

# Algorhythms

cs4hs.rpi.edu + csdt.rpi.edu

## Purpose

The purpose of the Algorhythms project is to train high school art teachers on computing/art concepts using Culturally Situated Design Tools (CSDTs). Then, the art teachers in turn train their high school art students who are under-represented ethnically in STEM.

## Hypothesis

Computer science and art share concepts. Thus, art can be used to teach students computational thinking concepts and thereby inspire them to pursue careers that combine computing and art.

## Methodology

1. Art teachers attend a Rensselaer CS4HS workshop funded by Google.
2. They take an attitudes survey.
3. They take achievement pre/post tests for African Fractals, Virtual Beadloom and Cornrow Curves CSDTs.
4. They engage in learning computational thinking/art concepts using CSDTs.
5. They explore hands-on art activities for their students using CSDTs.
6. They integrate the activities into their high school art classes.

## Analysis

Two under-represented students showed improvement on the Cornrow Curves post-test. Whereas, the other three under-represented students scored the same on both tests.

On the Virtual Beadloom Post-Test, four under-represented students showed improvement. Whereas, one under-represented student scored the same on both the pre- and post-tests. The latter student also scored the same on the both pre- and post-tests for Cornrow Curves.

MIT App Inventor Summit 2013

## Data



Student	Ethnicity	Gender	Cornrow Curves Pre-Test	Cornrow Curves Post-Test	Virtual Beadloom Pre-Test	Virtual Beadloom Post-Test
1	W	F	12	12	20	20
2	W	F	7	Not taken	21	Absent
3	W	F	11	12	19	22
4	B,W,NA	M	11	13	21	23
5	A	M	12	12	19	19
6	L, W	F	8	12	9	22
7	W	F	9	11	22	24
8	B	F	13	13	19	23
9	B	F	12	12	17	19
10	W,A	F	11	12	18	24
11	W	M	12	9	20	23
12	B	F	10	10	23	23
13	W	F	13	13	21	22

Bath County Computer Attitudes Survey	Agree	Don't Know	Disagree	1	2	3	4	5	6	7	8	9	10	11	12	13
1. I think studying about culture (for example like in Africa or Mexico) is boring.			13	D	D	D	D	D	D	D	D	D	D	D	D	D
2. People who like computers are often odd.	1	2	9	D	D	D	D	D	D	D	D	D	D	D	D	A
3. Working with math problems on a computer is fun, like solving a puzzle.	4	3	6	D	?	D	A	?	A	A	?	A	?	D	D	A
4. It is easy to get tired of using a computer.	4	2	7	A	D	A	?	D	D	D	D	D	D	A	?	A
5. Studying computer science in high school would be a good idea.	6	4	3	?	A	A	A	A	?	?	A	D	?	D	D	A
6. People who use computers in their jobs are the only people who need to study about computers.	2	11	D	D	D	D	?	D	D	?	D	D	D	D	D	D
7. Learning about computers is interesting.	7	1	5	D	?	D	A	A	A	A	D	A	D	D	D	A
8. School would be a better place without computers.	11	2	D	A	D	A	A	A	A	A	A	A	A	A	A	A
9. I enjoy using a computer.	1	2	10	A	D	?	D	D	?	D	D	D	D	D	D	D
10. Computers are boring.	6	4	3	?	A	D	?	A	D	A	?	D	?	A	A	A
11. Working on a computer is a good way to spend spare time.	2	5	6	A	D	?	D	?	D	?	D	?	D	D	D	?
12. Using a computer becomes boring after about a half hour.	3	5	4	?	A	?	D	?	D	?	D	D	D	D	D	?
13. Learning about computers is something I can do without.	1	3	9	A	D	?	D	D	D	D	D	D	D	D	D	?
14. Computers are not exciting.	4	9	D	D	D	D	D	D	D	D	D	D	D	D	D	?
15. Studying about computers is a waste of time.	7	2	4	D	A	D	A	D	A	?	D	?	D	?	D	?
16. It is fun to figure out how computers work.	8	5	7	A	A	?	A	?	A	A	?	A	A	?	A	A
17. Computers help people to think.	4	9	D	?	?	D	D	?	D	D	?	D	D	D	D	?
18. Classroom discussions about the use of computers in society are a waste of time.	2	4	6	D	D	?	?	?	A	D	D	A	D	D	D	?
19. Studying about the history of computers is boring.	8	1	4	D	A	D	A	A	A	?	D	A	A	A	A	A
20. Learning about the different uses of computers is interesting.	1	3	9	?	D	?	D	D	?	D	D	?	D	A	D	D
21. Reading and talking about how computers might be used in the future is boring.	7	4	2	?	A	?	A	?	A	?	D	A	A	A	A	?
22. Learning about the development of computers is interesting.	5	3	5	A	D	A	?	D	D	A	?	?	A	A	D	D
23. Learning to program a computer is something I can do without.	5	4	4	D	A	?	?	A	?	?	A	?	D	D	D	A
24. Learning about computer hardware and software is fun.	6	4	3	D	?	D	?	A	A	?	A	?	D	A	A	A
25. I enjoy learning about how computers are used in our daily lives.	4	7	2	A	?	D	A	?	?	?	?	?	?	?	?	A
26. Studying about the uses and misuses of computers will help me to be a more responsible citizen.	6	3	4	D	A	D	?	A	?	?	D	A	A	D	?	A
27. I wish I had more time to use computers in school.	6	3	4	D	A	D	?	A	?	?	D	A	A	D	?	A

