Edith Cowan University

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The Other Art of Computer Programming

A Visual Alternative to Communicate
Computational Thinking

Focus Group 3000 Transcription

16th September 2016

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2020

Focus Group 3000 Transcription

16th September 2016

Project: The Other Art of Computer Programming

Primary Researcher: Melanie Tarr

Document: FocusGroupDiscussionFinal3000.pdf

Communicator	Time Interval	Verbal Communication
Leader	00:00 00:08 00:12 00:16 00:18 00:21	OK so I'm going to show everyone three different types of pictures, um… and then you can tell me what you think, which word goes the best with them, so there is communication or there is meaning making or there is aesthetics. So let's just have a quick look.
	00:23 00:28 00:30 00:32 00:34 00:42 00:43 00:50	That one, those pictures… Is that communication, meaning or aesthetics? Which word would you pick (just quickly what comes off the top of your head)? Hands up for communication, hands up for meaning, 1 person, 2, 3 – 3 people for meaning and hands up for aesthetics. OK so most people think aesthetics in here, so that was…1, 2, 3, 4, 5, 6, 7…
Teacher	00:54	Must be nine.

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Leader	00:56 01:00 01:04 01:05 01:06 01:09 01:15 01:19 01:20 01:23 01:26 01:30 01:35 01:38 01:41 01:48	8 girls for aesthetics… Which is what I got for the results for them. It's, you know and aesthetics. So this one, lets have a look at this one. This is Seymour. He died two months ago. I'm so sad because I wanted to ask him some questions. He invented LOGO that language we did, that looks at computer geometry and that is one of the first computer robots, it was called a turtle and they used to get the three year olds to program it so they knew that really young children could program after they did this exercise with them. So what word would you use to describe Mr Papert, is he, is it a communication picture, a meaning making picture or is it aesthetic, does it look good? Hands up for communication.
ParticipantC	01:50	Wait. What do you mean by communication?

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Leader	01:55 01:59 02:00 02:06 02:09 02:12 02:17 02:18 02:20	So…we use pictures for different things. So on your iPhone, on the front of it there's a series of pictograms. So it's faster to press on a pictogram and know what it means like a stop signal rather than actually read it and that's fast communication isn't it? Do you think? Do you agree with me? And then there's different things like artworks. Some artworks are really attractive aren't they?
ParticipantC	02:24	Yeah
Leader	02:26 02:27 02:30 02:33 02:34	So when you describe those, they look good and they are aesthetic, aren't they… So like the Mona Lisa or something like that. And then there are other pictures that are used for meaning making, like a map.
ParticipantC	02:38	Ohhhhh (loud)
Leader	02:39 02:40 02:42 02:44	So that means something that is going to direct you somewhere and take you somewhere, you don't look at it because it is pretty. It's got a function.
ParticipantG	02:46	Ohhhhhh (louder)

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Participants	02:47	(Lots of talking), oh yeah, oh yeah
Leader	02:48 02:50 02:52 02:55	Is that easier, it's hard to understand pictures isn't it but if we can get everyone to agree on what the role of pictures are then we can get information in quicker to people's brains.
ParticipantG	02:58 03:00	So, was the first one actually meaning not aesthetic?
ParticipantC	03:03	Yeah
Leader	03:04 03:07 03:10	Yes, but we have gone past that, so that's OK, there is no right or wrong answer… to these. So what do you think this one is?
Participants	03:12	Aesthetic…aesthetic….aesthetic..aesthetic…
Leader	03:19 03:22 03:25	I think its aesthetic too… So I'm going to absolutely agree with you on that. But then I don't have to agree… What about this one?
ParticipantC	03:27	Meaning
ParticipantG	03:28	Meaning
	03:29	Meaning

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Leader	03:30 03:34 03:37	Meaning making… Who says communication? It's quite quick isn't it, cause it means what the word says… its "abstraction".
ParticipantC	03:38	Yes
Leader	03:40 03:43 03:48 03:50 03:53 03:55 03:58 04:00 04:06 04:10 04:12 04:14 04:16 04:20 04:24	Right so three people for communication. Who says its aesthetic…It just looks good and there is no other function for it… hmmm no one thinks its aesthetic anymore. OK that's good. OK so this is your results for what you thought the role of pictures are in learning and everyone thought they were mostly aesthetic. About a third of the class thought it was communication, which is what I'd expect because you're all on iPads or iPhones aren't you? So you're looking at pictograms and things like that for quick understanding and then… but most people think its aesthetic. Which is fine. So do you have any reasons why you think or thought it was aesthetic?
Leader	04:26	Yes

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Communicator	Time Interval	Verbal Communication
ParticipantC	04:27 04:28 04:32 04:34 04:38	I think it's probably because we are so used to pictures being things to look at that are pretty, and learning from like reading stuff so its kind of probably new for us. For pictures its…
Leader	04:42 04:47 04:51 04:55 04:57 04:59 05:00 05:11 05:10 05:14	That's… I think that's a great explanation, does anyone want to add anything to that. Does anyone want to add anything…no…just to let you know… I have a couple of girl's schools and this one talks so I said to xxx could I please come back and ask them some questions. They are… The other one is like so quiet and I thought please can I talk to them…OK dual coding theory. So how did you feel about the circuit?
ParticipantC	05:18	Oh… a bit confused
ParticipantG	05:19	It was different
ParticipantC	05:19	Different
ParticipantG	05:20	A different way to understand…

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Leader	05:22 05:27 05:30 05:35 05:37 05:40 05:46 05:48 05:49 05:53 05:58 05:59 06:00	That is the inside of every computer, it, its one or zero and then they do millions of circuits on top of it and its all abstracted and then every two years we shrink the amount of things we can store on a resistor so it gets tinier and tinier…but…I mean that's basically all it is, and those tables there, the Difference Engine was out of 10, so it was more cleverer than what we do now. So did you feel… Did the picture and the table go together? Did you understand what was being asked? You know how some of the gates are AND gates and some of the gates are NAND gates.
ParticipantMimi	06:01	Yeah
Leader	06:02	Did that work or was that confusing?
Participantmimi	06:02	Confu…
Participantx	06:04	I think it was
ParticipantG	06:05 06:10	I didn't totally get it if it was the shape, AND or NAND or whatever.
Participantx	06:11	I didn't understand if it was NAND …

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ParticipantG	06:12	I think if it said the shape…
Leader	06:13	OK. So did you want the words in the … next to the actual table?
ParticipantG	06:18 06:19 06:21	Yeah then you don't have to kind of think about, Oh this shape goes with that gate which goes with this operation.
Leader	06:25 06:27 06:29 06:32 06:36 06:38 06:41 06:43 06:45	OK…That's good! Um, did you consider the table and the circuit diagram together when you were reaching the conclusion? This is actually really early engineering, too like this is the way they teach engineering when they move it into high schools so they give the picture and then have another way of communication as well. So did you look at the table and the picture together?
ParticipantJ	06:46	Yeah

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Leader	06:50 06:52 06:57 06:59 07:02	Cause it would have been too hard to try and work out. OK great. Nearly finished. Right with the binary tree. Umm…Could the pictures have been reorganised so that it was easier to spot a pattern?
ParticipantG	07:05	Yeah
Leader	07:08 07:11	How could I have drawn that better? Everybody. I'm trying to represent sequence or order.
ParticipantJ	07:14	I think its pretty good.
Participants	07:15	I, I, I, …..
ParticipantsM	07:16	I thought it was fine.
ParticipantO	07:22	So that the path goes from one to two to three to four…
Leader	07:24 07:26	So I'll give you another example that I gave to another school. Can I just rub this off?
Teacher	07:29	Yeah
ParticipantG	07:32	It's awful

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Communicator	Time Interval	Verbal Communication
ParticipantO	07:34	We are learning what xxx means
Leader	07:37 07:39 07:41 07:44 07:55 08:00 08:05 08:07 08:10	I might be able to explain this a little bit better. So this is the way a computer stores information its got nine there, maybe a minus there then its got a two then a three there. So it's all stored like that. So when it goes through and retrieves it, it will go down and it will get the 9, and then it will get the two and the three and it will put those in brackets so it's two take three. So that's how it retrieves the order of the information. Does that…
ParticipantC	08:12	Ohhhh
ParticipantO	08:13	So it's like a sum.
Leader	08:14 08:20 08:24	This is hard for me to explain binary trees…I struggle with them. But…does that explain it a little bit clearer… to you?
ParticipantG	08:26 08:27	Yeah so it's kind of like a specific order, it creates order.

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Leader	08:30 08:33 08:35 08:36	Yes…so is there a way I could have drawn that better? Because what you are doing now for me is that you are designing the curriculum for year 8s next year…OK?
Participant	08:37	Oh god…pressure
Leader	08:39	So… Is there a way that I could do that better?
ParticipantO	08:44 08:47	Well I think that…um… With the flight path thing, that was cool but I was a bit confused as to what that actually meant.
ParticipantC	08:51	mmm
ParticipantO	08:52	I think, I can't quite remember.
Leader	08:54 08:55 09:00	Yes, I think that I should actually make, once its gone through the node…fainter…And I should bring out the node that's current really dark.
ParticipantG	09:02	Oh Yeah…the circle.
Leader	09:03	So use opacity?
ParticipantG	09:06	Oh Yeah

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Leader	09:07 09:09	Yeah the circle…In the second box across, make that really lighter than the top one.
LeaderG	09:10 09:11	So make the orange one stand out more, and then
Leader	09:13 09:15	Yep…100%...I think I need to use more opacity.
ParticipantO	09:19	Ohhhh I… I just… I've got it ….OK.
Leader	09:22 09:25 09:27 09:30 09:31	Everyone OK with that? And also put it all on one page because what happens is that is the pseudo code for that order. Of traversal through the nodes. So the way I do the curriculums is an instructional comic.
Leader	09:32	Its so weird computer science isn't it xxxx?
Teacher	09:34	Yes…
Leader	09:38 09:42 09:43 09:50 09:55 09:58	So, basically the way I do the curriculum is they are comics. They're a special kind of comic called an instructional comic. So everyone thought they learned facts faster with comics. Most people thought that. Why is that? Does anyone want to add anything?

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ParticipantG	09:59 10:03	I think its more visual and so we understand more because of the pictures and stuff.
Leader	10:09 10:11	Yeah… I'm just checking that my phone is on. Great
Leader	10:12 10:15	Um. Everyone thought that learning comics would be easy for them?
ParticipantG	10:19	Yep
Leader	10:20	Is that true?
ParticipantF	10:21 10:23 10:24 10:25	Because I think explaining stuff with pictures is easier than explaining stuff with words or like to read stuff cause I know when I'm cooking I really like to read a book and watch a video on it.
Leader	10:29 10:34	So you said cooking so you like to watch a video or it's a recipe?
ParticipantF	10:35 10:36 10:39	It shows you how to do it and same sewing because reading the instruction book is just soooo confusing.
Leader	10:42	Right, because a recipe is like an algorithm. Yep

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Communicator	Time Interval	Verbal Communication
ParticipantO	10:43 10:45 10:49 10:50 10:55 10:57	I think that, um… I think it kind of depends on the way different people learn because some people might learn faster with like pictures and stuff but um some might learn better with words, I think that for me I kind of like words and then a picture to go with it, that's just me though.
Leader	11:00 11:06 11:07 11:10 11:12 11:17 11:23 11:24	And some people are like that. I have a computer science teacher who I work with and he says he thinks in code. He doesn't think in pictures he says he actually thinks in code so some people are like that they think in code and code is words. So that's OK. Um So would you, would you like learning things in the future with comics?
Participants	11:27	Yes, yes, yes
Leader	11:30	Is there anyone that would not like to learn through a comic? Yep
ParticipantM	11:32	Words are so much easier to comics.
Leader	11:33	Words are easier and Yep
ParticipantF	11:35 11:37	Well I don't know…like I feel like a video would be better.

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ParticipantJ	11:39	*Labelling like things?…that lists what like steps we do?*
ParticipantF		Yeah like the ones on Khan academy.
ParticipantF	11:47	The Khan academy's good…that was good
ParticipantF		Yeah like Khan academy they have videos like in sewing when you get Miss xxxx to show you…
ParticipantF	11:50	Yes. That is so true.
Participants		
Leader	11:52 11:53 11:54	When you are doing that, watching the Khan academy do you let it play through and you know it or do you stop it?
ParticipantJ	11:56	I stop it
ParticipantF	11:56	I stop it
ParticipantF	11:57	I play it through
Participant	11:58	I play it through
ParticipantJ	11:59	Play it through… play it through then I get a question and I forget so I have to go up and stop it.

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Communicator	Time Interval	Verbal Communication
ParticipantF	12:02	Actually no I play it through once …
Leader		Right OK
Charlie	12:08	And answer those questions …???
Leader	12:11	I like the Khan academy too, I think its good
Julie		Yeah
Leader	12:14	Ummm. Any one else want to add anything?
ParticipantL	12:16 12:17 12:22 12:23	I think the comic is quite cool but I think I'd probably like a little bit more words to explain it. But the comic, like the pictures to go with it is good.
Leader	12:25	Yes
ParticipantJ	12:23	I find comics are quite hard to understand, just
ParticipantJ	12:26	I know
ParticipantJ	12:30 12:35	because, although they are simple, there's some information that words could probably fill in.

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Leader	12:36 12:39 12:40 12:42	Is that the layout? Are you talking about the layout of the comic, like you don't really understand the order or is it the pictures you don't understand?
Participants	12:47	
ParticipantJ	12:50 12:52	It's just that sometimes the pictures don't fill in the information that words could be able to…
Leader	12:53	Because its really open, isn't it the interpretation, because I have some comics done by a man in New York named Chris Ware and I look at them and it takes me a little while to know what's going on. Yep
ParticipantF	13:06 13:12 13:19	I find that it's easier to use words because say when you're answering something or explaining, you have to use words to explain it. So it's kinda and for some reason its clear I visualise words.
ParticipantF	13:23 13:24 13:26	Yeah it's like when I like for example, when I memorise something. I actually visualise the words that I understand. Yeah it's weird.
ParticipantC	13:29	It sounds really weird
		I really can

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Communicator	Time Interval	Verbal Communication
ParticipantJ		I do that
ParticipantM		I do that
ParticipantG		You realise that you visualise *what you would do*.
Josie	13:46 13:47 13:48 13:49	To me its actually … and I'd rather have a clue book of pictures and a couple like headings it makes me imagine more so I think about it wholly and it goes in my brain a lot.
Leader	13:53 13:56	So that imagination is important to you and that picture? Like the graphic novel thing?
	14:02 14:04 14:11	It's easier and say if um on the book if you want to make the activity, I think it would be clearer with words, headings and words. This paragraph is for this …That would be quite helpful.
Leader	14:12	Yep, that's great. Yep
Julie	14:13 14:18	I feel like for me probably a comic, and then words explaining what it means
Julie	14:22 14:25	Cause like the picture helps me remember *what it is* and the words help me understand.
Participant	14:26	mm
Participant	14:26	mm

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Communicator	Time Interval	Verbal Communication
Julie	14:27	Yep
Leader	14:32 14:33 14:38	That's good information, that's really great information. So people want to use comics more often when they learn, I think we have already covered that. Does anyone want to add anything to that?
Leader	14:47	These were the statistical trends that came out from all the schools
Leader	14:55 14:56 14:57	Um. So do you expect, do you expect to learn something about programming if you learn with comics?
ParticipantG	14:58	Yep
ParticipantM	14:59	Yes
Leader	15:00 15:02 15:04 15:08	Would you expect to learn something, why, what would be the reason? We have already given reasons haven't we? I've got lots of information. OK next one.
ParticipantJ	15:10	Wait, When you say comics do mean just like a picture with words?

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Leader	15:16 15:17 15:20 15:23 15:26	I mean like the ones I showed you that I did. Remember when you did your thing? They're, they're different they are a bit more specific than a normal comic. They're like, called an instructional comic.
Participant	15:27	Oh OK
Leader	15:28 15:30 15:36 15:37 15:41 15:43 15:48 15:49	But a lot of people look at teenagers and saying oh they like it because it's emotional or something like that but I like to use it because its just knowledge transfer. It's quicker for x and I to get information into people's brains in that way. So that is why I'm looking at it. Not for any other reason. Yep
Larissa	15:50 15:52 15:56	I just…I think that probably the context is quite hard as well, I think that probably added to it. I don't know.
Leader	15:57	Is that the pictures are difficult to
Larissa	15:58	Well I think that the…
Leader	15:59	…Decipher?

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Larissa	16:00	Well, not necessarily I think that, just like
Mandy		Stuff that's in there
Participant	16:03	Whichever way we learn it, it would still be hard for us to learn…
Participant		Yeah, it's hard.
Mandy		…Because it's a different way of thinking.
Participant		I just…
George		Learning is hard.
Participant		Mmm
George		Learning is hard.
Leader		Girls, Ladies, sorry just a quick question about narrative design, are you interested in the stories… in computer science…like do you know how the first bug was discovered?
Participants		Mumbling

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Leader	17:04	I'm going to give your teacher this poster of Grace who invented the first compiler and she also helped John von Neumann solve a quadratic equation that invented the atom bomb, but that's a bit sad so we won't talk about that, but she… the first bug was an actual moth that flew into this machine that was twice as big as this room. It was very big
Participants		Was it was a moth? How big was the computer? So it was a literal bug?
Leader	17:09 17:12	And twice as long in Harvard in America, so it wasn't a bug it was a moth.
Participants		Talking…
Leader	17:20 17:23 17:25 17:27	So they could not find out what was wrong with it so the bug was actually taken out of the machine and stuck in a book and she said, "This was the first bug".
Participant	17:30	So its like a literal bug

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Leader	17:34	And then Alan Turing, he loved… His favourite book was Snow White and he ended up poisoning himself with an apple.
Participants	17:45	Ah…
Leader	17:44 17:46	So that's a bit gory but are those stories interesting?
Participants		Yes…yeah
Leader	17:48 17:50	To weave into the curriculum. They are aren't they?
Leader	17:56	OK. Last page. What about games in comparison to learning with comics?
Leader	18:07	This is an interesting area at the moment. So if I put a timer on each page and I got you and was timing you as you completed each page, how would you feel about that?
Participant	18:17	A bit rushed
Participant	18:18	I feel like its better if we just work
Leader	18:20	Give you a bit of a headache?
Participants	18:22	Yeah

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Leader		Don't want that?
Participant	18:32	Yeah what x said, otherwise you can't
Participant	18:33 18:34	People do naturally work…like some people might work fast…
Leader	18:36	Yes?
Participant	18:40	I think it would be good to……that pushes you faster to do better. When you're learning…. It helps you pushes you and tests your brain.
Leader	18:52	So some people are OK for timing and some people don't want it. What about achievement badges…with each unit?
Leader	19:05	So if you did the Grace Hopper on compiling or a unit like that you'd get a little bug as a badge.
Participant	19:09	Yeah, that would be cool cause then you could be like "oh…I want to get this little badge".
Leader	19:12	What if you need to get your teacher's attention if you could contact them or message them instead of putting your hand up?
Participant	19:24	That's cool
ParticipantG	19:25	Yeah

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Participant	19:28	If you messaged would they come and then explain it over.
Leader	19:32 19:34 19:35 19:38	Well it might be, you might be able to just send her a message, an anonymous one or one with your name on it like, I need help on this and no one else can see it.
Participant	19:42	Yep
Leader	19:43	Um, what about a score? At the bottom of the page that tested as you go?
Participant	19:47	Yep
Participant	19:49	Oh yeah, I'd like that so much.
Leader	19:56 19:57 19:58	OK that's it ladies. Thank you so much for your contribution. I've got a lot of valuable things in that. And… How do I stop this?

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