University of Arkansas, Fayetteville

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Computer Science Teacher Survey

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COMPUTER SCIENCE TEACHER SURVEY

By:

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Executive Summary

In April/May of 2020, the University of Arkansas' Office for Education Policy (OEP), in partnership with Arkansas Governor Asa Hutchinson's Computer Science and Cyber Security Task Force, fielded a survey with the 400+ Arkansas educators who at that time held a computer science endorsement (528), computer science approval code (5016), or computer science technical permit (5014) on their educator's license. The survey received 153 responses, a nearly 40 percent response rate. The full survey results follow this executive summary.

Among the respondents, 28 do not currently teach computer science, but 24 of those not currently teaching computer science indicated that they would like to. Those not teaching computer science cited school/grade does not offer computer science courses, other teacher teaching, and need in current role(s) as reasons. Teachers not currently teaching computer science were excluded from questions about current school/district context.

The student composition in respondents' districts was relatively similar to the state as a whole. Respondents taught in districts where 41 percent of students were minority and where 57 percent qualified for free or reduced-price lunches through the National School Lunch Program, compared to 40 percent and 60 percent respectively for the state. Respondents' districts were, however, considerably larger than the average district in Arkansas. The median district in which a survey respondent teaches had an enrollment of 1,681 students, compared to the state median district enrollment of 916 students.

Sixty percent of respondents currently teaching computer science have between 2 and 4 years of experience teaching the subject, 23 percent have 5 or more, and 17 percent began teaching computer science this year. Survey respondents were nearly 90 percent white and were 54 percent female and 46 percent male.

Sixty percent of respondents reported feeling extremely or very well supported, and most reported having high-quality resources available and being likely to receive funding for computer science related expenditures. Teachers reported feeling that their building and district-level administrators were supportive of computer science, but wanted their district's curriculum director to do more to facilitate vertical alignment around computer science courses/concepts. They also reported significant uncertainty about school counselors' understanding and support for computer science courses.

Only 39 percent of respondents reported receiving a great deal or a lot of formal training, while 27 percent report receiving only a little or none at all. However, 78 percent reported feeling extremely or somewhat competent teaching computer science. Teachers reported having access to a wide array of training/professional development resources, but there were some gaps in knowledge around these resources. Most respondents had participated in at least one CSforAR training, and 83 percent said CSforAR trainings were far or somewhat above average.

When asked how to improve computer science education in the state common answers included:

- Increase access to high-quality professional development and training – some expressed that they were not aware of some of the resources discussed in this survey;
- Rethink curriculum standards – does each standard have to be included in each course;
- Better promote computer science courses and pathways with students in a way that facilitates their understanding of the subject and the opportunities it presents;
- Increase administrators' and, especially, counselors understanding and promotion of computer science courses/pathways;
- Increase opportunities for students to get industry recognized certifications;
- Recruit and retain more highly-qualified teachers with significant formal training in computer science;
- Provide students with more experiential learning opportunities and better connection to real-world industry opportunities;
- Ensure schools have up-to-date equipment;
- Increase vertical alignment around and early exposure to computer science; and
- Make computer science a graduation requirement.

The remainder of this document is comprised of the full survey results. The survey data is aggregated and/or anonymized so that no individual or school can be identified. Answers to open response questions are provided in their entirety.

How long have you been teaching Computer Science (including computing)?
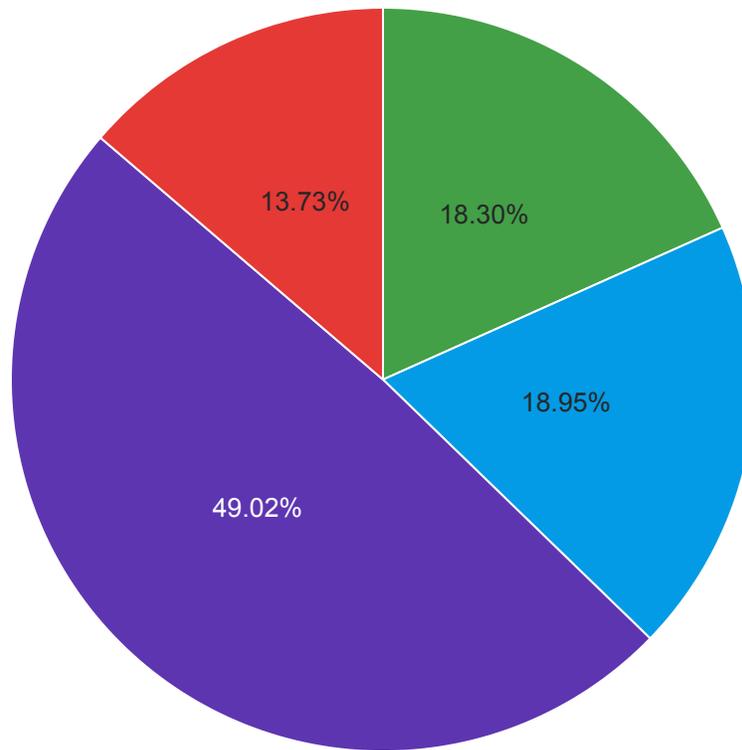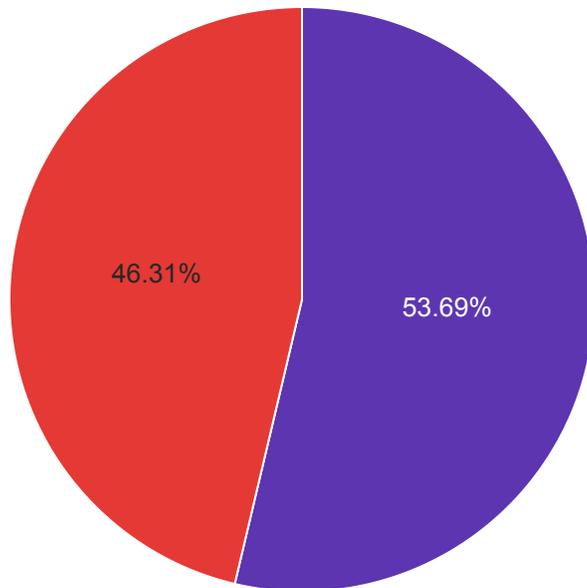

● I do not currently teach computer science or computing ● 5 years or more ● 2-4 years ● This is my first year

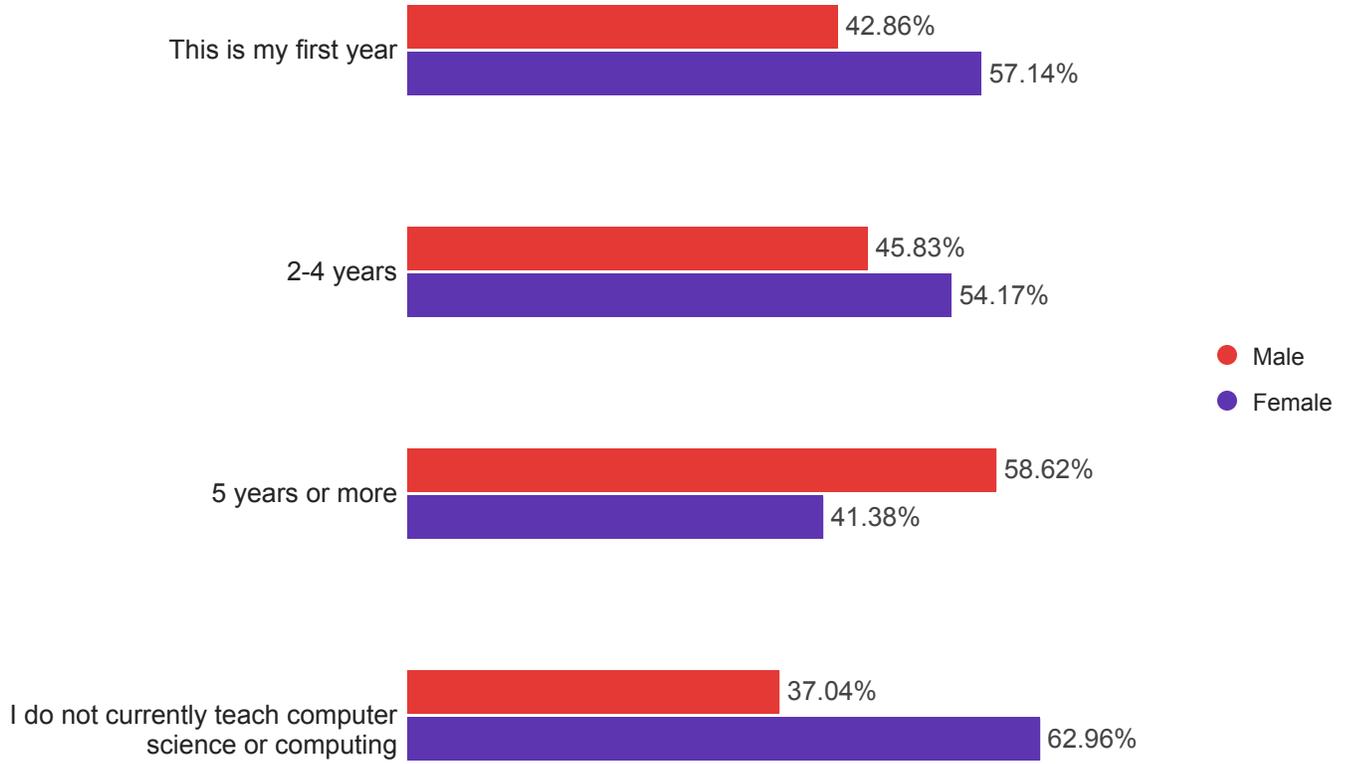| Experience Teaching CS		Choice Count
This is my first year	13.73%	21
2-4 years	49.02%	75
5 years or more	18.95%	29
I do not currently teach computer science or computing	18.30%	28
Total		153

What is your gender?

● Female ● Male

Gender		Choice Count
Male	46.31%	69
Female	53.69%	80
Total		149

Gender by Experience

With which race do you identify?

White — 89%
Black or African American — 5%
American Indian or Alaskan Native — 3%
Hispanic/ Latino — 2%
Pacific Islander or Native Hawaiian — 0%
Asian — 0%
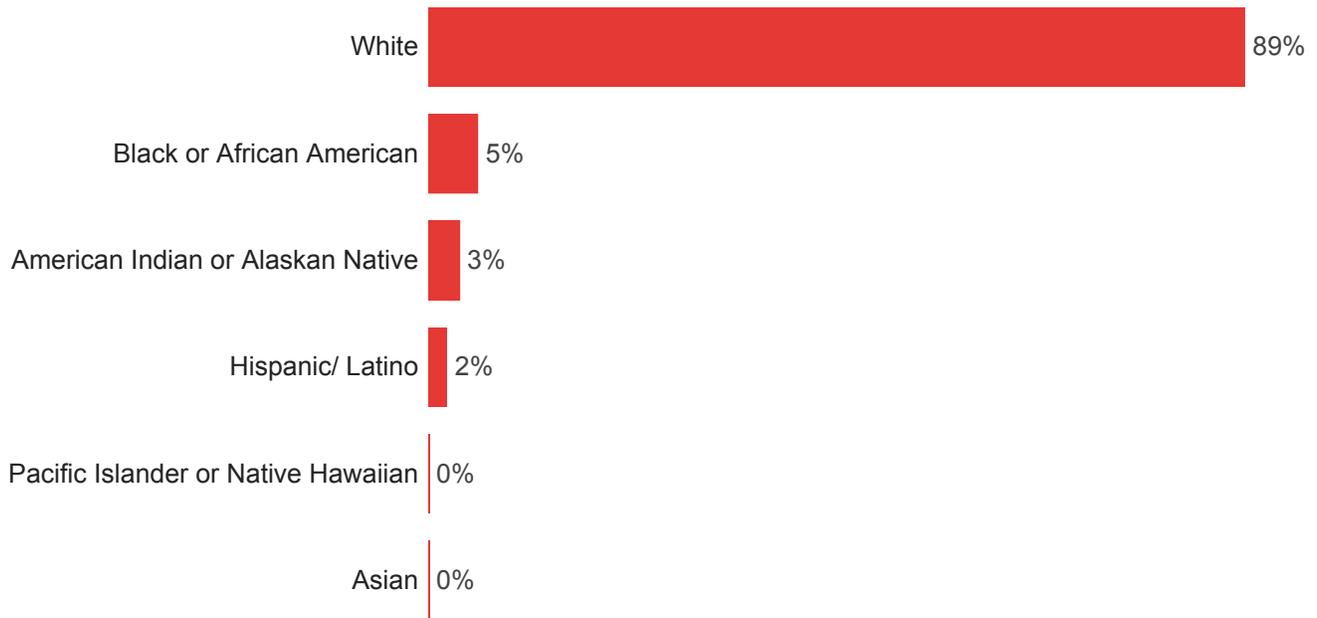
Race	Choice Count	
White	89.19%	132
Black or African American	5.41%	8
American Indian or Alaskan Native	3.38%	5
Hispanic/ Latino	2.03%	3
Pacific Islander or Native Hawaiian	0.00%	0
Asian	0.00%	0
Total		148

Race by Experience

This is my first year
- 95.24%
- 0.00%
- 0.00%
- 0.00%
- 0.00%
- 4.76%

2-4 years
- 91.55%
- 5.63%
- 0.00%
- 0.00%
- 0.00%
- 2.82%

5 years or more
- 89.66%
- 3.45%
- 3.45%
- 0.00%
- 0.00%
- 3.45%

I do not currently teach computer science or computing
- 77.78%
- 11.11%
- 7.41%
- 0.00%
- 0.00%
- 3.70%
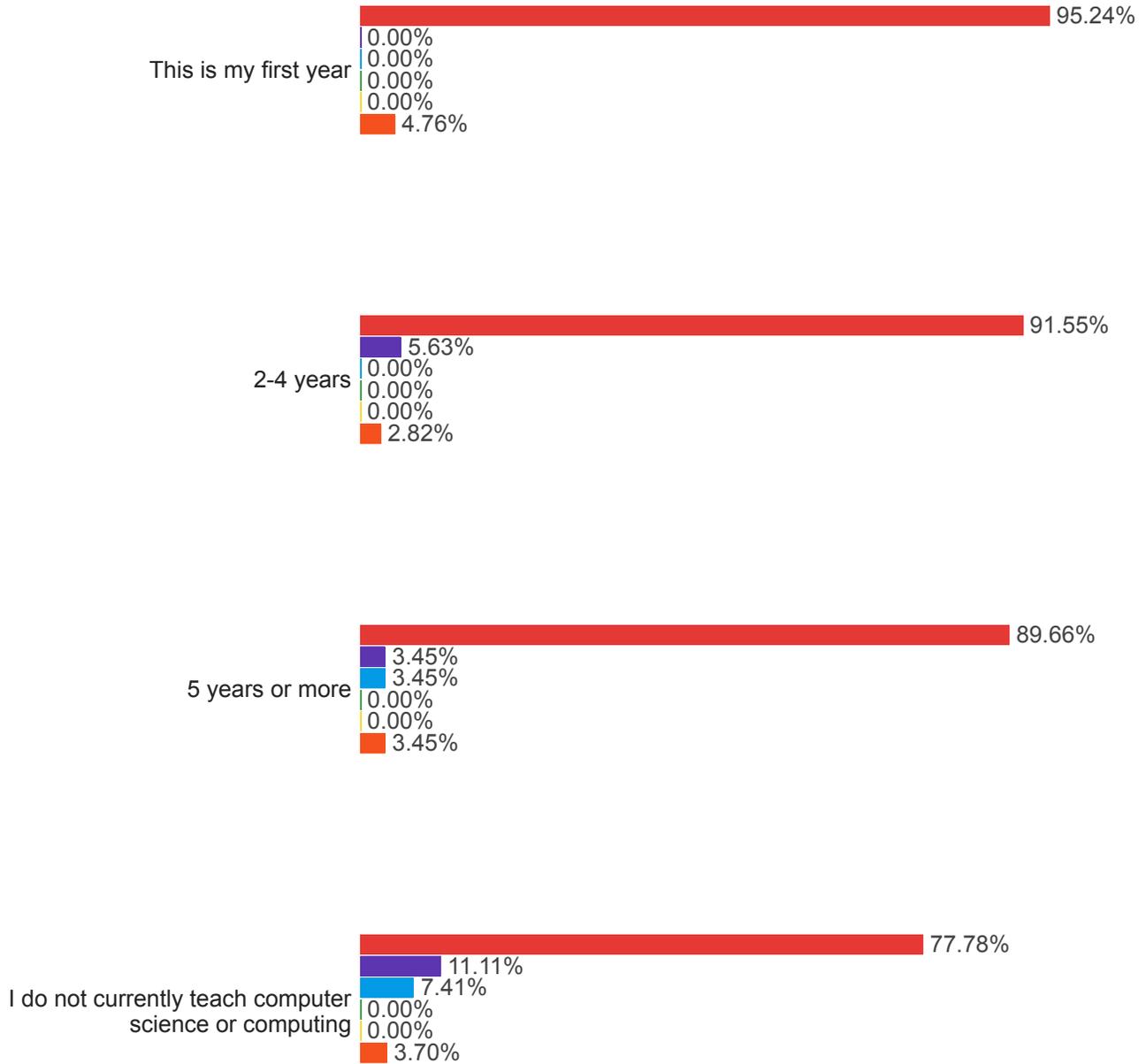
● White ● Black or African American ● Hispanic/ Latino ● Asian ● Pacific Islander or Native Hawaiian

● American Indian or Alaskan Native

If you are not currently teaching CS, would you like to be teaching computer science or computing?
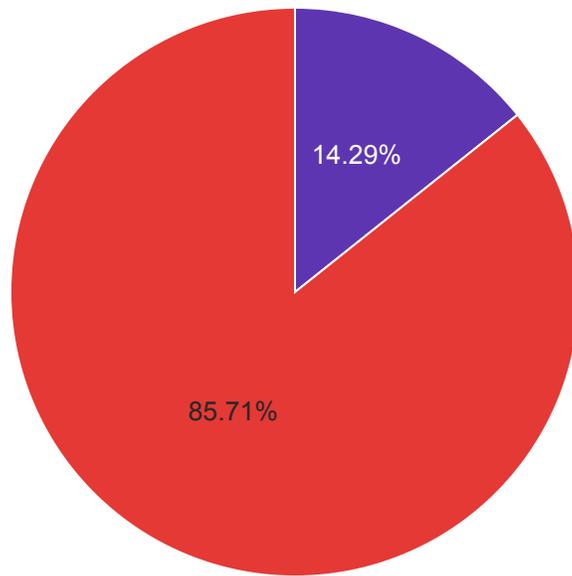
Answer		Choice Count
Yes	85.71%	24
No	14.29%	4
Total		28

If you are not currently teaching CS, why are you not currently teaching computer science or computing?

Another teacher at our school has that position.

I am a Science Teacher and it is a shortage area.

I am currently teaching engineering courses and I only added the computer science license because I wanted to know more about programming/code so I can teach my Competitive Robotics team.

I am needed more as a HS Math teacher, a job whch I also enjoy. My district is small and does not have the personnel slots to support full computer science (or engineering).

I am not currently a classroom teacher.

I am teaching Biology and AP Biology

I am teaching Kindergarten and have not had an job offers as of yet to teach computer science and computing

I am the State Director of CS

I am the technology coach for my building which is grades 3-6

I don't feel like I know quite enough to teach a HS computer science course. I teach middle school robotics and really enjoy teaching them how to code.

I got a physical education job/ coaching

I just recently graduated and not yet employed.

I passed the Praxis and taught it last year which was my first year at a new school. Right after school started, a teacher at my school was upset because he was promised that he would have the course. I told my principal that I would be fine with letting him take it the next year to keep the peace. I also encouraged my principal to extend the CS course offerings which she has done.

I teach Middle School. No opportunity yet at my school.

I was not scheduled for it this year. However, my admin has told me I will next year (2020-21).

I will be teaching it 2020-21.

I'm teaching engineering/physics and loving it too

Just got certified will be teaching some next year.

Not Sure. Maybe because my school already has a computer science teacher

Other teachers are doing so in my building; they do not have a need for any one else right now

School doesn't offer at jr high level yet, and they won't let me transfer to high school

School moved personnel around, and the teacher that took over the other computer classes is also CS certified. I was and am teaching physical science.

Starting next year. Certified Spring 2020

not available at my school

How interested were you in teaching Computer Science?

Extremely interested   Very interested   Moderately interested
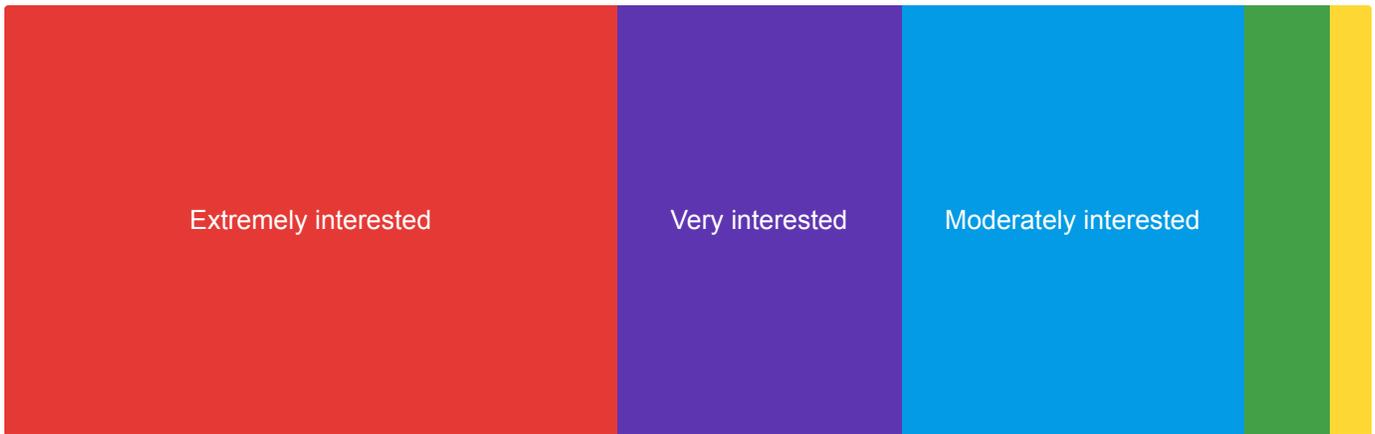
● Extremely interested [45%]   ● Very interested [21%]   ● Moderately interested [25%]   ● Slightly interested [6%]
● Not interested at all [3%]

Interest in Teaching CS		Choice Count
Extremely interested	44.79%	43
Very interested	20.83%	20
Moderately interested	25.00%	24
Slightly interested	6.25%	6
Not interested at all	3.13%	3
Total		96

How do you currently feel about teaching Computer Science?
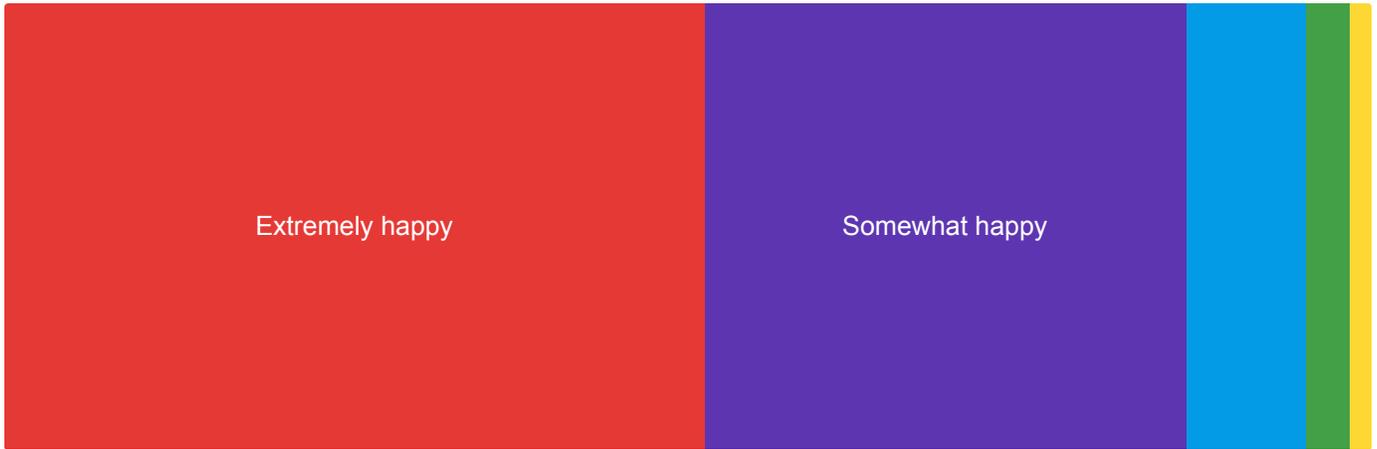
● Extremely happy [51%] ● Somewhat happy [35%] ● Neither happy nor unhappy [9%] ● Somewhat unhappy [3%]
● Extremely unhappy [2%]

Current Feeling about Teaching CS		Choice Count
Extremely happy	51.20%	64
Somewhat happy	35.20%	44
Neither happy nor unhappy	8.80%	11
Somewhat unhappy	3.20%	4
Extremely unhappy	1.60%	2
Total		125

Happiness by Experience

This is my first year
- 52.38%
- 33.33%
- 14.29%
- 0.00%
- 0.00%

2-4 years
- 44.00%
- 41.33%
- 8.00%
- 5.33%
- 1.33%

5 years or more
- 68.97%
- 20.69%
- 6.90%
- 0.00%
- 3.45%
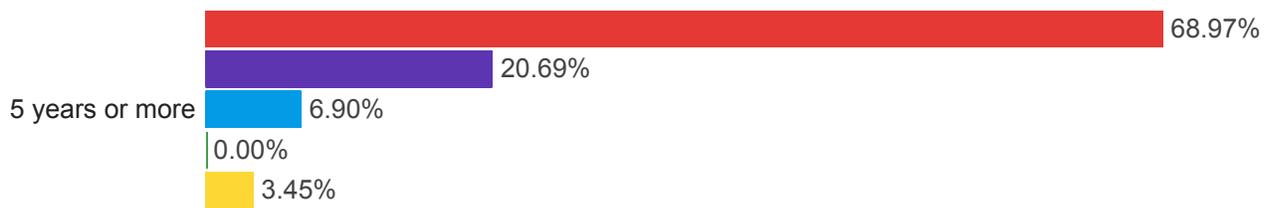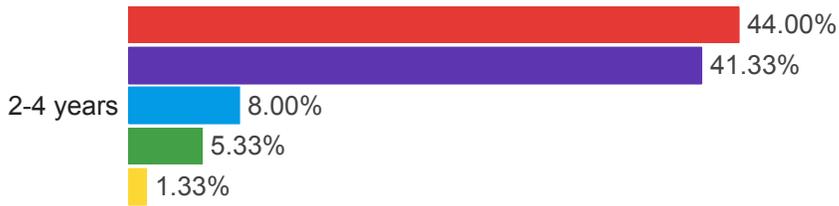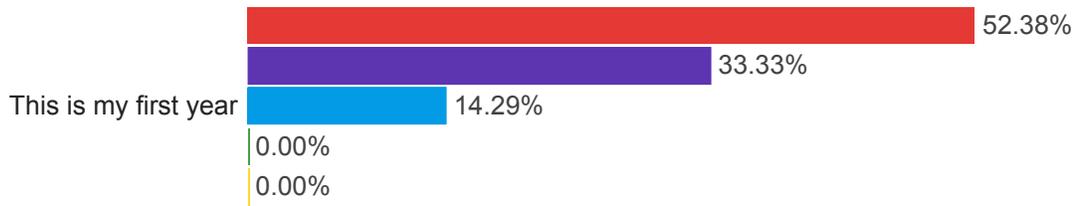
What CS class(es) do you teach? Please select all that apply.

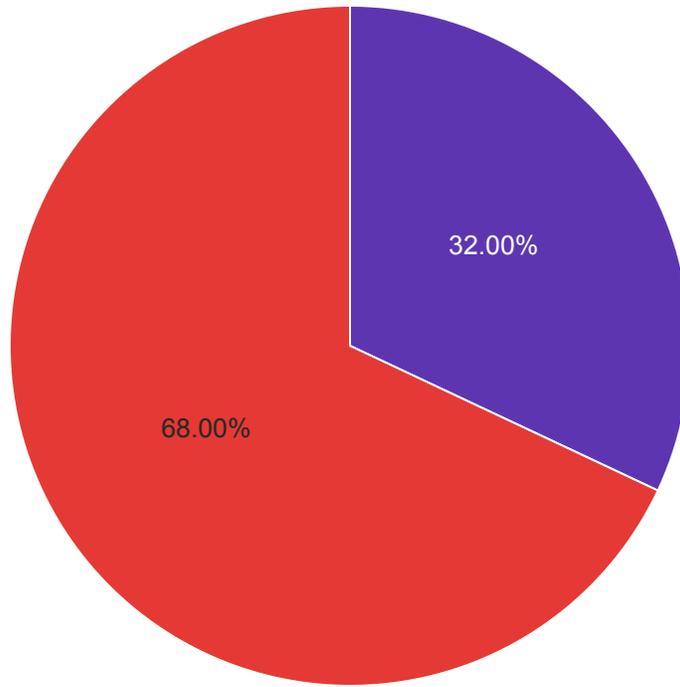| Course Name	Choice Count
Computer Science with Programming/ Coding Emphasis Level 1 (0.5 Credit)	89
Computer Science with Programming/ Coding Emphasis Level 2 (0.5 Credit)	86
Computer Science with Programming/ Coding Emphasis Level 4 (0.5 Credit)	40
Computer Science with Programming/ Coding Emphasis Level 3 (0.5 Credit)	40
College Board Advanced Placement (AP) Computer Science Principles Level 2 (0.5 Credit)	29
College Board Advanced Placement (AP) Computer Science Principles Level 1 (0.5 Credit)	29
College Board Advanced Placement (AP) Computer Science A Level 2 (0.5 Credit)	25
College Board Advanced Placement (AP) Computer Science A Level 1 (0.5 Credit)	25
Mobile Application Development Level 2 (0.5 Credit)	14
Mobile Application Development Level 1 (0.5 Credit)	14
Robotics Level 1 (0.5 Credit)	11
Robotics Level 2 (0.5 Credit)	10
Mobile Application Development Level 4 (0.5 Credit)	10
Mobile Application Development Level 3 (0.5 Credit)	10
Computer Science Independent Study Level II (Weighted Credit)	8
Computer Science Independent Study Level I (Weighted Credit)	8
Advanced Information Security Level I (Weighted Credit)	7
Computer Science with Networking/ Hardware Emphasis Level 1 (0.5 Credit)	7
Other Concurrent Credit Computer Science 1 (1 Credit)	6
Computer Science with Networking/ Hardware Emphasis Level 2 (0.5 Credit)	6
Advanced Information Security Level II (Weighted Credit)	5
Computer Science with Information Security Emphasis Level 2 (0.5 Credit)	5

Computer Science with Information Security Emphasis Level 1 (0.5 Credit)	5
Advanced Programming Level I (Weighted Credit)	5
Advanced Programming: Game Design Level I (Weighted Credit)	3
Computer Science with Networking/ Hardware Emphasis Level 4 (0.5 Credit)	3
Computer Science with Networking/ Hardware Emphasis Level 3 (0.5 Credit)	3
Advanced Programming Level II (Weighted Credit)	3
Other Concurrent Credit Computer Science 2 (1 Credit)	2
Computer Science Internship Level II (Weighted Credit)	2
Computer Science Internship Level I (Weighted Credit)	2
Advanced Programming: Game Design Level II (Weighted Credit)	2
Robotics Level 4 (0.5 Credit)	2
Robotics Level 3 (0.5 Credit)	2
Computer Science with Information Security Emphasis Level 4 (0.5 Credit)	2
Computer Science with Information Security Emphasis Level 3 (0.5 Credit)	2
Advanced Networking Level I (Weighted Credit)	2
Other Concurrent Credit Computer Science 7 (1 Credit)	1
Other Concurrent Credit Computer Science 5 (1 Credit)	1
International Baccalaureate (IB) Computer Science HL Level 2 (0.5 Credit)	1
International Baccalaureate (IB) Computer Science HL Level 1 (0.5 Credit)	1
Advanced Networking Level II (Weighted Credit)	1
Other Concurrent Credit Computer Science 9 (1 Credit)	0
Other Concurrent Credit Computer Science 8 (1 Credit)	0
Other Concurrent Credit Computer Science 6 (1 Credit)	0
Other Concurrent Credit Computer Science 4 (1 Credit)	0
Other Concurrent Credit Computer Science 3 (1 Credit)	0

International Baccalaureate (IB) Computer Science SL Level 2 (0.5 Credit)   0

International Baccalaureate (IB) Computer Science SL Level 1 (0.5 Credit)   0

Do you teach other courses in addition to your CS courses indicated above?

- No
- Yes

Answer	Choice Count	
Yes	68.00%	85
No	32.00%	40
Total		125

If you teach courses in addition to CS, please indicate the additional courses that you teach.

chemistry, anatomy and physiology, environmental science

chemistry, PAP Physical Science and 8th Grade Science

Yearbook, Survey of Business, Social Media and Communications

Unmanned Aerial Systems

UAS I/II

Transitional Math and Algebra 3, although I have taught Bridge, Geometry, Alg 2, Precal and Calc in the past.

Survey of Business, Intro to Business, Computer Science 8.

Survey of Business, Financial Literacy, Securities, Investments, Insurance, and Risk, JAG

Survey of Business, Career Development, Social Media and Communications, Exploring Business Applications, Entrepreneurship

Survey of Business

Survey of Business

Survey of Business

Survey of Business

Survey of Business

Survey of Business

Survey of Business

Social Studies (Civics, Economics, World Geography)

Science

Science

Quantitative Literacy

Physics, Chemistry, Credit Recovery

Physical Science

PLTw CSIM

PAP Geometry, AP Statistics

Music Appreciation, Basketball, Soccer

Medical Office Management, STEM grades 6-8

Medical Office Management and Survey of Business

Math 8th grade, alg 1

Math

Keycode, careers, yearbook

Keycode, Survey of Business, Digital Marketing, Markets and Analytics

Keycode, Economics, Financial Literacy, Accounting, Web Tech, Yearbook

Keycode 7th grade

Key code cba

Junior High Cs, robotics

Internship

Instructional Facilitator Literacy

Health and PE

Geometry, Pre-AP Geometry, and Pre-Calculus

Geometry, Algebra 3, College Algebra, College Trigonometry

Geometry

GT enrichment and pull out, Coding Block

English

Economics

East

EAST, Intro to Business, Keycode

EAST, Audio/Visual

EAST and 6th Grade CS

EAST AND WEB TECHNOLOGIES

EAST

EAST

Design and Modeling

Concurrent Music Appreciation

Computerized Business Applications

Coding Block

Chemistry, Physics

Chemistry forensics ap statistics

Career Development, Robotics 7/8 PLTW

Career Development, KeyCode, Exploring Business Applications

Career Development, Exploring Business Applications, Accounting I, Financial Planning and Wealth Management, Keyboarding, Keyboarding Applications, Introduction to Business, KeyCode, Survey of Business

Career Development and Key Coding

Career Development

Businesz

Business classes

Business and Career Development courses

Biology, PAP Biology, AP Biology

Biology

Audio Visual Technology Lab

Algebra II, Precalculus

Algebra II, Pre-Calculus

Algebra 2, Quantitative Literacy

Algebra 2, PreCal/Trig, Geometry

Algebra 1, Algebra 2, Precalculus, Advanced Topics

Algebra 1

Accounting I and II, Small Business Operations

AP Statistics, AP Physics 1, AP Physics C Mechanics, GT grades 3-5 and high school GT enrichment

AP Physics 1, Principles of Engineering, Engineering Design and Development

AP Physics 1, AP Chemistry, Honors Chemistry

AP Calculus, Robotics

AP Calculus AB, Algebra 1

8th Grade Math

7th-8th grade coding block

5th And 6th grade technology

How well supported do you feel in your CS role?

Extremely well	Very well	Moderately well		

● Extremely well [30%]　● Very well [30%]　● Moderately well [26%]　● Slightly well [10%]　● Not well at all [3%]

Feeling of Support in CS Role	Choice Count	
Extremely well	30.40%	38
Very well	29.60%	37
Moderately well	26.40%	33
Slightly well	10.40%	13
Not well at all	3.20%	4
Total		125

Please indicate your current licensure related to Computer Science.
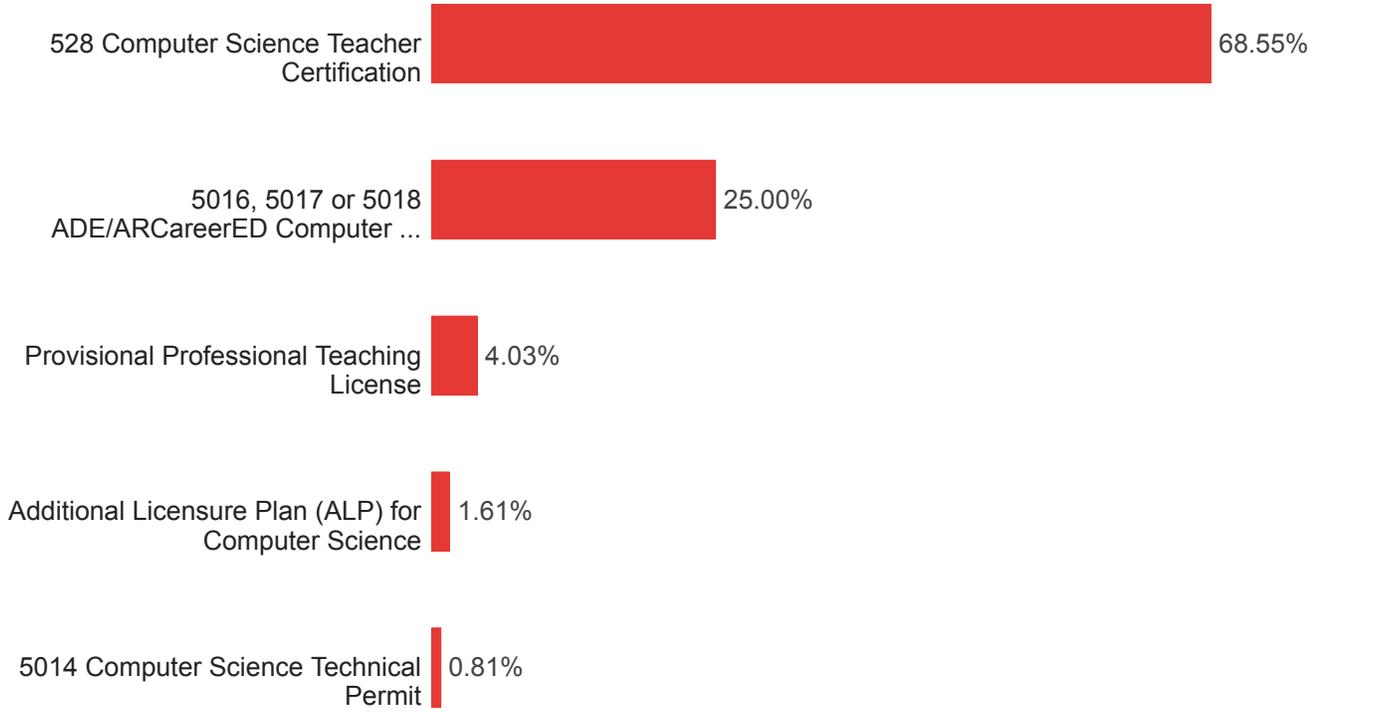
Current CS Licensure	Choice Count	
528 Computer Science Teacher Certification	68.55%	85
5016, 5017 or 5018 ADE/ARCareerED Computer Science Approval Code	25.00%	31
Provisional Professional Teaching License	4.03%	5
Additional Licensure Plan (ALP) for Computer Science	1.61%	2
5014 Computer Science Technical Permit	0.81%	1
Total		124

Please rate the quality of your CS resources.

Classroom space
- 55.65%
- 30.65%
- 10.48%
- 2.42%
- 0.81%

Appropriate hardware
- 28.23%
- 43.55%
- 20.16%
- 7.26%
- 0.81%

Appropriate software
- 33.87%
- 39.52%
- 20.97%
- 4.03%
- 1.61%

Ongoing CS learning opportunities
- 37.90%
- 37.10%
- 19.35%
- 4.03%
- 1.61%

Legend:
- Excellent
- Good
- Average
- Poor
- Very poor
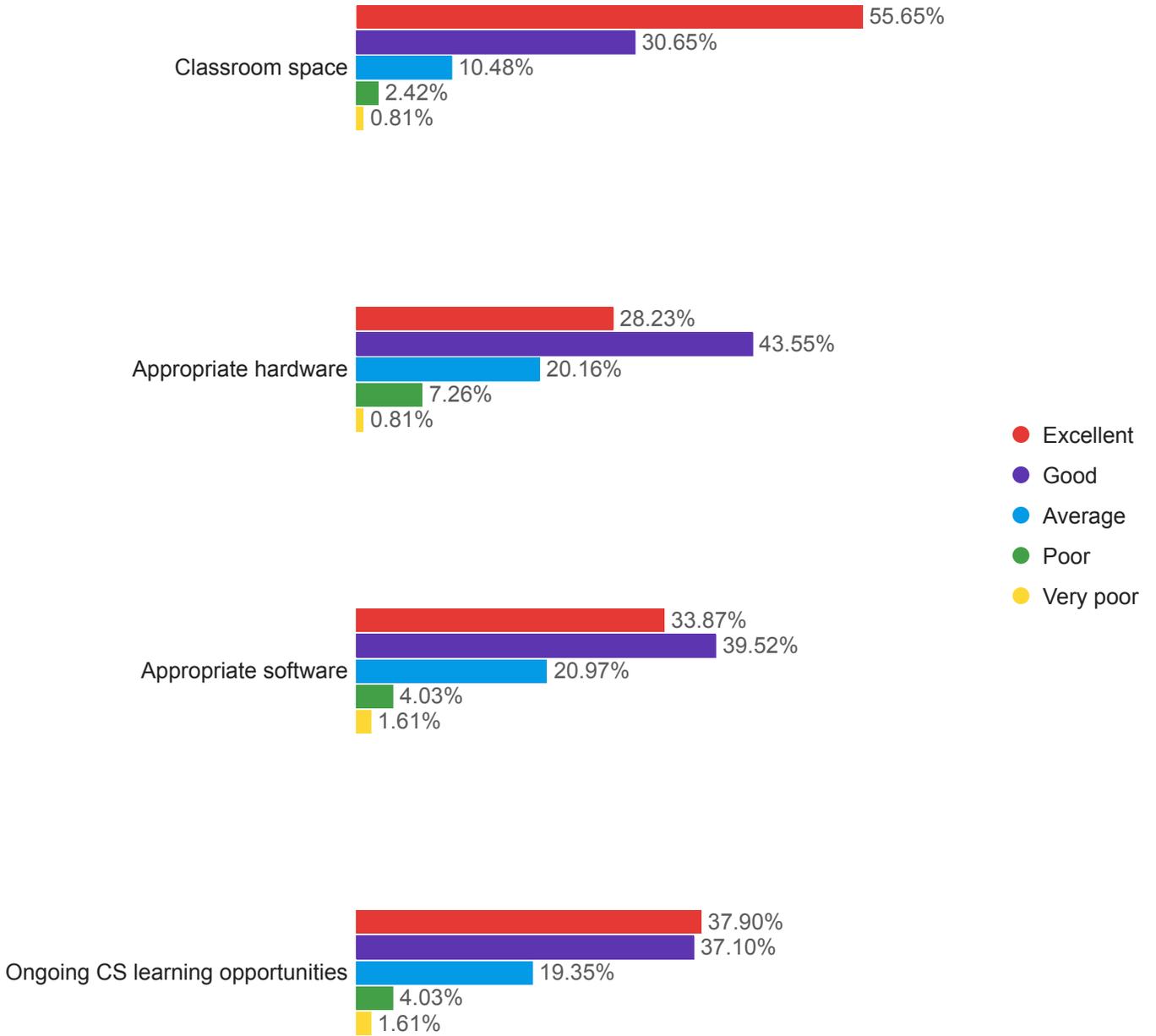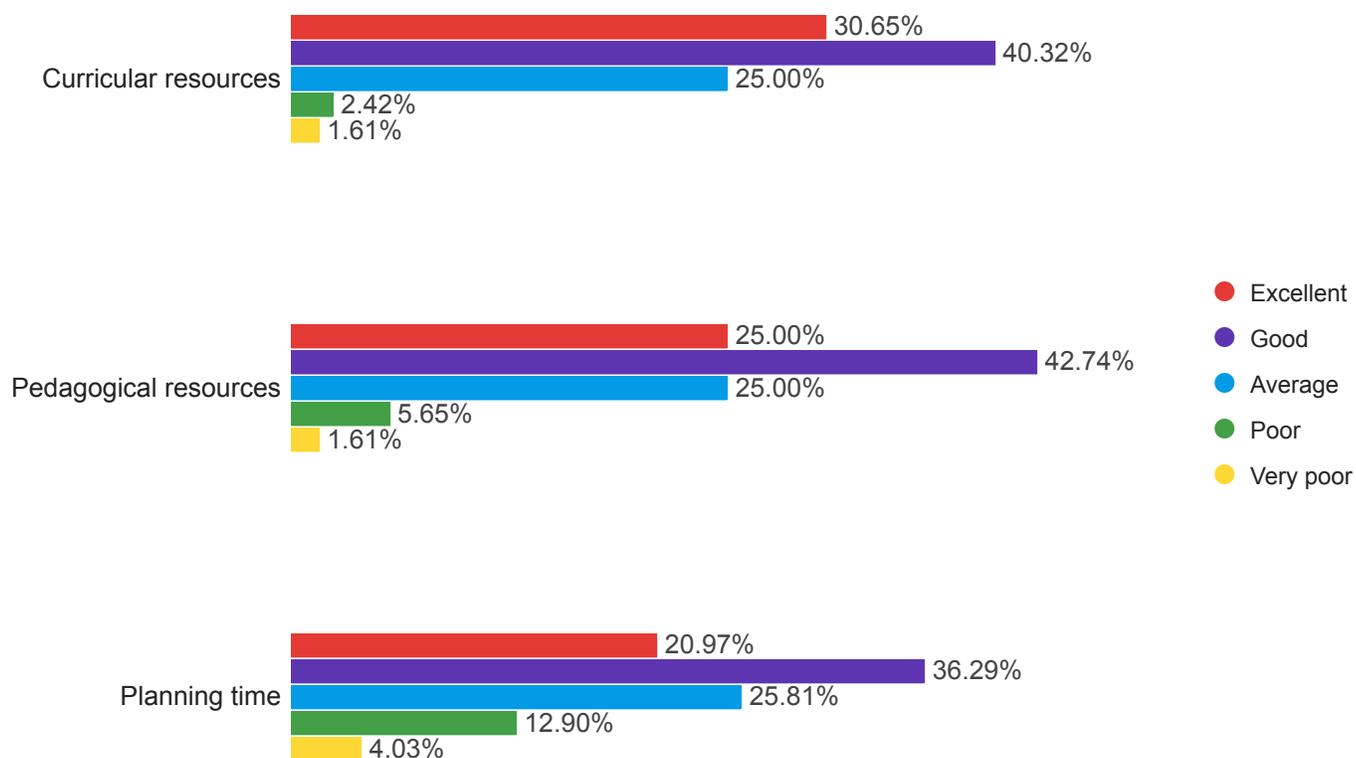
CS Resources	Excellent	Good	Average	Poor	Very poor	Total
Classroom space	69	38	13	3	1	124
Appropriate hardware	35	54	25	9	1	124
Appropriate software	42	49	26	5	2	124
Ongoing CS learning opportunities	47	46	24	5	2	124
Curricular resources	38	50	31	3	2	124
Pedagogical resources	31	53	31	7	2	124
Planning time	26	45	32	16	5	124

How likely would you be able to obtain funding from your school for the following CS-related items?
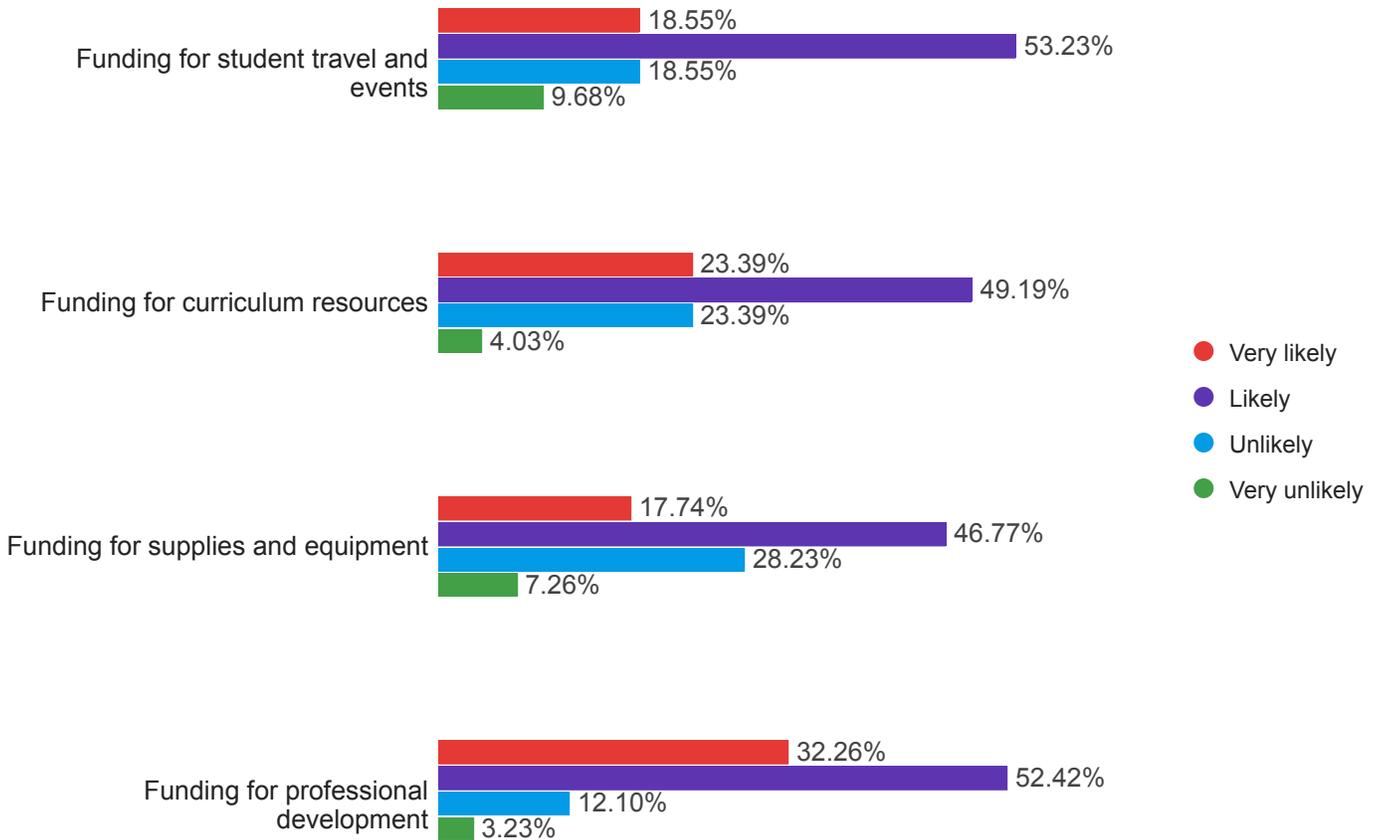
CS-Related Expenditures	Very likely	Likely	Unlikely	Very unlikely	Total
Funding for student travel and events	23	66	23	12	124
Funding for curriculum resources	29	61	29	5	124
Funding for supplies and equipment	22	58	35	9	124
Funding for professional development	40	65	15	4	124

In your opinion, computer science is supported_____
than other subjects taught in your school.
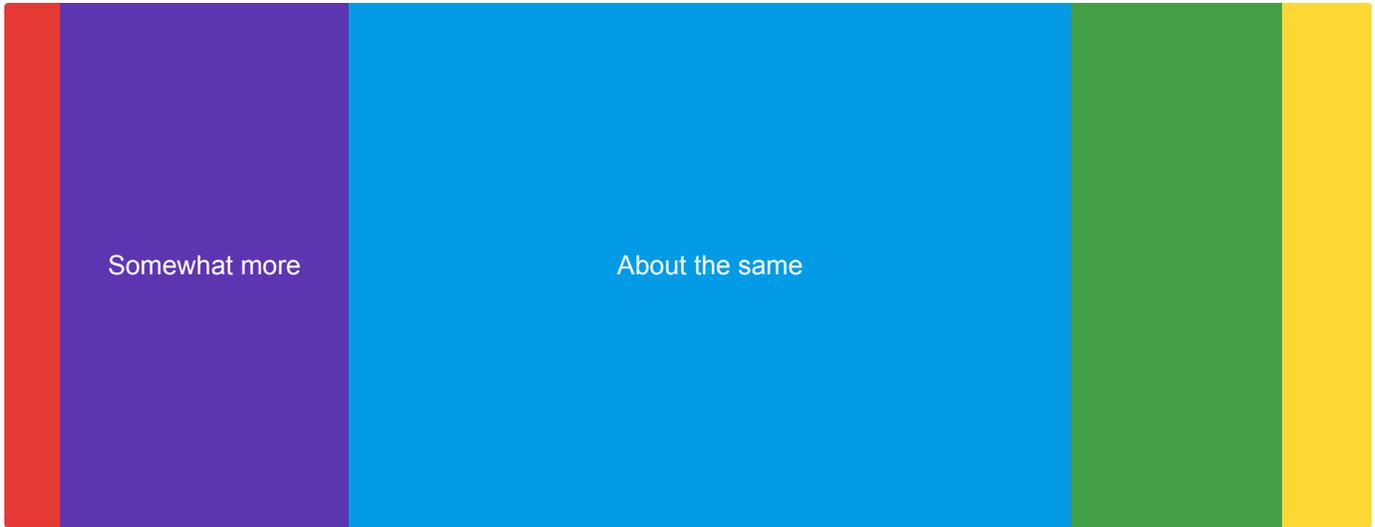
● Much more [4%] ● Somewhat more [21%] ● About the same [53%] ● Somewhat less [15%] ● Much less [7%]

Support for CS Relative to Other Subjects		Choice Count
Much more	4.07%	5
Somewhat more	21.14%	26
About the same	52.85%	65
Somewhat less	15.45%	19
Much less	6.50%	8
Total		123

How competent do you feel teaching CS?

Extremely competent | Somewhat competent

- ● Extremely competent [23%] ● Somewhat competent [55%] ● Neither competent nor incompetent [12%]
- ● Somewhat incompetent [8%] ● Extremely incompetent [2%]

Feeling of Competency Teaching CS		Choice Count
Extremely competent	23.39%	29
Somewhat competent	54.84%	68
Neither competent nor incompetent	12.10%	15
Somewhat incompetent	8.06%	10
Extremely incompetent	1.61%	2
Total		124

How engaging do you feel your course(s) is/ are to students?
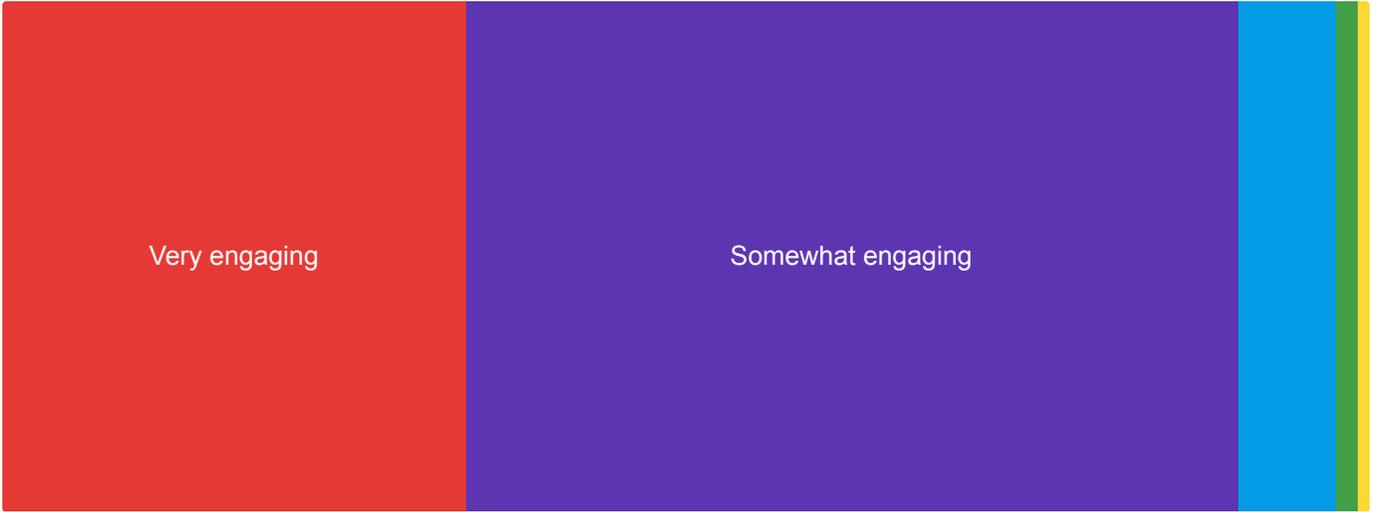
- Very engaging [34%]
- Somewhat engaging [56%]
- Neither engaging or disengaging [7%]
- Somewhat disengaging [2%]
- Very disengaging [1%]

Feeling about Student Engagement in CS Courses		Choice Count
Very engaging	33.87%	42
Somewhat engaging	56.45%	70
Neither engaging or disengaging	7.26%	9
Somewhat disengaging	1.61%	2
Very disengaging	0.81%	1
Total		124

What percentage of your CS students do you predict ...
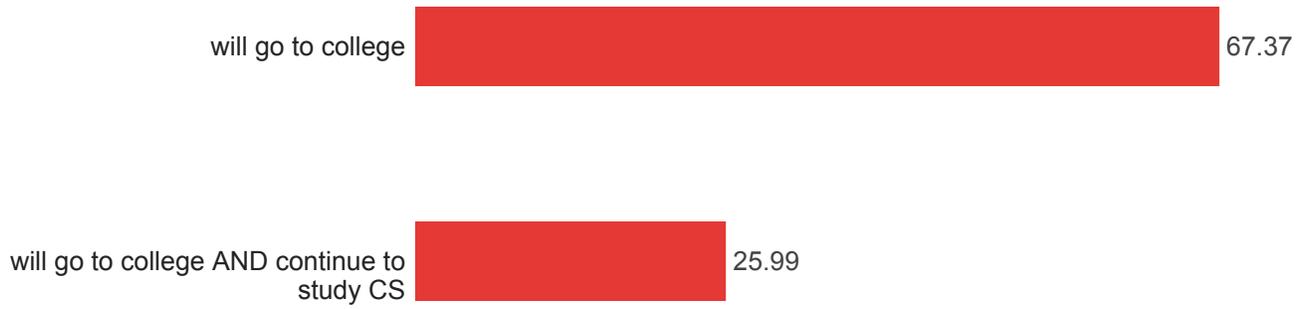
Please answer the following questions about your building principal's feelings/ actions about CS.
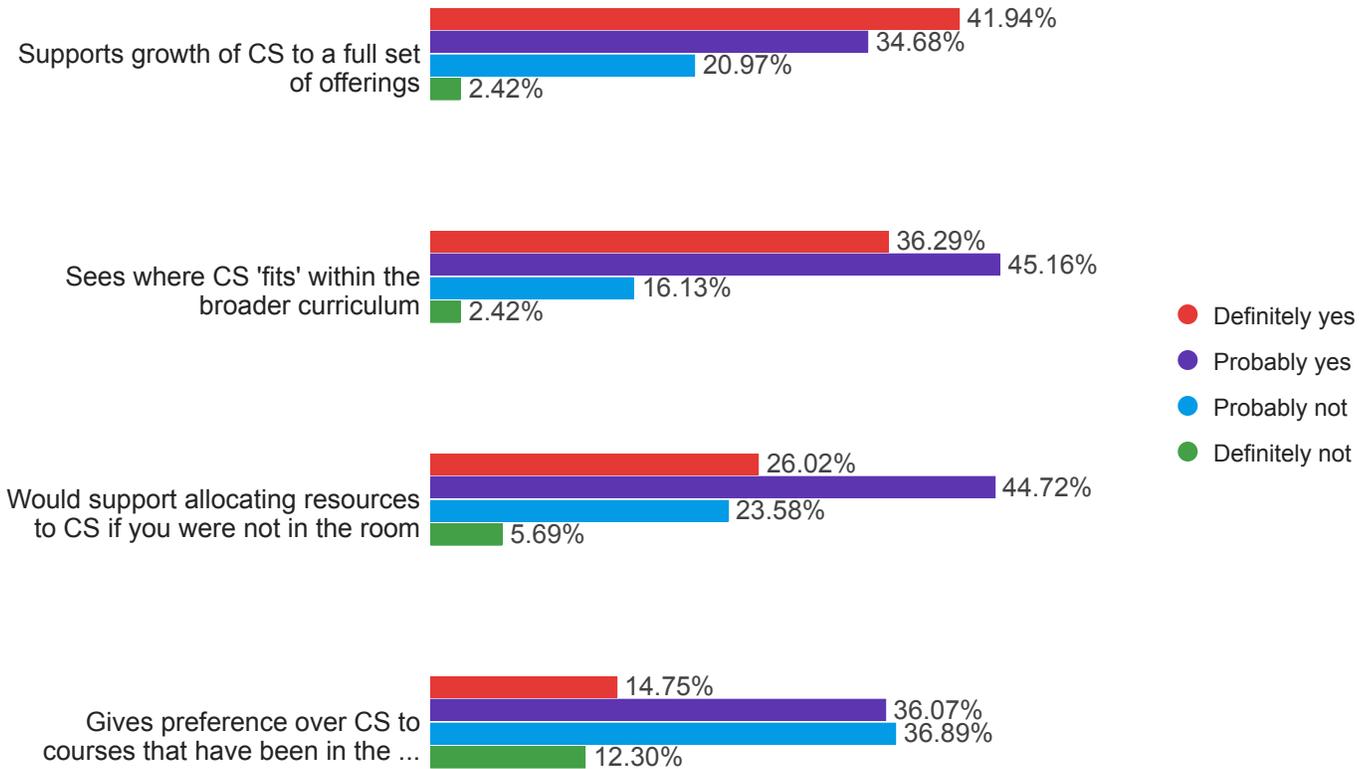
Supports growth of CS to a full set of offerings
- 41.94%
- 34.68%
- 20.97%
- 2.42%

Sees where CS 'fits' within the broader curriculum
- 36.29%
- 45.16%
- 16.13%
- 2.42%

Would support allocating resources to CS if you were not in the room
- 26.02%
- 44.72%
- 23.58%
- 5.69%

Gives preference over CS to courses that have been in the ...
- 14.75%
- 36.07%
- 36.89%
- 12.30%

- ● Definitely yes
- ● Probably yes
- ● Probably not
- ● Definitely not

Building Principal's Feelings/Actions about CS	Definitely yes	Probably yes	Probably not	Definitely not	Total
Supports growth of CS to a full set of offerings	52	43	26	3	124
Sees where CS 'fits' within the broader curriculum	45	56	20	3	124
Would support allocating resources to CS if you were not in the room	32	55	29	7	123
Gives preference over CS to courses that have been in the curriculum longer	18	44	45	15	122

Please provide your perceptions about your school counselor's feelings/ actions about CS.

Understands what CS is
- 14.52% (Definitely yes)
- 47.58% (Probably yes)
- 26.61% (Probably not)
- 11.29% (Definitely not)

Understands how CS differs from computer literacy
- 12.90% (Definitely yes)
- 37.10% (Probably yes)
- 37.90% (Probably not)
- 12.10% (Definitely not)

Helps students understand what CS is
- 10.57% (Definitely yes)
- 35.77% (Probably yes)
- 39.02% (Probably not)
- 14.63% (Definitely not)

Helps students understand where CS may fit into their future ...
- 11.29% (Definitely yes)
- 41.13% (Probably yes)
- 31.45% (Probably not)
- 16.13% (Definitely not)

Gives the same consideration to placing students into CS courses ...
- 16.13% (Definitely yes)
- 36.29% (Probably yes)
- 29.84% (Probably not)
- 17.74% (Definitely not)

Understands how CS courses contribute to school ESSA score
- 22.76% (Definitely yes)
- 43.09% (Probably yes)
- 24.39% (Probably not)
- 9.76% (Definitely not)

Legend:
- Definitely yes
- Probably yes
- Probably not
- Definitely not

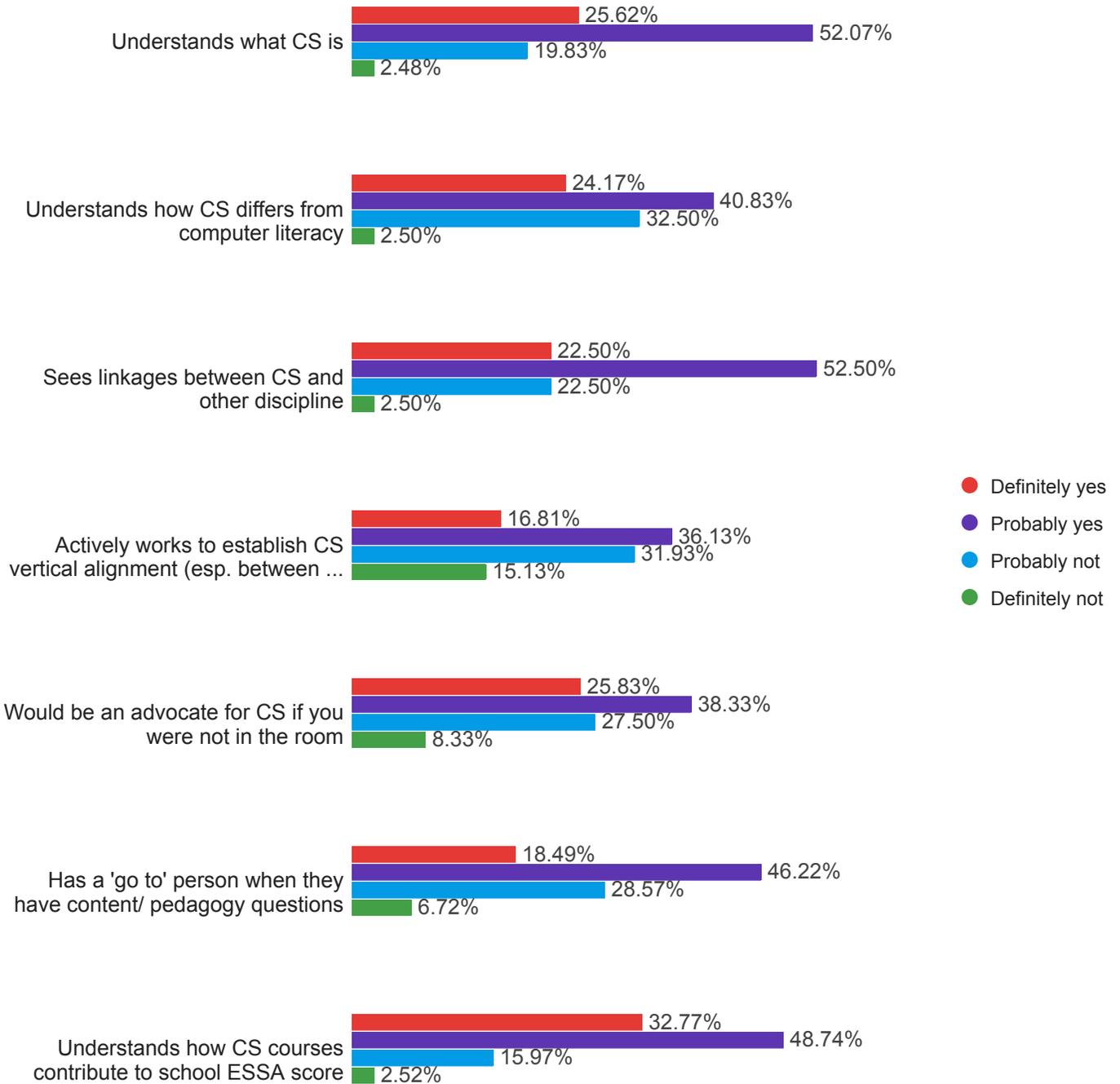| School Counselor's Feelings/Actions about CS	Definitely yes	Probably yes	Probably not	Definitely not	Total
Understands what CS is	18	59	33	14	124
Understands how CS differs from computer literacy	16	46	47	15	124
Helps students understand what CS is	13	44	48	18	123
Helps students understand where CS may fit into their future studies/ careers	14	51	39	20	124
Gives the same consideration to placing students into CS courses as into other disciplines	20	45	37	22	124
Understands how CS courses contribute to school ESSA score	28	53	30	12	123

Please provide your perceptions about your school/ district curriculum director's feelings/ actions about CS.

Understands what CS is
- 25.62%
- 52.07%
- 19.83%
- 2.48%

Understands how CS differs from computer literacy
- 24.17%
- 40.83%
- 32.50%
- 2.50%

Sees linkages between CS and other discipline
- 22.50%
- 52.50%
- 22.50%
- 2.50%

Actively works to establish CS vertical alignment (esp. between ...
- 16.81%
- 36.13%
- 31.93%
- 15.13%

Would be an advocate for CS if you were not in the room
- 25.83%
- 38.33%
- 27.50%
- 8.33%

Has a 'go to' person when they have content/ pedagogy questions
- 18.49%
- 46.22%
- 28.57%
- 6.72%

Understands how CS courses contribute to school ESSA score
- 32.77%
- 48.74%
- 15.97%
- 2.52%

Legend:
- ● Definitely yes
- ● Probably yes
- ● Probably not
- ● Definitely not

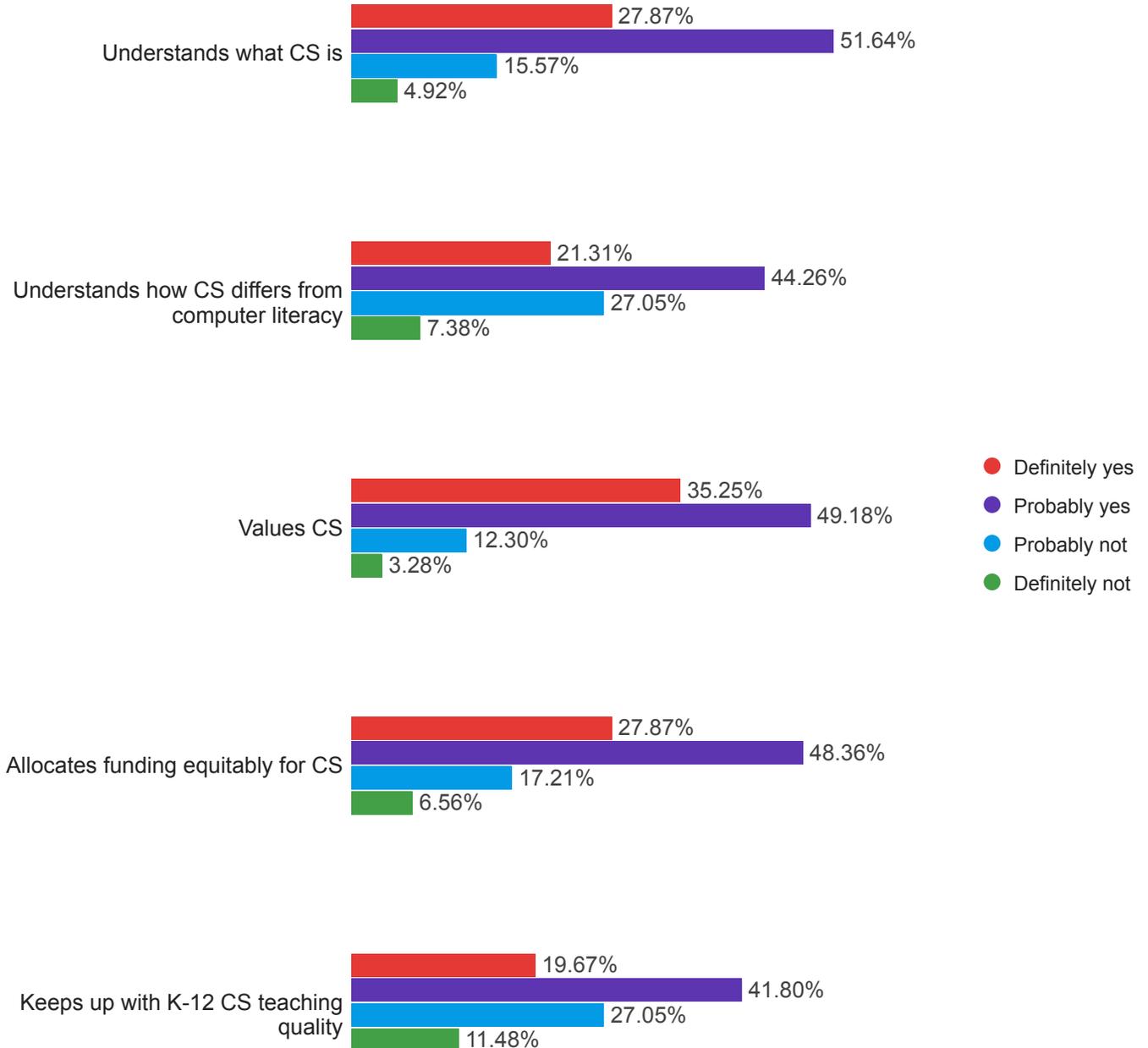| Curriculum Director's Feelings/Actions about CS	Definitely yes	Probably yes	Probably not	Definitely not	Total
Understands what CS is	31	63	24	3	121
Understands how CS differs from computer literacy	29	49	39	3	120
Sees linkages between CS and other discipline	27	63	27	3	120
Actively works to establish CS vertical alignment (esp. between lower grades and high school)	20	43	38	18	119
Would be an advocate for CS if you were not in the room	31	46	33	10	120
Has a 'go to' person when they have content/ pedagogy questions	22	55	34	8	119
Understands how CS courses contribute to school ESSA score	39	58	19	3	119

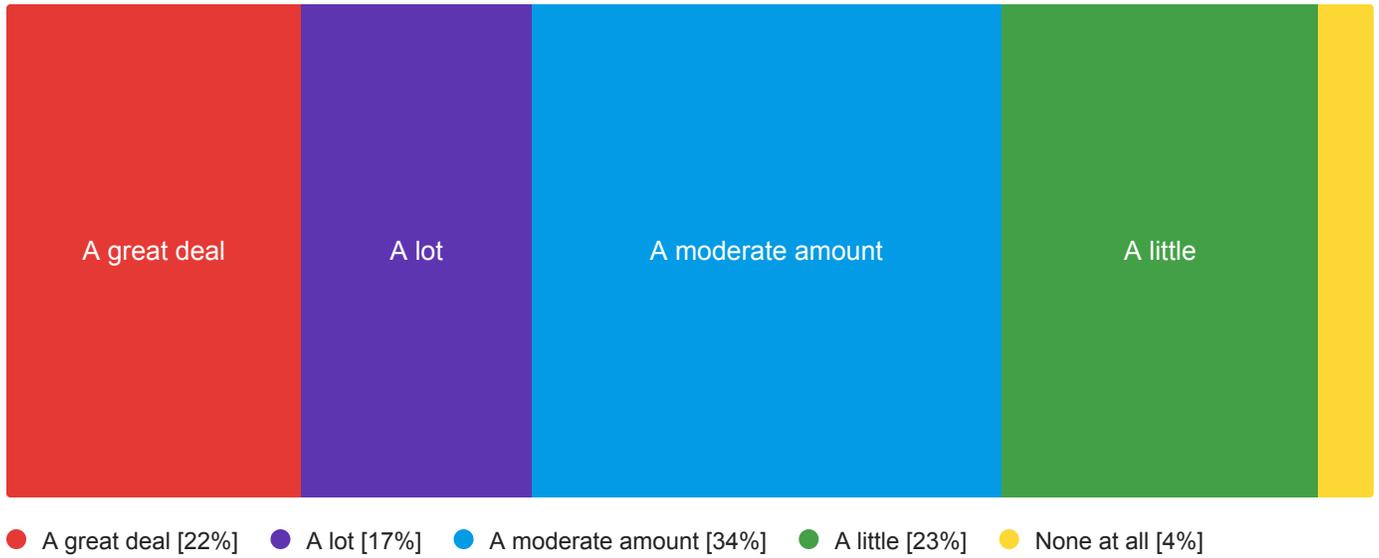Please provide your perceptions about your Superintendent's feelings/
actions about CS.
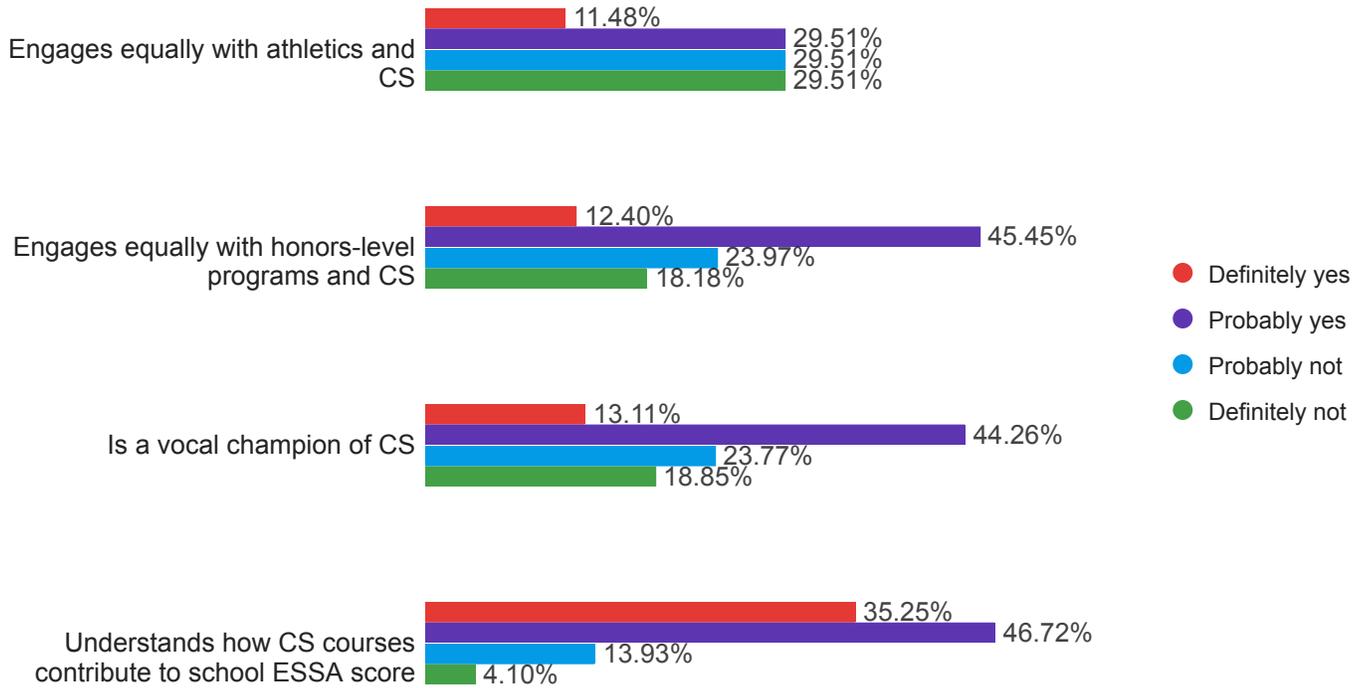
Engages equally with athletics and CS
- 11.48%
- 29.51%
- 29.51%
- 29.51%

Engages equally with honors-level programs and CS
- 12.40%
- 45.45%
- 23.97%
- 18.18%

Is a vocal champion of CS
- 13.11%
- 44.26%
- 23.77%
- 18.85%

Understands how CS courses contribute to school ESSA score
- 35.25%
- 46.72%
- 13.93%
- 4.10%

Legend:
- Definitely yes
- Probably yes
- Probably not
- Definitely not

Superintendent's Feelings/Actions about CS	Definitely yes	Probably yes	Probably not	Definitely not	Total
Understands what CS is	34	63	19	6	122
Understands how CS differs from computer literacy	26	54	33	9	122
Values CS	43	60	15	4	122
Allocates funding equitably for CS	34	59	21	8	122
Keeps up with K-12 CS teaching quality	24	51	33	14	122
Engages equally with athletics and CS	14	36	36	36	122
Engages equally with honors-level programs and CS	15	55	29	22	121
Is a vocal champion of CS	16	54	29	23	122
Understands how CS courses contribute to school ESSA score	43	57	17	5	122

Please indicate your level of formal training in Computer Science.

A great deal | A lot | A moderate amount | A little

● A great deal [22%] ● A lot [17%] ● A moderate amount [34%] ● A little [23%] ● None at all [4%]

Level of Formal CS Training		Choice Count
A great deal	21.60%	27
A lot	16.80%	21
A moderate amount	34.40%	43
A little	23.20%	29
None at all	4.00%	5
Total		125

Please indicate which of the following resources you have access to/ have used.

No-Cost professional development provided by the CS Specialists ...
- 35.48%
- 53.23%
- 6.45%
- 4.84%

State CS specialist consulting
- 21.31%
- 38.52%
- 33.61%
- 6.56%

State CS specialist classroom visits
- 6.56%
- 19.67%
- 58.20%
- 15.57%

Materials and equipment check-out
- 4.92%
- 21.31%
- 48.36%
- 25.41%

Student events at co-op
- 11.57%
- 45.45%
- 29.75%
- 13.22%

Legend:
- Use regularly
- Use sometimes
- Have access but d...
- Don't have access
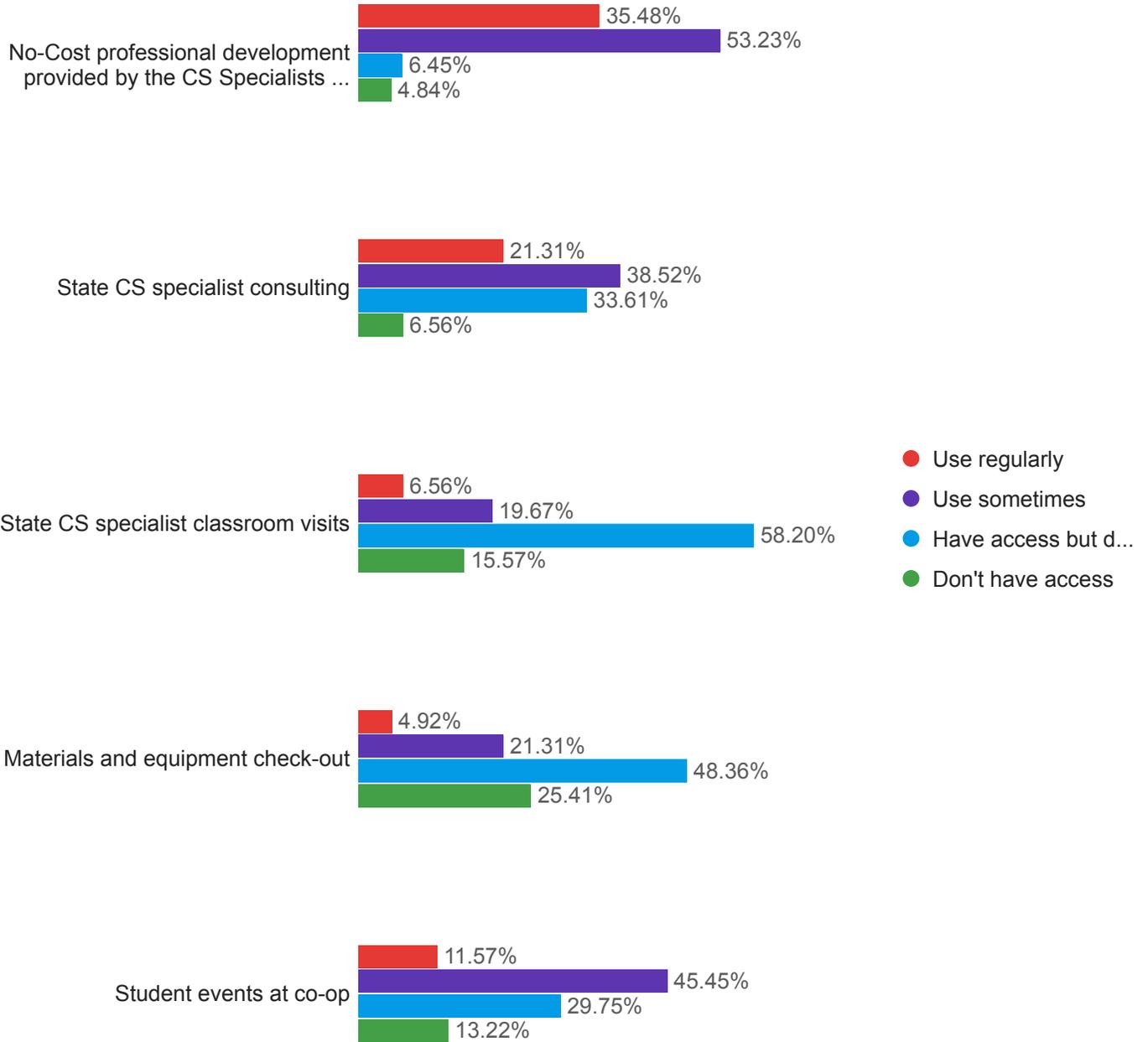
| CS Resources	Use regularly	Use sometimes	Have access but don't use	Don't have access	Total
No-Cost professional development provided by the CS Specialists through the ESC	44	66	8	6	124
State CS specialist consulting	26	47	41	8	122
State CS specialist classroom visits	8	24	71	19	122
Materials and equipment check-out	6	26	59	31	122
Student events at co-op	14	55	36	16	121
Stipends for demonstrating mastery/ providing leadership	16	50	21	35	122
STEM Coalition	4	31	53	35	123
ASMSA/ Coding Arkansas' Future	30	33	34	25	122
Apps for Good	4	18	67	33	122
Women's Foundation of Arkansas / Tech for Good	2	14	55	50	121

In which CSforAR trainings have you participated? Please select all that apply.

Training	Percentage
High School Computer Science and Certification Preparation (30 hours)	61.48%
I have not participated in any CSforAR trainings.	21.31%
Would you like some Pi with that?: An Introduction to Physical ...	15.57%
Advanced Java - High School CS Professional Development (3 day)	12.30%
Arduino: An Introduction to Physical Computing	9.02%
Introduction to Computer Networking	5.74%
Advanced Information Security- High School CS Professional ...	4.92%
Advanced Python Programming - High School CS Professional ...	4.10%
Abbreviated Advanced Information Security- High School CS ...	4.10%
Advanced Network/Hardware- High School CS Professional ...	2.46%

CSforAR Trainings	Choice Count
High School Computer Science and Certification Preparation (30 hours)	75
I have not participated in any CSforAR trainings.	26
Would you like some Pi with that?: An Introduction to Physical Computing with the Raspberry Pi	19
Advanced Java - High School CS Professional Development (3 day)	15
Arduino: An Introduction to Physical Computing	11
Introduction to Computer Networking	7
Advanced Information Security- High School CS Professional Development (3-day)	6
Advanced Python Programming - High School CS Professional Development (3 day)	5
Abbreviated Advanced Information Security- High School CS Professional Development	5
Advanced Network/Hardware- High School CS Professional Development (3-day)	3
Total	172

How would you rate the quality of the CSforAR training(s) you attended?
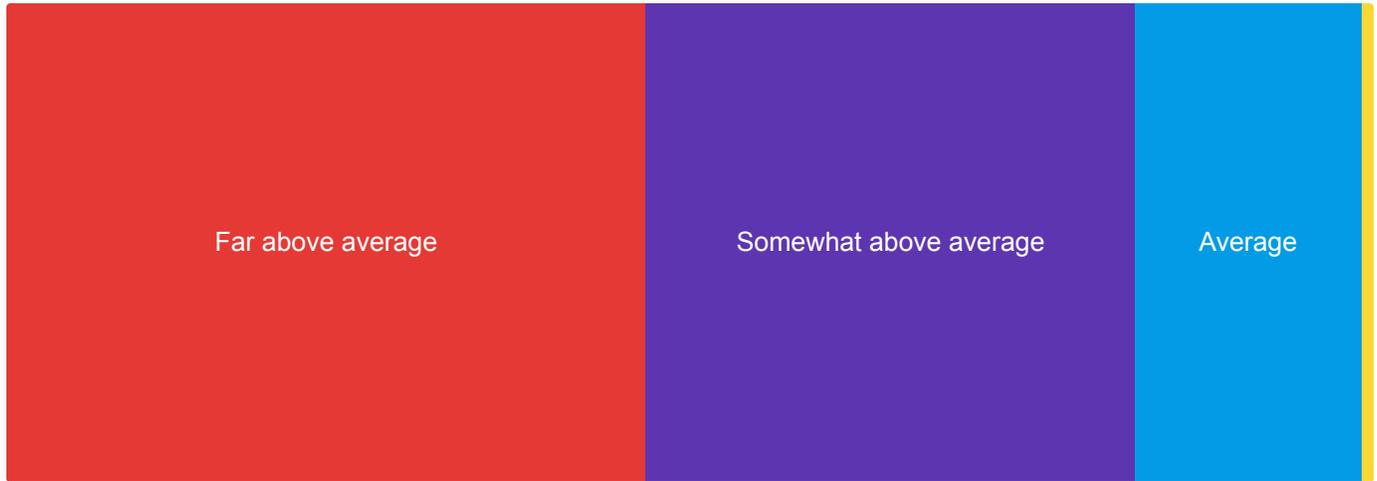
● Far above average [47%]   ● Somewhat above average [36%]   ● Average [17%]   ● Somewhat below average [0%]
● Far below average [1%]

CSforAR Training Quality		Choice Count
Far above average	46.79%	51
Somewhat above average	35.78%	39
Average	16.51%	18
Somewhat below average	0.00%	0
Far below average	0.92%	1
Total		109

In your opinion, what is the most important thing that can be done to improve the quality of Computer Science education for Arkansas students?

A better defined set of course frameworks for each CS course.

A course at the junior high level, not a six-week block inside another course. The teachers of the coding block courses are understandably more focused on their original courses' content and goals and feel like "fish out of water" in the coding block.

A more structured outline/curriculum for educators.

A platform for community related involvement. Like an app or something that connects industry professionals with Computer Science teachers. The industry professional could provide their contact info and indicate their level of interest...zoom meeting, guest speaker, offer tours of their workspace, provide job shadow or internship experiences, etc.

A webpage that is easy to find and navigate that lists and describes the resources available to teachers combined with check-ins from the specialists. A lot of teachers at smaller schools are trying but have 3 or more preps daily. Once you get moving it is hard to think about, research, or implement new ideas independently.

Add more resources for the beginning students. It is hard to find beginner programming with step-by-step instructions for students.

All coops are not created equal and sometimes they need to share that there are others that are better

An important obstacle for a lot of students in smaller districts is access to computer science courses. I teach in a very small district and before I started teaching computer science it was not offered on campus. Another thing that would help to improve the quality would be to encourage more students to take computer science. The more students interested the more funding the districts will allocate towards computer science.

As I am not teaching the subject, I do not have an opinion on this.

Availability of more computers in the schools.

Be sure that ALL schools have teachers that are dedicated to teaching CS, don't force teachers to teach 4 preps on top of CS. Too many preps won't allow a teacher to focus on the subject they are probably struggling the most to teach.

Be sure that teachers have the ability to have access to quality materials either for free, or are paid for either by districts or the state. There needs to be more time mandated for training for teachers on tech and programs available and how they can be incorporated into the frameworks.

Begin at an early age with a vertically aligned curriculum with trained dedicated teachers.

Better qualified teachers

Better resources for teachers and students. I taught CS last year for the first time. The only support I really got was a list of links to websites, many of which had only a small bit available for free. I used Code Academy, because it was the best I could find at the time. The openness of the frameworks is great for a very experienced teacher, but a nightmare for a new teacher without a good curriculum to use. A standardized curriculum/program available to use would be the best for new or inexperienced teachers.

Computer Science certified teacher in every Arkansas High School and having access to state of the art equipment.

Continue and expand pathway options in schools and statewide marketing efforts alerting parents and students of opportunities.

Continue for future years what already started with stipends.

Continue providing PD regularly. I wish we had more summer opportunities because many of us teach core subjects and it's hard to get out of school. Provide help to rural schools. I do not feel confident and rely heavily on online content. Programs from ASMSA widen the gap in some ways because they require specific technology to implement(laptops as opposed to chromebooks). Therefore, the opportunity gap is really dependent on how much districts can invest financially. In rural schools, there are so many curriculum costs to compete that these courses are the first ones cut. KEEP THE INNOVATION GRANT!! Without attaining this grant we were going to drop the course completely. Now, I have the potential to build our program!! Educate school leaders. Help them plan to expand courses when teachers, like myself, are tied to a major content area. How can we develop programming that allows expansion of programming and not lose lots of core content teachers in small schools.

Continue to offer CS PD. Teachers who are interested in CS and who have administrators who are supportive have access. Others may not, either due to having to give up summer time or having to miss class time during the school year. Encourage follow up training. Many teachers worked hard at PD to enable them to pass their Praxis but have not taking advantage of some great follow up CS PD.

Continue to provide training and resources to educators. We just need more time to take advantage of what is being provided!

Continue to support teachers with professional developments. Teachers need to be up-to-date with the skills require in the work place.

Continued PD and availability of instructional help.

Continued professional development for instructors.

Continued support and training for teachers

Continued training. For someone who did not know any computer science, I now feel comfortable teaching CS 1 & 2. I have had very good PD! However, I feel stuck there. I wish there was a free online CS 101 course over a year to take. The type of course that would be taught in college. I need help and practice, practice, practice understanding higher-level concepts. The PD being offered that addresses this is too fast and short.

Continuing professional development

Counselors and Admin knowing what Computer Science is and not just putting seats in chairs.

Create core standards in for CS education in grades K-8. Create courses that introduce elementary and middle school students to CS as a promising career option available to them. Giving students more hands-on coding experiences.

Do not let it be a "dumping ground" course for those students who need either a math or science credit.

ESL Strategies need to be used and implemented to increase interest among minority students

Educate on the importance especially to those who have not grown up with it.

Emphasis placed on recruiting students to the subject. This can be done by introducing CS at younger ages and keeping it throughout into the high school years.

Ensure excellent teacher training. I believe the state is working very hard to do so, but I am sure not all teachers take advantage of these opportunities.

Establishing sets of tried-and-true curriculae as a base for key courses, with flexibility for projects to fill out the courses. Right now there seem to be a lot of computer science teachers having to reach out to others for ideas on how to teach some computer basics.

Everybody involved in the CS process and curriculum at the school and district levels needs to understand the difference between CS and computer literacy. I've had a number of students placed in my classes that have either never used a computer, or were considered "good with computers" but had no interest in programming. Trying to differentiate for those students caused the quality of my instruction and the rigor of my material to decline.

Finding teachers to fill the role that are interested and don't feel forced into the position.

For my school, I would like to have some help and guidance in promoting CS so that more students would take it

For our school, provide more opportunities other than just AP CSP.

Funding

Funding for continuing education for teachers interested in adding knowledge Not just professional development.. a chance to receive formal education in regards to the content we are being asked to teach so we can have a better grasp on the material.

Get Math teachers on board to teach this stuff. I've been through 60 hours of training and still don't feel confident or understand how to teach it. I can facilitate it, but not teach it.

Get kids enrolled into the classes

Get more students interested, establish a consistent curriculum that easily aligns to state standards, and offer more PD that isn't tailored to just beginners (This is why I never go).

Give schools/teachers access to a curriculum. Some schools cannot afford several thousand dollars for a school site subscription. I know ASMSA provides a program with support but it is also difficult for some schools to pay for registration fees and travel, especially when you teach multiple courses.

Grants for online student learning platform and spread the word about CS resources like Mobile CS Principles training

Have a more accessible program to allow more teachers with some experience with computer science to become certified.

Have excited and supported teachers in the classroom.

Help those in administration understand how valuable Computer Science is. Prepare recruiting materilas for cs teachesr to donwload/use when recruiting

I believe that the quality of computer science education in Arkansas is exceptional because the state has given so many resources to teachers to teach those classes. However, students in low-income and rural areas will not see true benefits if they do not have equitable access to teachers, technology, and wireless networking. Their peers can work from home, but if they do not have technology (laptops or tablets) and Wifi at home to expand their learning, they will not have an equitable education.

I believe that the quality of education that students can receive is dependent in large part on the exposure that they receive. I realize that many efforts have been put towards ensuring a great deal of exposure but I think that exposure should still increase.

I do not have any exposure to observing computer science instruction to students in the state of Arkansas.

I have been told that this is being done already, but my greatest concern was the Computer Science Standards for levels 1-4. Currently they are the same for all 3 focus areas. I would like to see these standards targeted specifically for the Hardware/Networking, Programming, and Security pathways. On a positive note the current standards have allowed me to branch off and educate myself in other areas my focus of expertise wasn't necessarily in.

I haven't taught computer science, but from what students have told me, they have said that it is too easy/boring at times. They wish they could do more hands-on things (not just writing the code).

I think awareness of the importance with building administration.

I think students should have earlier exposure to computational thinking and have the opportunity to join a mentoring program.

I think that the main focus is on coding but there's lack of understanding of "why" you learn to code. I think that the emphasis on coding makes the students feel "bogged down." It's also hard to keep them engaged.

I think the trajectory for Computer Science in Arkansas is great. If there was a way to systematically deploy more hardware and software to the schools with fewer resources, that could make a big difference.

If you want to improve the quality you need to increase the talent teaching the course. In my opinion there are two ways that could have immediate impact: While providing online courses and content is great for beginning teachers it doesn't help them grow as much. Current teachers must be given incentive to grow their own knowledge. The other way is to attract talent from the business sector by providing competitive wages for those teachers.

In my opinion, it's all about building a pipeline. Just as a student needs to have English every year, students who are interested in CS need more than one exposure to become proficient. I think it would be great if there was some form of certification for students who complete a series of CS courses.

Increased training and awareness of administration/counselors

Increases access to quality equipment.

Internet and coding devices at home! I have way too many students who do not have access at home.

It is great that the Gov is offering all these opportunities for CS but if your school doesn't help promote it, it doesn't really grow the program.

It is just going to take time to educate people about the opportunities. I feel starting at the lower levels and working up to other grades will make the biggest impact on growth for CS.

Keep being the leading state in Computer Science education and curriculum.

Keep having professional development.

Keep the computer specialists out doing trainings and available to teachers as resources. I was helped so much by them this spring!!

Keeping up to date with new equipment and curriculum.

Limit the number of students per classroom. Some CS courses get exponentially more difficult to teach with a large number of students. The math and science credit is a blessing and a curse. It really helps some kids but some of my classes have a large number of students who don't care about computer science and only want a math or science credit.

Make CS a requirement.

Make stronger connections with businesses and bring a more cohesive model of study similar to shoo/Skills USA. It looks like we are headed in this direction which is a great thing!

Making sure that schools who have a CS program have adequate equipment to fit the needs of the students.

More Computer Science career education for students and teachers.

More for Advanced or past basics. Sample Unit plans, or sample curriculum map for semesters

More information to counselors... but they don't want to know/think they already know

More online curriculum resources that are aligned to state standards.

More professional development for high school teachers

More real test prep. Like start the test prep with a test, then analyze what was missed and teach each one individually

More stipends to teachers that will attend CS professional development in order to encourage further learning and comprehension of CS.

More training for teachers at Co-ops.

Move it out from under CTE. It needs to function as a separate unit just like math. Under CTE it is just another course. It needs to be mandatory for all students as a true requirement. Put Anthony in charge but not under CTE. This just causes several problems currently by schools grades based on partial Computer Science number of students we have several problems. We need to focus on good teaching at a high level not just number of students. I know you want funding but Perkins just is stretched thin. Fund Computer Science and make it separate and Mandatory but NOT under CTE.

My biggest problem has been my district. I have asked to be removed as the HS CS teacher. I feel I can do more to promote CS in my GT classes and in MS coding block than I can at HS. Principals, Superintendents, and counselors need by in if the programs are going to excel.

None

Not allow school counselors to use it as a dumping ground for seniors who fail math and science.

Offer specific classes at several locations throughout the state for the CS endorsement. (Remember when the Career Orientation endorsement required two college classes?) This could be done at educational co-ops, community colleges and/or universities. However, this is NOT a revenue stream for universities--don't take advantage of this need.

One, and probably the biggest obstacle to improving the quality of Computer Science at my school, is equipment. Second, my school does not offer a path that would allow students to be well versed in Computer Science. Very little, if any, Computer Science in taught in the elementary. Some students are exposed to coding in PLTW in middle school. However, right now, our school only offers Coding I and Coding II. All other Computer Science classes are taught online.

Ongoing Computer Science education / professional development for teachers without a CS backgroud.

Our computer science department at the state level is incredible. They are constantly pushing out information to us to help give us support and answer questions. Anthony Owen will answer any email nearly 24/7 (and I'm a nobody). The specialists are just incredibly hard working and kind. I think they would do anything to help us be successful. For me, the things I need are continued support for those of us that are NEWER in the CS world. I don't have a degree and I have 5 different preps--all different languages. It can be overwhelming and just incredibly hard at times. I don't currently have the knowledge base and confidence that I hope to eventually have.

Permanent increase for cs teachers. I could be making double with less time commitment using my degree.

Phase in the requirement to pass Praxis 5652 to teach. (May already be in the works) Many prospective teachers I have encountered are math teachers or business teachers that while competent in their subjects are not well equipped to teach computer science.

Principals and Counselors need to be educated enough that they will support the courses. I have asked for several years for 8th grade coding class elective, and have been denied. We teach a 10 week coding unit in 7th grade that the kids really love, (they make their own apps,) then nothing until CS 1 in high school which is not pushed. We lose so many interested students! Also, the high school courses need to be taught in a way that teaches the frameworks, but is also INTERESTING to the students!

Probably, the most important thing would be to continue to invest in training teachers. I got into teaching computer science because I wanted to find a way to teach robotics at my school. However the deeper I go I find that the CS field is a lot more than just robotics. As my students want to go in those other directions I will need either more training myself to journey along with them, or I will need other people teaching this subject who can help them in areas I am not equipped for.

Proper equipment-if students have to wait forever for things to load, they get frustrated and lose interest and focus

Provide Training - I am new to Arkansas and it is hard to find training opportunities like I had in Texas. Communication - I had not heard of any of the training opportunities that were mentioned in this survey.

Provide a mandated yearly school budget that the CS instructors a aware of and have input about.

Provide access to more resources.

Provide release time to Computer Science teachers at all levels to attend Computer Science courses and Preparation workshops.

Provide resources. Students at my school are requesting the robotics class but without the resources to purchase supplies, it will be difficult to add this class.

Push the basic classes down in grade level to 8th and 9th to make room for more avenues at the high level to keep students interested.

Quality professional development and curriculum resources.

Recruiting more computer science majors to teaching. This might require some sort of stipend or bonus situation. Industry pays much better than a starting teacher salary. And then teaching doesn't have a pay for performance model. You increase your salary by hanging around year after year.

Recruiting student participation especially in the younger grades before students think they "can't" do it.

Resources at underprivilidged schools that are directly allocated to CS.

Rethink which curricular requirements for each semester are 100% essential or rethink the conception of CS courses as a bunch of self-contained semesters. I understand that you're trying not to trap students with significant self-taught knowledge in classes that are too easy for them, but that could be accomplished by letting there be some kind of "comp" test like colleges do for a lot of subjects. Trying to force nearly every single standard into every single 1-4 course only makes sense for the parts that actually permeate computer science. Reducing the number of standards would allow the students to delve much more deeply into the truly essential standards. Each semester could then have a more in-depth look at one or two of the side topics, and the students might get more out of it. The way it's structured now, it feels like the "mile-wide, inch deep" approach is getting in the way of student understanding. The other thing that I would really love to see would be a bigger focus on classes that help students get industry-level certifications (much like we do for welding and other trades). Going to college is wonderful, but there are a ton of jobs that only require certifications, and they could either work part-time during college or have entire careers ahead of them without the expense of college. Things Like Google's IT support professional certificate or any of the lower-level CompTIA or Cisco certificates (or even IBM's massive variety of course offerings) could be the backbone of the classes.

Since I do not teach the course, this is a personal opinion. Some training in best practices for teaching this discipline is not something I have seen. As we all know, being a content expert does not guarantee that one is good at teaching a discipline.

Start the program with Elementary Students. My high school students are overwhelmed by the whole aspect of coding. This will not survive unless it is introduced early on in the educational process.

Stop asking business teachers to take this on. We have never taken any classes in this area in college. Get teaching degree programs going so that CS teachers are highly qualified and our students will have the opportunity to really learn CS. I am 46 years old and have never taken a class or college class in this, but because I spend 2 weeks in training for the last 2 summers, I am expected to be able to pass this praxis test. It is HARD.

Superintendents and Curriculum directors in each district need to made aware of the infinite possibilities of CS in the future job market for our students.

Support and empower good teachers. Teachers are key to the quality of any discipline.

Teacher training

Teacher training in areas that teachers may not be familiar with in order for schools to be able to offer a larger variety of courses.

The ability to have more meaningful, hands on experience with how coding affects their life.

The most important thing that I have seen that should be done to improve the quality is to make certain the students have up to date computers and programs. Trying to teach a computer class with old computers and little or no programs is not interesting to today's students.

To continuously offer ongoing training and resources to teachers..and maybe how it can fit in with other subjects

To provide equipment and some more detailed curriculum.

Train and fund teachers. Most potential CS teachers are in the IT field with salaries that are higher than a typical teacher. CS is a subject much more suited to large schools. Small schools typically have teachers that teach 3 or 4 subjects. CS is hard to fit in.

Training and resources.

Training opportunities and support for teachers new to teaching computer science.

Try to push school districts to put interested parties into CS classes instead of a random teacher to mark a mandate off their checklist.

Understand that in smaller schools there is not the CS pipeline of courses like at bigger schools not due to the desire or abilities of children but logistically lack of certified staff and schedules.

We need a stronger focus on the introduction of computer science and computing in the early childhood environment.

We need more support. I'm a Social Studies teacher by training and am currently an EAST facilitator. I'm not an idiot and I'm very techy but I am not prepared to teach the course after a 30 hour PD with a from a COOP specialist that wasn't a good teacher.

We need to start moving from being facilitators back to being teachers. Early on in this journey, I understand it was important for CS teachers to be facilitators, primarily because many of us were in over our heads in terms of content. However, I did not like that feeling, so I started getting formal training (some from CSforAR, some from other providers, and some from my Master's degree program). As we become experts in our content, we'll be able to teach students better, and we'll have a better idea of what to ask for in terms of support.

We used Edhesive. I worked on this program to help develop my skills. I have also utilized my CompSc Specialist at the Coop.

a truly standardized curriculum Stop all of the over duplication of resources at the state, coop and ASMSA levels to name a few . Way too many chiefs pushing out info to prop up their own organizations and justify their own programs, teacher are left in the middle to cypher through it all

attract people that are passionate about the subject

increase funding and increase real world applications of the courses.

more buy in from administration and other staff

not sure

recruit teachers that WANT to teach computer science. Don't make the person that has a set of computers in the room teach it, unless they WANT to teach it.

In your opinion, what is the most important thing that can be done to improve the educational benefit of Computer Science education for Arkansas students?

Increase access and improve promotion/enrollment of existing programs.

-Local colleges to provide CS free of charge summer camps for high school students to encourage them to take CS courses. -Provide CS students access to more scholarships that will help them continue their CS education after high school.

A set of prerequisites for students who are enrolled in CS.

A standardized curriculum available for newer teachers would probably give students a better understanding of CS than the hit or miss approach which I believe most teachers are using now, because of what is available to them to use to teach.

A streamlined program.

A uniform coding class sequence across schools from jr high through high school

Any improvements to the quality improve the benefits.

As I am not teaching the subject, I do not have an opinion on this.

At Jr. High level I see many students choosing sports over CS classes. Maybe more coding clubs or extracurricular coding activities to draw kids in verses sports or other clubs. A lot of student athletes do not have space in their schedule and do not see the potential of coding verses sports because they have been part of a team since middle school and do not want to let them down even though they will not be playing in college. If there were CS Clubs in middle grades or younger this could possibly keep students involved.

Better qualified teachers

Better teacher training (it's very good now at the lower/intro levels, but veterans are stuck in our growth). The advanced training I took only covered new material the third day. Everything else was a repeat of the five-day course, and understandably so, because many of my fellow participants needed the review. However, I need something for people on my level.

Bring in more diverse students. Ethnicity and more importantly, more girls. Promote it better for these groups.

CS course requirement for all HS graduates.

Coding competitions.

Computational Thinking

Computer Science education in Arkansas has so many options for students. Access to beginning steps for students to learn would likely increase the number of students enrolling in Computer Science.

Computer Science teaches so many great life skills--such as perservance, logical thinking, indepdent and group work, etc. I think the focus should be more on these benefits, instead of the math and science benefits. This scares too many students away from CS.

Continue to educate teachers on higher levels(levels above 1/2) of computer science... Continue to recruit students at younger ages...most of my girls chose to do this because of a direct connection to a teacher who told them they were good at it in 6-8th grade.

Continue to offer competitions for students, and again incorporate into other subjects

Continue to offer student competitions and connections to how this will help shape their future.

Continue to provide access to competitions, camps, scholarships, campus tours.

Continue training teachers and offering opportunities for teachers to network with other CS teachers. Also, provide as much usable, simple to understand curriculum with pacing guides so that teachers have the opportunity to focus on learning the skills to better assist their students. More internship opportunities as students becomes Seniors to provide them with chances to see real world Computer Science in the work force.

Continued materials from businesses that support the computer science initiative in the state.

Continued promotion from the state office will be the biggest validation. Every time Asa Hutchinson talks about computer science you can tell he is passionate about it. I have played his videos to teachers from other states and they are so jealous of the support. Every time I talk to parents and students about the AP score money they light up. It's a huge pull! They are all motivated by the potential to earn $1000. I hope that stays in place.

Continued support for teachers and sharing of resources. Making sure that districts have efficient funding to support their students with effective curriculum and technology in the classrooms.

Develop more business & community partnerships that will allow students to see how computer science is actually applied in the real world.

Do not let it be a "dumping ground" course for those students who need either a math or science credit.

ESL Strategies need to be used and implemented to increase interest among minority students

Educating more teachers to facilitate the CS experience in Arkansas schools.

Encouraging students to continue to pursue computer science education would increase the benefit to students.

Equipment and software funding for the classroom. Help with offerings in rural high school and encouragement for students to take the courses.

For students to have a better understanding of what is involved in computer science. A lot of students take CS 1 & 2 because they equate it with video games and what they did in middle school with Hour of Code and/or block coding. CS 1 & 2 requires computational thinking. Many soon realize they really don't like it and struggle through or don't care. It holds back the students that do like and could excel further.

Funding

Get teachers to collaborate and create a curriculum together! We use so many free resources but I think we have some brilliant humans and it may help first year teachers improve earlier!

Give stipends and bonuses for CS teachers to work in Delta.

Have industry provide input to schools on how they rely on CS for their current work environment and they anticipate changes in the future. This should be done locally. Students need to see how this benefits their futures in the local community.

Help programs by providing funding for up to date equipment and continuing to provide equipment at a quicker pace then normal computer updates.

Help schools streamline a set of courses that way students have opportunities to take CS courses 9th-12th.

Hosting computer science job fairs that let kids see what kinds of jobs are out there, how much they make, all that it involves, etc...

I am a licensed counselor and when I can get into that role, I will be able to advocate for it better, but I am not a good teacher of this subject. I have done a lot of programing in the past and still do, but it is lighting consoles, digital audio consoles and video systems but the software is written, I just have to program it to what I want. I also programmed fire alarm and nurse call systems before becoming a teacher. This computer science stuff is way beyond that.

I believe Arkansas does a great job with this my offering students scholarships, competitions, and most importantly—future job prospects!

I do not know.

I don't really have an opinion on that other than to keep on doing what we are doing.

I really not sure at this point

I think benefit will be realized regardless of what the students' future goals entail because of the disciplined way of thinking that computer science encourages. So, if a student is taking a computer science class, is engaged, and is receiving high-quality instruction, there will be benefit. The degree of interest, engagement, and quality of instruction will determine how much benefit is derived.

I think students should be more aware of career opportunities.

I think that having businesses seeking out and actively recruiting graduates would be fantastic.

I think that students need to understand more about computer science. I think that platforms like code.org are overused and bore the students after a while, but other platforms are too expensive. Not all students need to know how to program. Understanding the inner-workings of a computer's hardware, networking, and security are also important.

I think the state is doing a great job pushing CS. I just need more training and support.

I think we are doing fine and giving all students the opportunity to have CS exposure.

If student had more opportunities to do fun field trips and allow the student to see a future career in CS.

In my opinion, the InfoSec stuff is a great start. The companies that the governor is trying to bring into the state will help by increasing the number of prominent jobs available and the number of regions in the state offering those jobs.

Increase awareness of CS classes, starting in 7th grade. Make sure 6th grade teachers/counselors know about Key Code so they can get students excited for it. Re-frame how Key Code gets presented, my students groan because it's required and they see it as taking an elective "choice" away. Instead promote it in a positive light.

Increase the availability of level 4/5 classes/content, content/standards for middle school or Jr. High classes to build interest at earlier ages, and a completionist pathway for CS.

Increase the number of teachers. Increase the number of "qualified" teachers.

Internships

It's already highly incentivized to learn CS as a student just through career options, so this is one career path that is at the very least monetarily and availability wise very lucrative.

Keep doing what is being done and then look into more ways that regular classes can use and benefit from CS (Alg 1).

Make CS a mandatory credit for graduation

Make Computer Science a required class similar to what they have done with a foreign language course.

Make it a requirement like Math but not under CTE.

Make it a requirement rather than an elective.

Make it relevant. Computer Science isn't for everyone just like Calculus isn't for everyone.

Make it required for all grades to include as an elective for all grades and give full support to it just like the band, athletic, etc.

Make sure students have qualified and enthusiastic teachers who have a desire to teach CS.

Make sure that all the opportunities are available when schools are setting budgets so calendars can be set and teachers can request funds in advance not as they come up.

Make the IT department familiarize themselves with the curriculum so that they can open access to the appropriate links and work with teachers in finding alternative sites.

Making sure that all students have access to atleast one computer science course. Sometimes, computer science courses are only marketed to the "smart" kids.

Modernize content annually to include new developments in CS technology trends. Vastly increase 9-12 internship opportunities to equip students with meaningful CS experience doing real work for real clients in an office environment.

More access to the internet for rural students.

More information to counselors... but they don't want to know/think they already know

More professional development for high school teachers

None

Not sure. Possibly add more certifications.

Nurture an interest in CS at a younger age, by connecting job and career paths available through CS.

Offer more classes

Open up computer science to how it relates to the other fields (i.e engineering, business, etc.). Open up computer science to hands-on learning/programming and actually building something that will work with their code.

Opportunities for students to attend trainings and workshops.

Parents need to understand that computers are the future whether they like it or not. I do not know how to get this done.

Partnerships with local business and industry to show the students OFTEN what is needed from their education

Partnerships with outside companies, creating internships, etc.

Persuade schools to allocate more resources and funding for programs that work.

Please keep providing stipends to teachers. And keep the specialists available for resources.

Principals, superintendents, and counselors need to see the benefit for their students.

Promotion of computer science to all students.

Provide and require a basic computer programming class.

Provide more courses.

Provided real world experiences for them. Allow them to code in teams like they would in a business setting. Bring in professionals that can relate to them and tell them about their job experiences. Have a collaboration of CS teachers that meet regularly and plan/share projects and ideas together.

Raise awareness of college scholarship that are available for students that study CS in college Offer introduction CS college course for students that have no coding experience

Require a High school level computer science class for graduation (.5 credit class ok)

Require students to have some component EACH year that they are in school: K-12 This forces all teachers to have some knowledge of the area, and learning the language of CS will be scaffolded over time.

Same response.

Schools need CS instructors at all grade levels so students can continue to learn and build on skills.

See above

See above.

See above.

Separate and delineate computer science from the business classes, students go to business classes and PLAY with tech instead of Comp Sci where they are required to actually learn

Show math and science teachers how it relates so they see the benefits of students taking CS and promote it in their class.

Show students how technology is incorporated in all aspects of life and how much it benefits them to know how to read code or make code or be "cyber aware"

Smoothing out the transitions between elementary -> middle grades, middle grades -> high school, high school -> {career, trade school, college} in a way that anticipates and minimizes opportunities for talent loss at transitions.

Start introducing it to the students at a younger age.

Start the program with Elementary Students. My high school students are overwhelmed by the whole aspect of coding. This will not survive unless it is introduced early on in the educational process.

Starting at the 7th grade level visits from professional and at the high school level internships.

Students need to be exposed to skills that can be used for jobs and shown how important Computer Science is in real world situations.

Students need to start CS early. Learning the critical thinking and computational thinking skills at an early age would keep them involved in CS up through the AP CS levels. Teachers also need more direction on how to use the curricula that are available to us. I've looked at CodeHS and the ASMSA materials, and though they are high quality, the implementation into day-to-day classroom plans is a struggle for me.

Students should have solid skills that employers are looking for upon graduation. They need a direct career path.

Talk to INDUSTRY (Walmart, Tyson, JB Hunt, R&D companies, military bases)--what are their long term needs? What salaries are being projected for these potential employees? THEN build classes, certifications and internships with local employers.

Teachers who are comfortable with the concepts that they are presenting too students.

The courses need to involve a lot of application and creative problem solving - not information dumps and testing over lists of facts. I believe some of this is being done by good teachers, but education tends to slide towards pushing information over working projects. It's just something that happens, but it can suck the joy out of working with computers. In small districts such as my own, we need more funding to obtain both the teaching positions and technology to support active development work.

The educational benefit for Arkansas students taking Computer Science courses should come from three things: 1. A great and effective education, where the teachers are knowledgeable and excited to teach Computer Science. This education should stimulate growth and reflect a perception of relevance towards Computer Science. 2.Students should feel value in the subject. If students do not value what they are learning, they will not want to learn it. (this is being considered in many facets). 3. Students should feel a level of equity in Computer Science education. Students should have a fair and consistent educational process without limitations. It should never feel like the largest or most funded schools have better access to learning and opportunity.

The most important thing to improve educational benefits would be summer programs for the students to work with a business that needs them in the future.

The students have got to decide that hard is worth doing.

This is a tough question because I know that schools are at all different levels and teachers have all different levels of experience. I believe that a teacher needs to be passionate about the subject matter and have good rapport with the students and they will benefit from the education.

To have more industries that rely on CS and programming located here in AR. As the current situation with Covid-19 is showing us, people can do a lot of CS work from anywhere, even their homes. Why should the industry be crowded into expensive places like Silicon Valley, when the workers could be anywhere? Esp if the workers could be based in places like AR where our quality of living is so much higher than some of the major cities. I think a targeted, co-ordinated effort that recruits more CS industries to AR, and ensures that we have a steady supply of trained CS workers creates a positive feedback loop that benifits everyone.

To not push the use of Chrome Books which are not useful in the real world of business. No programs can be downloaded on Chrome Books, that are regularly used by businesses, and allows for the development of skills directly related to what most students need to become computer specialists.

We need more teachers who are experts in their field. We need experts in programming, networking, hardware, and cyber security to be the ones teaching our students. We don't have to go hire these experts out of their field, though. We need to take the teachers we have and help them become the expert in the room whenever they start teaching these classes.

continue to fund professional development opportuntiies throughout the state for teachers

not sure

people need to see the relevance of the things that we teach in CS -- how it ties in to what they are teaching, how it can be a support for other subjects, how knowledge of CS can benefit students in the workforce, how CS and technology are the future and this "stuff" is not going away