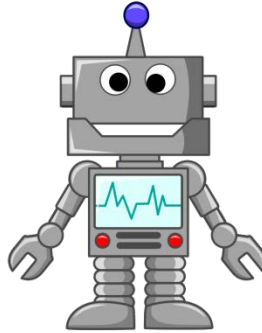


Student Perceptions On Computer Coding Ashfield Public School Term 3, 2015



The Initiative

21st Century education is about innovation. It is about being open to new ideas and new educational trends that enable higher order thinking, deep knowledge and deep understanding. It is about using technology to create learning experiences that go far beyond what was possible in traditional classrooms.

In 2014 Ashfield Public School was involved in Computer Science Education Week, December 8 -14 with students from Kindergarten to Year 6 participating in the Hour of Code.

The evolution of Hour of Code is a weekly 30 minute lesson on computer coding in all classes throughout 2015. The goals of these lessons are for students to:

- Have the skills, knowledge and understanding to use computer coding create their own games, websites, and applications.
- Choose and apply problem-solving skills and mathematical techniques, communication and reasoning
- Find computer coding engaging, relevant and useful

The survey

Students across the school from K-6 participated in a survey. The survey was about ascertaining student perceptions about the teaching of computer coding at Ashfield Public School.

There were five questions in the survey:

1. What is computer coding
2. Do you enjoy computer coding
3. Why?
4. How will computer coding help you in the future?
5. How can we improve computer coding at our school.

Data was collected from 188 students across Years 1 – 6.
Data was also collected from 56 Kindergarten students and students from the Support Unit.

Data from the survey

What is student understanding of computer coding

87% of the students surveyed answered this question. 190 responses described an understanding of computer coding.

33% of the responses described computer coding as making and playing movies, animations, games, activities.

22% the response described computer coding to be about directional language & concepts including a step by step procedure to move blocks.

100% of students in Year 2 and Year 6 were able to describe their understanding of computer coding.

Only 1% of the ideas about what computer coding is associated it with problem solving.

It is possible to infer that student understanding of computer coding as making and playing movies, animations, games, activities are influenced by the fact that Scratch is used to teach computer coding.

Scratch involves programming interactive stories, games, and animations and sharing creations with others in the online community.

It is recommended that Scratch continues to be used to enable students to make and play movies, animations, games and activities. Scratch also enables students to develop understanding and skills associated with computer coding as instructing a computer.

It is recommended that more explicit instruction is given to students about computer coding as a way to engage in problem solving. Explicitly linking computer coding to working mathematically is also recommended.

Do students enjoy computer coding

72% of children described computer coding as something they enjoy doing all the time, or mostly enjoy doing it. 28% of children described computer coding as something they sometimes enjoy or do not enjoy.

The implication for teaching and learning at Ashfield Public School is to maintain and develop computer coding as it is an initiative that the majority of children enjoy.

Why do students enjoy computer coding

82% of the students surveyed answered this question. 155 responses described why computer coding is enjoyable.

41% of the responses described computer coding as enjoyable because it was fun and/or easy. 25% of the responses identified that computer coding as enjoyable because it involves playing and/or making games and animations.

10% of the responses identified that computer coding was enjoyable because it was about being creative, imaginative and/or using thinking skills.

By being fun and achievable, computer coding engages children. It is recommended that explicit teaching of computer coding focused on creativity, imagination and thinking skills. Computer coding should be embedded in English to enhance deeper knowledge and understanding in relation to Object C.

Objective C

Through responding to and composing a wide range of texts and through the close study of texts, students will develop knowledge, understanding and skills in order to think in ways that are imaginative, creative, interpretive and critical

Why don't students enjoy computer coding

35% of the students surveyed answered this question. 41 responses described why computer coding is not enjoyable. All these responses were given by students in Year 3 to Year 6.

50% of the responses described computer coding as not enjoyable because it can be confusing, complicated, difficult and/or not understanding its purpose.

It is recommended that increased explicit instruction is provided during class to increase skills, knowledge and understanding for the students disengaging from computer coding.

How will computer coding help students in the future

62% of the students surveyed answered this question. 141 responses described how computer coding will be beneficial in the future.

14% of responses describe computer coding as providing skills for a future career.

16% of responses describe computer coding as assisting with learning, thinking and solving problems. This is in comparison to the 1% of responses in Question One that associated computer coding with problem solving.

It is recommended that explicit instruction during computer coding lessons focuses on the relevance of computer coding and its application to every day uses.

How can computer coding be improved at the school

62% of the students surveyed answered this question. 125 responses described how computer coding could be improved at the school.

39% of responses identified that more time should be spent on computer coding.

11% of responses identified that more resources, including iPads and laptops should be available to students.

It is recommended that the opportunity for computer coding be made available to children outside of class time. Apart from the computer coding club, this could happen during a break time in the library. Allocation of a teacher or peer mentors to assist students is also recommended.

Kindergarten and the Support Unit

Individual responses for the Kindergarten and the Support Unit were only taken for the question on enjoyment of computer coding. Overall, students enjoyed doing computer coding all of the time or mostly enjoy doing it.

In Kindergarten the other survey questions were asked to the whole class with comments from children recorded. The answers given by Kindergarten students were consistent individual answers from Year 1 to Year 6.

Perceptions of computer coding by Kindergarten students included associating it with following directions and playing a game. More time spent on computer coding was also identified by Kindergarten students.

Comment

Computer coding and the School Plan

The School Plan identifies quality learning as engaging every child with a differentiated and challenging, relevant curriculum with a focus on developing, individual strengths, a love of learning and the capacity to achieve. The plan also identifies quality teaching a whole school systematic delivery of a 21st Century curriculum focused on innovative learning.

Computer coding achieves aspects of quality learning and teaching in the following ways:

- The results of the survey indicate that overall, students are positive about computer coding and are benefiting from computer coding classes. Computer coding helps students develop a *love of learning*.
- As a *whole school approach* to learning with dedicated 30 minute weekly computer coding lessons from Kindergarten to Year Six.
- The Computer Coding Club run by parents from the Digital Learning Committee enables *capable students to accelerate* their skills, knowledge and understanding of computer coding. The Coding Club initiative also gives the opportunity to extend computer coding at the school as an *innovative educational pursuit* with a focus on where to next.

Future directions

A future direction of computer coding is to align it with other key learning areas rather than as a standalone IT initiative. Computer coding fits well with Working Mathematically (Mathematics) and imaginative, creative, interpretive and critical thinking (English). It is recommended that other key learning areas create authentic learning situations in which computer coding can be applied.

Developing computer coding as a way to select and apply problem-solving skills and mathematical techniques, communication and reasoning should continue to be a focus. Also to continue is maintaining computer coding as something that is fun, engaging, relevant and useful. It is recommended that teachers further their knowledge of the subject through ongoing professional development.

Conclusion

In conclusion the results of the Computer Coding survey indicate that overall across the school, students are positive about computer coding and are benefiting from computer coding classes. The classes enable students to develop the skills, knowledge and understanding to use computer coding create their own games, websites, and applications.

Data from the survey

What is computer coding?

Grade	1	2	3	4	5	6
Making / playing movies, animations, games, activities	18	4	13	14	10	5
Improve / learn about / use directional language & concepts	6	14	0	0	0	0
Step by step procedure / moving blocks	4	9	3	4	3	0
Making code / Hour of Code	4	2	2	3	1	1
Part of computer programming	0	1	0	0	5	1
Computer language / computer science	6	0	1	2	0	0
Instructing a computer	0	0	0	1	1	6
Learn how a computer works	0	0	5	0	0	0
A computer program	0	0	0	0	0	1
Making programs	0	0	1	3	0	0
Design websites	0	0	6	4	0	0
Scratch	0	0	1	0	1	2
A computer game	3	3	3	2	0	1
Create a system of something new	0	0	1	0	0	1
Learning something new / help you learn	0	2	0	1	0	0
Being creative / smart	0	0	1	0	0	1
Solving problems	0	2	0	0	0	0
Includes mathematics, English, writing and art	0	0	0	0	0	1
An educational website	0	1	1	0	0	0
No answer / doesn't know	0	4	9	6	6	0

Do you enjoy computer programming

Grade	K	1	2	3	4	5	6		
Not at all	0	1	1	3	5	0	2	12	5%
Sometimes	6	5	4	16	9	10	8	58	23%
Mostly	4	4	2	11	8	6	8	43	18%
All the time	46	30	24	7	13	10	1	131	54%
Total	56	40	31	37	35	26	19	244	100%

Why do you enjoy computer programming?

Grade	K	1	2	3	4	5	6
Improves skills of technology		0	0	1	3	0	1
Good to be working on computers		2	0	7	2	0	0
Connects people to technology		0	0	0	0	0	2
Playing / making games and animations		12	8	5	5	6	3
Because you learn		0	5	2	0	2	1
Teaches directional language		2	0	0	1	0	0
Be creative and imaginative / use thinking skills		2	1	5	2	2	4
Fun / easy		17	14	7	12	13	1
Get awards as you progress		0	2	1	1	0	1
No answer / doesn't know		6	3	15	13	6	10

Why do you **not** enjoy computer programming?

Grade	K	1	2	3	4	5	6
Boring / not interested		0	0	3	3	4	0
Frustrating when it doesn't work		0	0	2	2	1	1
When it gets confusing / complicated / difficult / don't understand what it is for		0	0	7	5	3	6
Spend more time on it		2	0	0	1	0	0
Not as good as Minecraft		1	0	0	0	0	0
No answer / doesn't know		34	31	4	22	19	12

How will computer coding help you in the future?

Grade	K	1	2	3	4	5	6
Learn how to make/play a game / or app		4	2	3	4	10	4
Create something		6	0	0	0	0	1
To be creative		2	0	2	0	0	1
To computer code / program		0	1	2	1	1	2
To make videos		0	0	0	0	0	1
Understand directional language		2	1	0	0	0	0
Become clever / smart		4	1	1	0	0	0
Collaborating		0	0	0	0	0	2
For a future / for future job		0	0	4	9	5	2
To work in IT		0	0	0	0	0	1
Better computer skills		0	1	4	3	2	0
Learn more about computers		2	1	2	3	2	1
Make your own computer		0	0	0	0	0	1
Repair your own computer		0	0	0	0	0	1
Control machines		0	0	0	0	0	1
Increased knowledge		0	1	1	0	0	1
Help us to learn / think / solve problems		2	7	11	1	2	0
Help with English and Maths / Learning		1	0	1	2	1	1
To be a teacher		2	0	1	0	0	0
Helps me play Play Station		2	0	0	0	0	0
Understand and read maps		1	0	0	0	0	0
No answer / doesn't know		13	14	10	13	18	3

How can we improve computer coding at our school?

Grade	K	1	2	3	4	5	6
Like it the way it is		0	1	0	2	2	0
Working with buddies including from other classes		0	0	1	0	0	1
Use a new website		0	0	0	0	0	2
Make it more challenging		0	1	1	0	2	3
Make a coding club		0	1	0	0	1	0
Applying it to robotics		0	0	0	1	1	1
More projects		1	0	0	0	0	1
More games		2	2	4	0	1	0
Spend more time on it		13	4	13	8	7	4
Better / more equipment		0	0	0	6	0	1
More skilled teachers to help		0	0	1	1	1	1
More information about it		1	1	0	1	4	1
More variety / more interesting / more fun		0	0	0	4	3	1
More iPads / laptops / computers		10	0	4	0	0	0
More work on directional language		1	0	0	0	0	0
Make it competitive		0	0	1	0	0	0
Play Minecraft instead		0	0	0	0	1	0
No answer / doesn't know		12	21	15	13	7	3