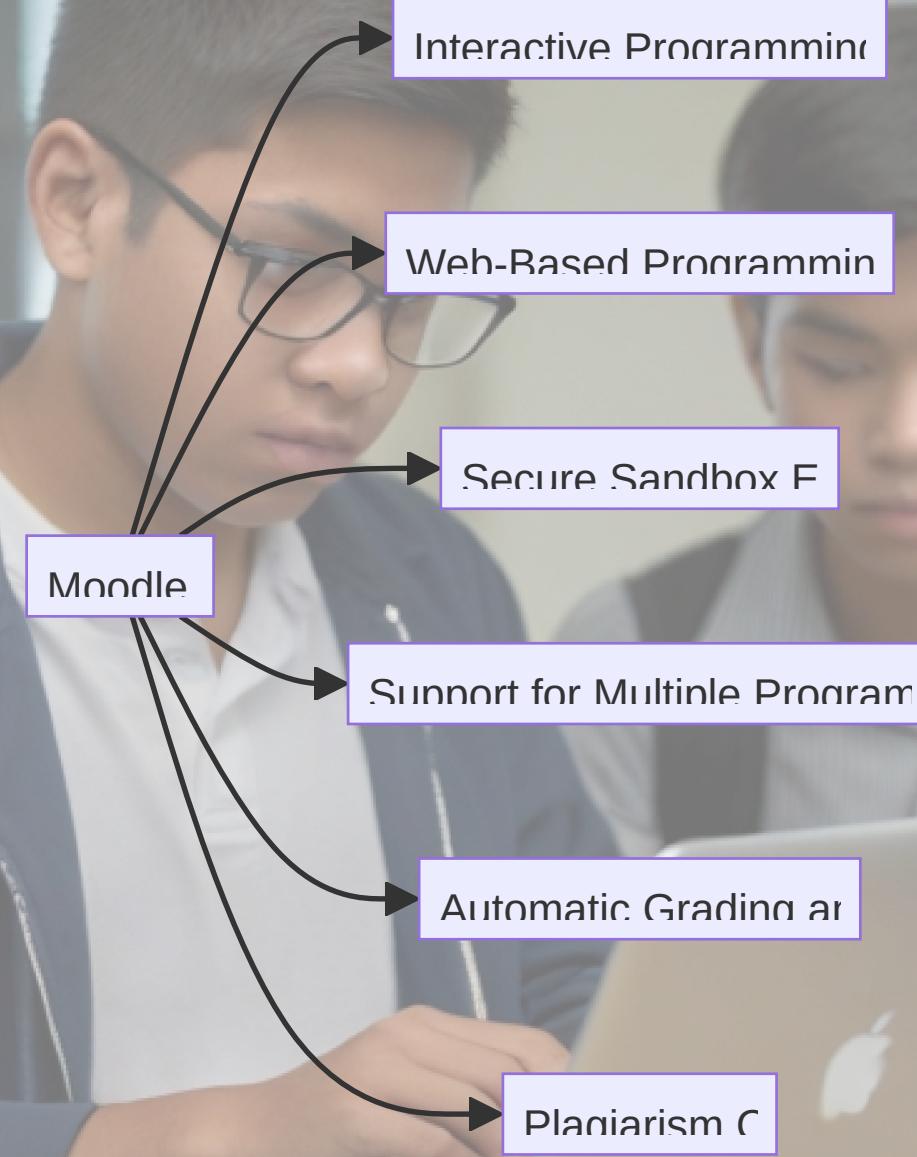
"Computer science educators often struggle with limited access to **up-to-date materials, software, and hardware**"

-University of Chicago Study

01

VPL - Virtual Programming Laboratory

Virtual Programming Laboratory



Interactive Secure Web-based Environment

SY23.CS3.Web Development Q3 - PracTest - GN (Hard) Edit — Mozilla Firefox

index.js

```
1 process.stdout.write('Enter a number: ');
2
3
4 let input = [];
5 process.stdin.on('data', function (data) {
6   input = data.toString().trim();
7
8   let total = 0;
9
10  if (input.length >= 2){
11    arr = input.split(')').map(Number);
12
13    for (let i = 0; i < input.length; i++) {
14      total = Number(total) + Number(input[i])
15    }
16
17  }
18  else {
19    total = Number(input);
20  }
21
22  console.log(total);
23  process.exit();
24
25});
```

Evaluate

Evaluating

Proposed grade: 6.38 / 17

Comments

Failed tests

- Test 3: demo3
- Test 4: demo4
- Test 5: 1210
- Test 6: first five
- Test 8: love love

Test 3: demo3

Incorrect program output

--- Input ---
47

--- Program output ---
Enter a number: 11

--- Expected output (numbers)---
2

Execution

Description

Ln 1, Col 1 JavaScript

Automatic Code Similarity Checker

← → C https://khub.mc.pshs.edu.ph/mod/vpl/similarity/listsimilarity.php 120% ☆

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Virtual programming lab Settings Test cases Execution options Requested files More ▾

ID	File Name	Score / Total Score	Similarity Score	Contributors
78	index.js	8.50 / 17.00	62 91 70*	B E M il B ta (*)
				Yan en S ol (*)
79	index.js	4.25 / 17.00	64 84 48*	M I A a C z (*)
				BS B J ne S s (*)
80	index.js	8.50 / 17.00	50 91 59*	B E M il B ta (*)
				E D e u z (*)
81	script.js	17.00 / 17.00	54 87 72*	JL J F La lor (*)
				GN.js 17.00 / 17.00

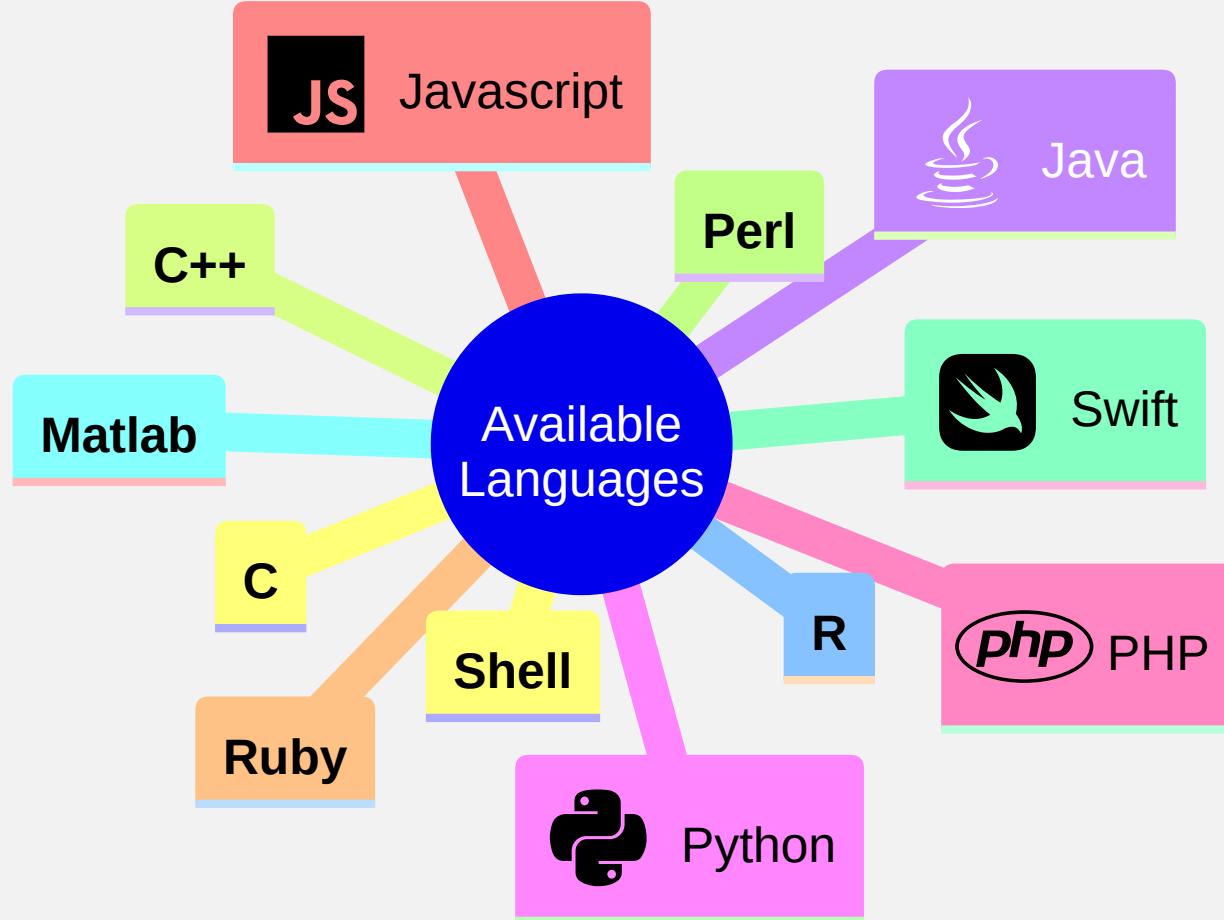
Easy Code Comparison

diff — Mozilla Firefox
https://khub.mc.pshs.edu.ph/mod/vpl/similarity/diff.php?type1=1&subid1=20048&filename1=script.js&type2=1&subid2=20273&filename2=GN.js 110% ⭐️

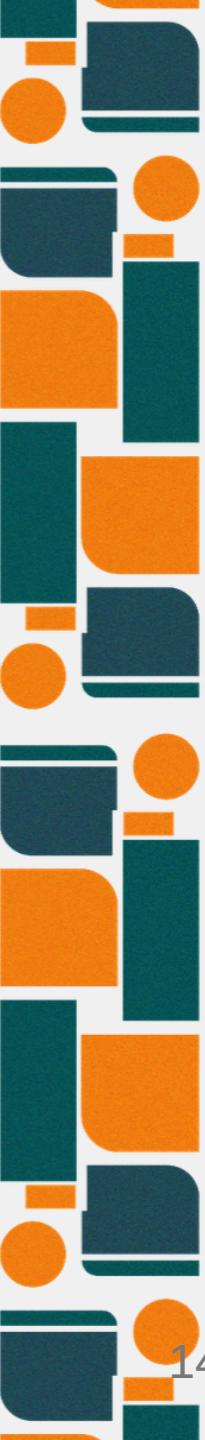
ipt.js	GN.js
1 process.stdout.write('Enter a number: ');\n2\n3 let input = '';\n4 process.stdin.on('data', function (data) {\n5 input = data.toString().trim();\n\n6 function sumOfDigits(num) {\n7 let sum = 0;\n8 while (num > 0) {\n9 sum += num % 10;\n0 num = Math.floor(num / 10);\n1 }\n2 return sum;\n3 }\n\n4 function g(n) {\n5 while (n >= 10) {\n6 n = sumOfDigits(n);\n7 }\n8 return n;\n9 }\n\n0 let result = g(parseInt(input));\n1\n2 console.log(result);\n3 process.exit();\n4 });	1 process.stdout.write('Enter a number: ');\n2\n3 let input = '';\n4 process.stdin.on('data', function (data) {\n5 input = data.toString().trim();\n\n6 function sumOfDigits(num) {\n\n7 let result = sumOfDigits(n);\n8 while (result >= 10) {\n9 result = sumOfDigits(result);\n10 }\n11 return result;\n12 }\n\n13 let result = g(parseInt(input));\n14\n15 console.log(result);\n16 process.exit();\n17 });

Lots of Programming Languages supported

** there are more
depending on the setup



Supported Programming Languages



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3 6 Edit mode

Virtual programming lab Settings Test cases **Execution options** Requested files More ▾

▼ Execution options

Based on	Select
Run script	JAVASCRIPT: Using nodejs with the first file
Debug script	FORTRAN: Using gfortran
Run	GO: Using "go build -o" with first file
Debug	GROOVY: Using default javac, run JUnit if detected
Evaluate	HASKELL: Using "ghc or runhugs +98" with the first file
Evaluate just on submission	HTML: Using "php -n -f" access index.html
Automatic grade	JAVA: Using default javac, run JUnit if detected
	JAVASCRIPT: Using nodejs with the first file
	JULIA: Julia running first jl file
	KOTLIN: Using default kotlinc
	LISP: Using clisp with the first file
	LUA: Using lua with the first file
	MATLAB: Using Matlab or Octave with the first file
	MINIZINC: Using "go run" with first file
	MIPS: MIPS R2000/R3000 using Spim emulator
	PASCAL: Using FPC or gpc
	PERL: Using "perl -w" with first file
	PHP: Using "php -n -f" with the first file or on serve if index.php exists
	PROLOG: Using swipl with the first file .pro or .pl
	PSEINT: Using pseint with the first file
	PYTHON-2: Using python2 with the first file

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VPL

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Abstract : Changes in the demands of education require innovation and creativity in the learning process. With the development of Artificial Intelligence (AI) in the field of education to help process daily activities including teaching and learning. The objective of this study is to investigate Artificial Intelligence (AI) in education, especially in the teaching and learning process. This research uses library research. The result analysis shows that AI has been widely applied to various educational technology platforms such as 1) Virtual Mentor, 2) Voice Assistant, for example, Google Assistant (Google), Siri (Apple), and Cortana (Microsoft). 3) Smart Content, 4) Presentation Translator. 5) Global Courses, for example, MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera, etc. 6) Automatic Assessment, 7) Personalized Learning for examples Ruangguru, etc. 7) Educational games, 8) Intelligent Tutoring System (ITS) or Intelligent Computer-Aided Instruction (ICAI). Artificial Intelligence (AI) is the process of modeling human thinking and designing a machine so it can behave like humans. In the future progress of science and technology, teachers' work such as correcting, student attendance, giving daily tests and exams, explaining knowledge, making administrative reports and other systemic work can be submitted to be completed by technology devices. Teachers can save more energy and can focus more on non-systemic work to create a golden generation with more character and quality with natural intelligence where robots cannot do it. Technology only runs systematically and is automated based on human commands, while the human mind, especially teachers deliver new knowledge. Therefore, the teacher's intelligence will be unmatched. AI that emerged as the industrial revolution is also the result of the creative minds of human natural intelligence. So when compared, between the two will never have an equal position.

Keywords: Artificial Intelligence (AI), education, teaching and learning

INTRODUCTION

Today's technology has become an unavoidable part of the passage of time. Technology has not only changed people's lifestyles but has also changed how we work, learn, and interact. Various kinds of innovations appear all the time, making our activities and work more practical and effective. A more recent technological development is the emergence of the term artificial intelligence which is abbreviated as AI (artificial intelligence) which is currently starting to steal attention as a tool to act like humans.

In its development, artificial intelligence has also penetrated the world of education. AI systems allow people to learn with the help of education assistants such as bots. The development of the times requires the world of education to adapt to technological developments to improve the quality of education, especially the adjustment of information and communication technology. Digital learning content that is developing today can be presented thanks to the application of AI. Thick textbooks can now be presented into content that is more



VPL Setup and Use

1. ***Install VPL plugin*** - Installing Moodle VPL is a straightforward process that involves uploading the plugin package and configuring the settings.
2. ***Setup VPL Jail Server*** - Involves setting up a dedicated server, installing the necessary packages, configuring the server, and testing the installation.
3. ***Create VPL Assignments*** - Creating VPL assignments involves careful planning, designing, and testing to ensure they align with learning objectives and effectively assess programming skills.

Citations

- AI-gen picture: Leonardo AI. 2024. <https://app.leonardo.ai/ai-generations>
- AI-gen picture: Cici AI. 2024. <https://www.ciciai.com/chat>
- icons: Font Awesome. 2024. <https://fontawesome.com/v6/>

Introduction

- Greeting and introduction
- Brief explanation of the Moodle VPL plugin
- Overview of the importance of programming education and the need for practical programming assignments

Understanding the Moodle VPL Plugin

- Explanation of what the Moodle VPL plugin is and its purpose
 - + Key features and benefits of using the Moodle VPL plugin
- Supported programming languages and environments
- Overview of the user roles and their responsibilities (instructors and students)

Creating Programming Assignments with Moodle VPL

- Step-by-step guide on how to create programming assignments using the plugin
- Defining programming tasks, requirements, and constraints
- Setting up programming languages, libraries, and compiler options
- Configuring evaluation criteria and grading methods
- Demonstrating the use of test cases and expected outputs

Student Experience with Moodle VPL

- Walkthrough of the student view and interface in the Moodle VPL activity
- Accessing and understanding the programming assignment
- Writing and submitting code within the web-based programming environment
- Running and testing code in the secure sandbox environment
- Receiving immediate feedback and evaluation results

Best Practices and Tips for Using Moodle VPL

- Sharing effective strategies for designing and implementing programming assignments
- Providing tips for instructors to enhance student engagement and learning outcomes
- Addressing common challenges and how to overcome them
- Highlighting success stories and case studies from other institutions

Q&A Session

- Allocating time for questions and answers
- Addressing any concerns or queries from the audience

Conclusion

- Recap of the key points covered in the talk
- Encouraging further exploration and adoption of the Moodle VPL plugin
- Thanking the audience for their participation and attention