BITS AND BYTES

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VCE Programming Language Options to Consider

By Maria-Ana Sanchez

Which programming language should we teach and why? This is the typical question teachers face when selecting a language for their Digital Technologies and Software Development curriculum. After reading a few articles and viewing some talks by experts online, I can say these languages are worth to consider teaching in 2019 and beyond: Python, Java, Swift and Java Script. These languages are not in any order.

Python has proven to be an easy language to introduce programming. Its syntax is simple and easy to read, and it is newer than a lot of other languages. Python is a powerful language used in computer science, machine learning and data analysis. Furthermore, the demand for Python programmers is high. GrokLearning offers numerous Python courses catering for different age groups and skills.

Java, on the other hand, is very popular for creating programs with real world applications. It is easy to learn as it has an English-like syntax, with helpful open source tools and libraries. It makes use of Netbeans and Eclipse, two powerful IDEs that have taken Java to the next level. We can find Java on mobiles, desktops and large scale applications.

Swift is also one of the most popular programming languages which is used for building iOS apps. Apple designed this language with a focus on the education market and consumers.

Swift is a powerful but easy to learn language. It is open source and it has a strong community always ready to help.

Java Script, along with HTML and CSS, is used for building interactive websites. JavaScript is an essential technology for web development, mobile apps and game development. Therefore, it is a significant language to consider. Students can code it in the browser as there is no need for a development environment.

It is important that students immerse themselves in programming and understand the logic of it. Once they learn the essential programming concepts such as variables, data structures, functions and control structures, they will realise that they can apply these principles to all other languages.
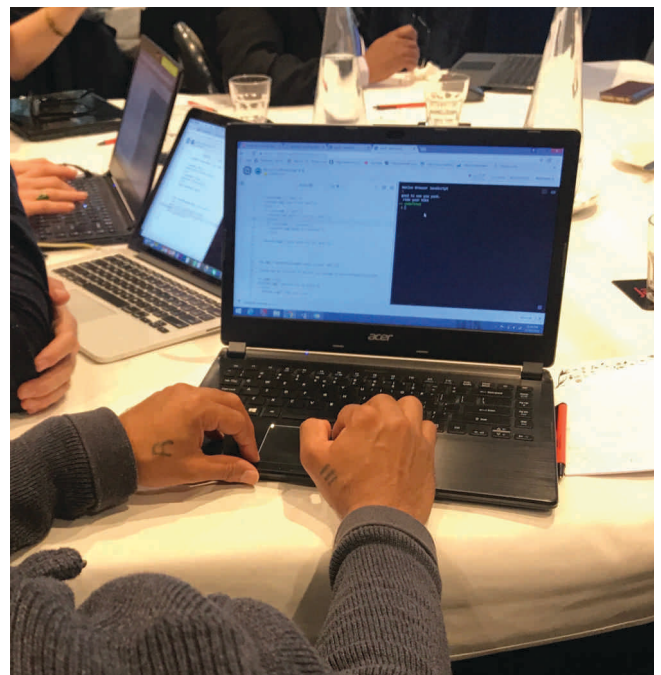
You could say it does not matter what language we teach and learn at school if students are developing critical thinking and problem-solving skills. However, it is important to consider languages that relate to latest technology advances such as Robotics and Artificial Intelligence, that are taught in tertiary institutions and that have high demands in the IT industry. Any language is challenging, fun and worthwhile to learn.

Mind Mapping with VCE Software Development

By Chris Paragreen

I have long encouraged my students to make something like a mind map to help them make sense of things, but after seeing several poor attempts and many no-attempts, I thought it best that I make a mind map for myself so that I could model to my students what they should be attempting.

Below you can see a mind map I developed as part of the process covered in the problem solving methodology of the

VCE SD Course. My reasoning for this was:

- to get my head around what I should and shouldn't be teaching
- to encourage my students to make sense of the bevy of terms at various places in the study design.

It's important to note that making this mind map is not something I give to my students, as I think it's better for their understanding to create one for themselves.

There are 3 sections in the study design that need to be synthesised. Firstly, and most importantly, are the key knowledge and key skills described in each area of study. The points in these sections are further refined by referring to the glossary and to the overarching description of the Problem Solving Methodology. Therein lies a source of confusion for teachers and students alike, because the latter two sections describe content for all of Computing, Informatics and Software Development. Each subject does not need to know all of it.

My mind map (in its current form) is not intended to cover the entire Software Development course. Rather, it is meant to clarify those sections of the PSM that relate specifically to Software Development. But it does take a lot of text and summarise it in a visual form. Perhaps it should be a task for students of Unit 2 Computing.
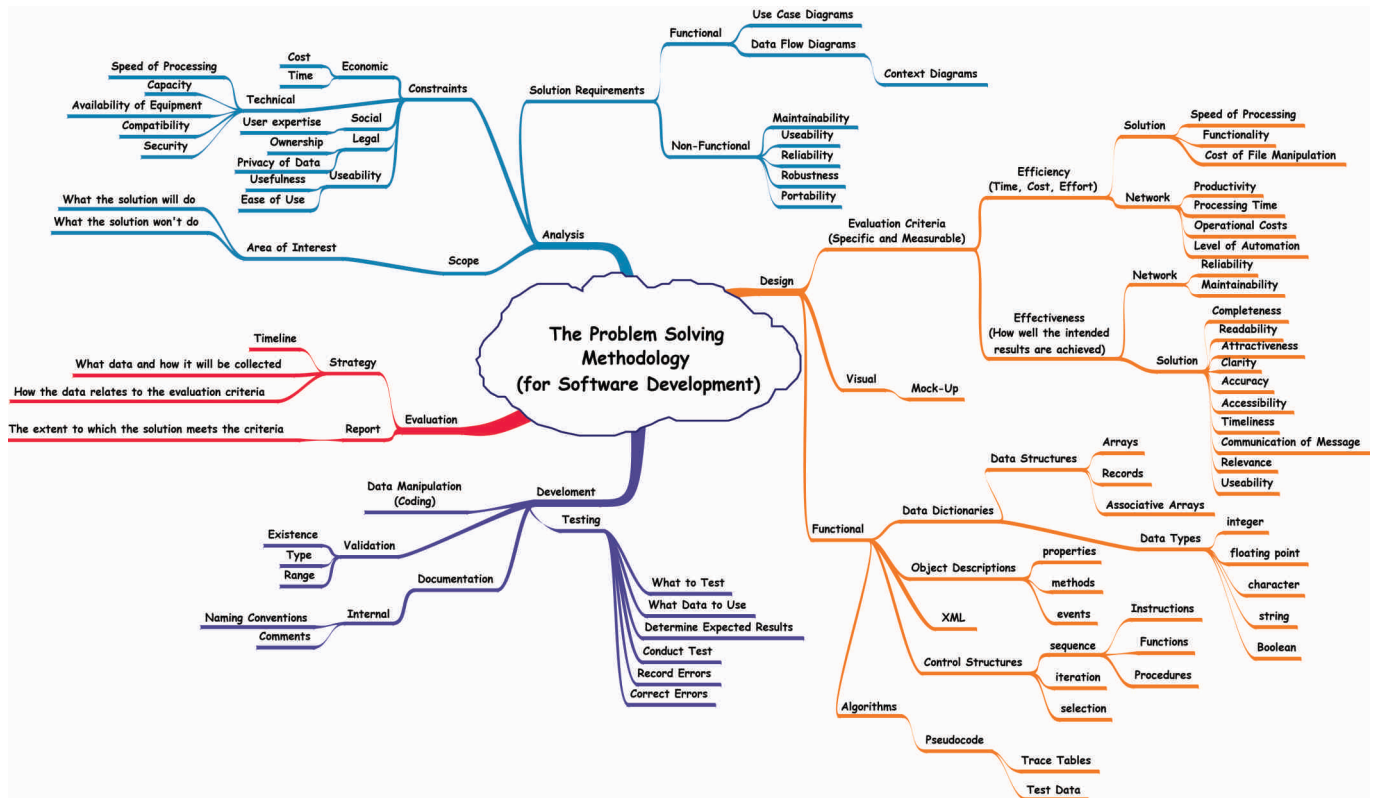
The Problem Solving Methodology for Software Development

Starting a STEM Space

By Celeste Pettinella, Doncaster Primary School

Firstly, what is a STEM space?

In simple terms, this is a room at our school that allows STEM (Science, Technology, Engineering and Mathematics) to take place for our students. This space is where one of these disciplines can take place or the integration of these disciplines can be housed. To begin the journey for creating a STEM space at Doncaster Primary School, I first asked my principal and assistant principal where it could be located. I was excited to put theory into practice and share this wonderful idea with my students, teaching colleagues, the wider community and university lecturers.

It began as a blank classroom with minimal resources. The DLTV kindly visited to look at the room offered to me and gave me suggestions. Later I searched Pinterest for inspiration and after six months of tinkering the space starting taking shape. Alisha, a teaching colleague designed floor plans and volunteered her time to create a masterpiece.

After six months it has transformed to host state of the art furniture and computers. We slowly built up the room with the latest technology tools and kits. It is now a colourful teaching and learning area where students can engage with 21C learning and problem solving. As the PLC coordinator, I allowed the STEM PLC team to decide upon a name. Whilst a Makerspaces was an option we decided STEM Space.

The set up of the space took a while. We used a consultant for ideas about innovative furniture options. Furniture to unwrap, tables to wipe, floors to be swept, pin boards to be dressed and some furniture to be assembled. A huge thank you to my supportive family for assisting as well as some colleagues.

I am very grateful that I have been able to network with the DLTV and Monash University.

We created a STEM timetable to schedule other classes to access and use the space. The space is now also used by our after-school STEM club. In addition, we have hosted special events such as the STEM EXPO. Roland visited us to show our students some of the latest technology including 360 cameras, makey makey, robots and virtual glasses.

The space at our school is evolving and whilst it is not 100% complete it is certainly a step in the right direction. Whilst designing a STEM space was challenging, there was no turning back once we had it up and running.