MEMORANDUM

To: Honorable Eric J. Holcomb, Governor of Indiana
Dr. Jennifer McCormick, State Superintendent of Public Instruction

From: Jake Koressel, Computer Science Specialist
Jennifer Jensen, PhD, Director of Teaching and Learning
Robin LeClaire, Chief Academic Officer

Date: January 8, 2021

Re: IC 20-20-45 NextLevel Computer Science Program Bi-Annual Report

Background

IC 20-20-45 established the NextLevel computer science grant program (program) and computer science fund (fund) to award grants, after June 30, 2019, to eligible entities to implement teacher professional development programs for training in teaching computer science (CS). This requires the Indiana Department of Education (IDOE) to: (1) administer the program and fund, and (2) develop, in consultation with the Governor's Office, guidelines to award grants from the fund to eligible entities.

Additionally, IC 20-20-45 requires:

- Not later than August 1, 2018, the State Superintendent of Public Instruction to enter into a contract for professional development services.
- IDOE to biannually submit a progress report to the Governor regarding the:
    1. development and administration of the program and fund, and
    2. status of public schools in meeting computer science curriculum requirements. This biannual report must be submitted by July 15, 2018 and not later than July 15th and January 15th each year thereafter.

Development and Administration of the Program and Fund

Timeline

- April 2018
    - IDOE completed the special procurement process with Nextech
    - IDOE funded $70,000 for start-up of Nextech contract
    - State Board of Education (SBOE) approved IDOE-recommended CS course additions
    - Announcement STEM Acceleration Grant - Cohort 1 recipients
- May 2018
    - First CSforIN Summit: www.CSforIN.org

    - IDOE met with Nextech, the Governor's Office, and other stakeholders to discuss Nextech budget forecast
    - IDOE awarded grants to seven schools to implement the Project Lead The Way (PLTW) Cybersecurity Pilot Program
    - IDOE published computer science professional development opportunities (continuously updated): https://www.doe.in.gov/wf-stem/cspd
- June 2018
    - First IDOE-sponsored Computer Science Fundamentals workshop takes place
    - Computer Science Specialist position begins at IDOE
    - Memo to the field regarding CS requirements and support
- July 2018
    - 2018 CSforAll Letter of Commitment
    - Strategic CSforALL Resource and Implementation Planning Tool (SCRIPT) Train-the-Trainer Workshop at Pathfinders Institute for IDOE and Educational Service Centers
    - Attendance at Computer Science Teachers Association (CSTA) Conference
- August 2018
    - Indiana Course Access Portal (iCAP) enrollments begin - computer science is included in course options: https://www.doe.in.gov/icap
    - State-Level Partnership with Girls Who Code begins
    - Identification of Computer Science Champs
    - Memo to the field regarding CS requirements and support
    - Development of two-day "Integrating CS in Middle School" workshop
    - Updated Computer Science Assignment Codes
- September 2018
    - In conjunction with OMB and the Governor's Office, IDOE finalized Nextech contract amendment - additional $600,000 (Appendix A)
    - First IDOE-sponsored SCRIPT workshop takes place
- October 2018
    - Attendance at CSforALL Summit
    - First IDOE-sponsored Integrating CS in Middle School workshop takes place
- November 2018
    - Launch of IDOE STEM Six-Year Strategic Plan
    - Established CS Training Badge for IDOE-sponsored workshop participants
    - Announcement of STEM Acceleration Grant - Cohort 2 recipients
    - Development of State CS Plan in accordance with the Code.org Advocacy Coalition's Nine Policies
    - CS Champs meet to begin development of middle school CS course
- December 2018
    - Attendance at National Initiative for Cybersecurity Education (NICE) K-12 Conference

  - Announcement of IDOE/PLTW Cybersecurity Grant recipients
  - Computer Science Education Week activities promoted by IDOE
  - Call for applicants to participate in "Computational Thinking for Every Educator" online course
  - Approval of the addition of PLTW Cybersecurity to Indiana's Course Description Guide
  - Updates to the CTE funding memo impacting computer science courses
- January 2019
  - Indiana named the third state to adopt all nine Code.org Advocacy Coalition Policy Recommendations
- February 2019
  - IDOE-sponsored Computer Science Curriculum Showcase
- March 2019
  - State Vex Robotics Competition
  - 50 educators complete "Computational Thinking for Every Educator" course
- April 2019
  - 0488 Computer Science - Middle Level is approved by the SBOE
  - SBOE adopts committee recommendations allowing computer science courses to fulfill Core 40 requirement for third-year science
  - Nextech contract amended to include additional summer 2019 projects
  - STEM Plan Playbook developed, including computer science and cybersecurity
  - CS Champs meet to begin developing CS portion of Science Framework
  - Computer Science Assignment Codes updated to provide additional flexibility
  - Biennial budget is finalized including $3,000,000 annually for the Next Level Computer Science Grant Program
- May 2019
  - Letter of Intent submitted to the Indiana Department of Administration for Computer Science Professional Development RFP
  - Memo to the field regarding CS requirements and support
- June 2019
  - Phase 1 of Science Framework released, including K-8 Computer Science Standards (https://www.doe.in.gov/science/framework)
  - Attendance at State Computer Science Supervisors Workshop
  - Attendance at Arkansas' National Computer Science Summit for State Leaders
  - RFP Released for K-12 Teacher Professional Development in Computer Science
  - STEM Certification Rubric Updates include compliance with IC 20-30-5-23
- July 2019
  - 2019 CSforALL Letter of Commitment
  - Attendance at Computer Science Teachers Association (CSTA) Conference
  - Attendance at Cybertech Midwest Conference
  - New course completion data collected

- August 2019
    - K-12 Computer Science Professional Development RFP submissions scored
    - Computer science assignment codes updated to provide additional licensing flexibility
    - Identification of five additional Computer Science Champs
- September 2019
    - K-12 Computer Science Professional Development RFP awardees publicly notified
    - IDOE publishes vetted list of STEM and computer science curriculum
    - Attendance at CSEdCon International Computer Science Education Conference
- October 2019
    - IDOE-sponsored STEM and Computer Science Curriculum Showcase
- November 2019
    - Superintendent of Public Instruction Dr. Jennifer McCormick releases 2020 Legislative Priorities for IDOE including requiring educator preparation programs to prepare new practitioners in state-recognized computer science programs
    - Attendance at CS Policy Academy co-hosted by Education Commision of the States (ECS) and the College Board
- December 2019
    - Attendance at NICE K-12 Cybersecurity Education Conference
    - Announcement of STEM Acceleration Grant - Cohort 3 recipients
    - Updates to the CTE funding memo impacting computer science courses
- January 2020
    - Announcement of STEM Acceleration Grant - Cohort 4 recipients
    - IDOE hosts meeting with representatives from Indiana Educator Preparation Programs to discuss CS in the pre-service teacher education experience
- February 2020
    - Tech Plan Survey questions updated to include K-8 CS implementation details
- April 2020
    - Plans made to shift all summer 2020 computer science professional development opportunities to a virtual format due to the COVID-19 global pandemic
    - Elementary CS course codes created and approved by SBOE
    - Group of Elementary CS teachers convene to begin development of K-5 CS Framework
- May 2020
    - Virtual STEM and Computer Science Showcase conducted
- June 2020
    - Attendance at virtual State Computer Science Supervisors Workshop
    - Various IDOE-sponsored professional development experiences offered through partner providers
    - Announcement of STEM Acceleration Grant - Cohort 5 Recipients
    - Expansion of vetted STEM and Computer Science curriculum list
- July 2020

  - Attendance at Computer Science Teachers Association Conference
  - New course completion data collected
  - Establishment of #CSforIN monthly newsletter
- August 2020
  - Survey of schools not in compliance with IC 20-30-5-23 to determine areas of need
- September 2020
  - IDOE opens applications for additional providers to be added to the list of Vetted STEM and computer science curriculum
- October 2020
  - Inclusion of elementary computer science courses in Elementary and Middle Level Subject Descriptions
  - Present Indiana's Story in 2020 State CS Policy Forum
- November 2020
  - Submission of first SEA 295 (2020) report on computer science including enrollment trends and instructor information

Training Snapshot by Provider

CodeHS (See Appendix B)

CodeHS Computer Science Training Numbers (Current as of 12/28/2020)		
Workshop	**Description**	**Number Trained**
New CS Teacher Workshop	Two-day workshop focused on high school teachers that will be teaching a computer science course for the first time	21
Computer Science Principles Workshop	Two-day workshop focused on high school teachers that will be teaching AP Computer Science Principles or Computer Science I	4
Computer Science A Workshop	Two-day workshop focused on high school teachers that will be teaching AP Computer Science A or Computer Science II	6
Cybersecurity Workshop	Two-day workshop focused on high school teachers that will be teaching Computer Science III: Cybersecurity or will be integrating cybersecurity content into other courses	6
Coding Bootcamp	Month-long, intensive, asynchronous session focused on building programming skills	13
Total Educators Impacted		**50**

Indiana University School of Informatics and Computing (See Appendix C)

Indiana University SOIC Computer Science Training Numbers (Current as of 12/28/2020)		
Workshop	**Description**	**Number Trained**
Computing by Design Workshop	11-day program intended to help high school teachers implement the Computing by Design (CxD) curriculum of the Informatics Diversity-Enhanced Workforce (iDEW) program.	75
Total Educators Impacted		**75**

IndianaComputes! (See Appendix E)

IndianaComputes! Computer Science Training Numbers (Current as of 12/28/2020)		
Workshop	**Description**	**Number Trained**
Elementary	Year-long program intended to build teacher CS content knowledge that culminates in a week-long curriculum development experience.	86
Middle		25
High		47
Multi-Grade/Other		36
Total Educators Impacted		**194**

Nextech (See Appendix A and Appendix D)

Nextech Contract #1 - Computer Science Training Numbers (June 2018 - July 2019)		
Workshop	**Description**	**Number Trained**
Computer Science Principles (CSP)	Nine-day professional development experience for high school teachers including five-day intensive training in the summer followed by quarterly Saturday workshops during the school year	44
Computer Science Discoveries (CSD)	Nine-day professional development experience for middle and high school teachers including five-day intensive training in the summer followed by quarterly Saturday workshops during the school year	60
Integrating CS in Middle School (ICS)	One- or two-day workshop targeting middle school teachers	207
Computer Science Fundamentals (CSF)	One- or two-day workshop targeting elementary teachers	744
SCRIPT (districts)	One- or two-day workshop for district teams	66

Cybersecurity Workshop	Three-day cybersecurity training for high school teachers including one day of industry exposure	32
Java Workshop	Four-day intensive Java training for high school teachers	14
Classroom to Career Experiences	One-day computer science industry experiences for K-12 teachers	37
Total Educators Impacted		**1204**

Nextech Contract #2 - Computer Science Training Numbers (October 2019 - Present)		
Workshop	**Description**	**Number Trained**
Computer Science Principles (CSP)	Nine-day professional development experience for high school teachers including five-day intensive training in the summer followed by quarterly Saturday workshops during the school year	27
CSP Refresher	Two-day workshop for those who have participated in an initial CSP training but want to learn about changes to the course and associated exam	20
Computer Science Discoveries (CSD)	Nine-day professional development experience for middle and high school teachers including five-day intensive training in the summer followed by quarterly Saturday workshops during the school year	59
Integrating CS in Middle School (ICS)	One- or two-day workshop targeting middle school teachers	26
Elementary Workshops	One- or two-day workshop targeting elementary teachers	559
SCRIPT (districts)	One- or two-day workshop for district teams	49
Cybersecurity Workshop	Three-day cybersecurity training for high school teachers	10
CSAwesome (Java)	Five-day intensive Java training for high school teachers	22
WeTeach_CS Licensure Prep	Five-day preparation course for teachers seeking the CS license addition	26
Total Educators Impacted		**798**

Project Lead The Way (See Appendix F)

Project Lead The Way Computer Science Training Numbers (Current as of 12/28/2020)		
Workshop	**Description**	**Number Trained**
Computer Science for Innovators and Makers	Five-day training for middle school teachers teaching a computer science course	25
App Creators		22
Computer Science Essentials	Up-to 10-day training for high schools teaching introductory computer science	8
Computer Science Principles	Up-to 10-day training for high schools teaching AP CS Principles or Computer Science I	14
Computer Science A	Up-to 10-day training for high schools teaching AP CS A or Computer Science II	5
Cybersecurity	Up-to 10-day training for high schools teaching Computer Science III: Cybersecurity	12
Total Educators Impacted		**86**

**Approximately 2,407 Indiana K-12 educators have received computer science training through partnerships between IDOE and the above mentioned providers as of December 28, 2020.

Status of Public Schools in Meeting Computer Science Curriculum Requirements

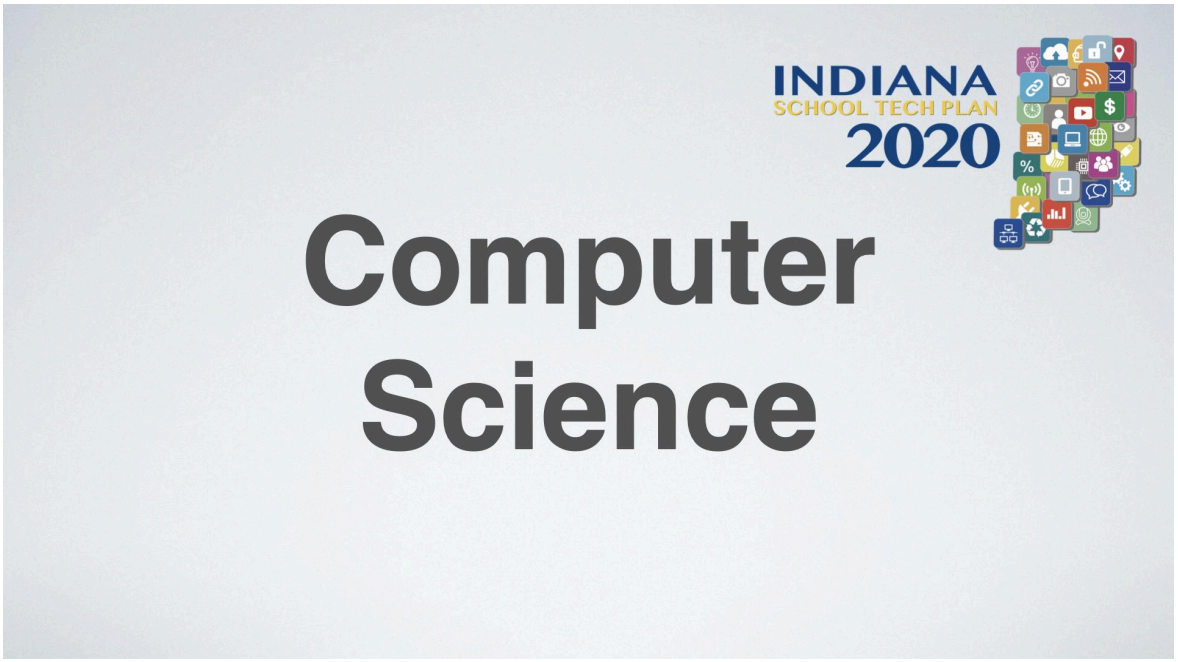
Grades K-8

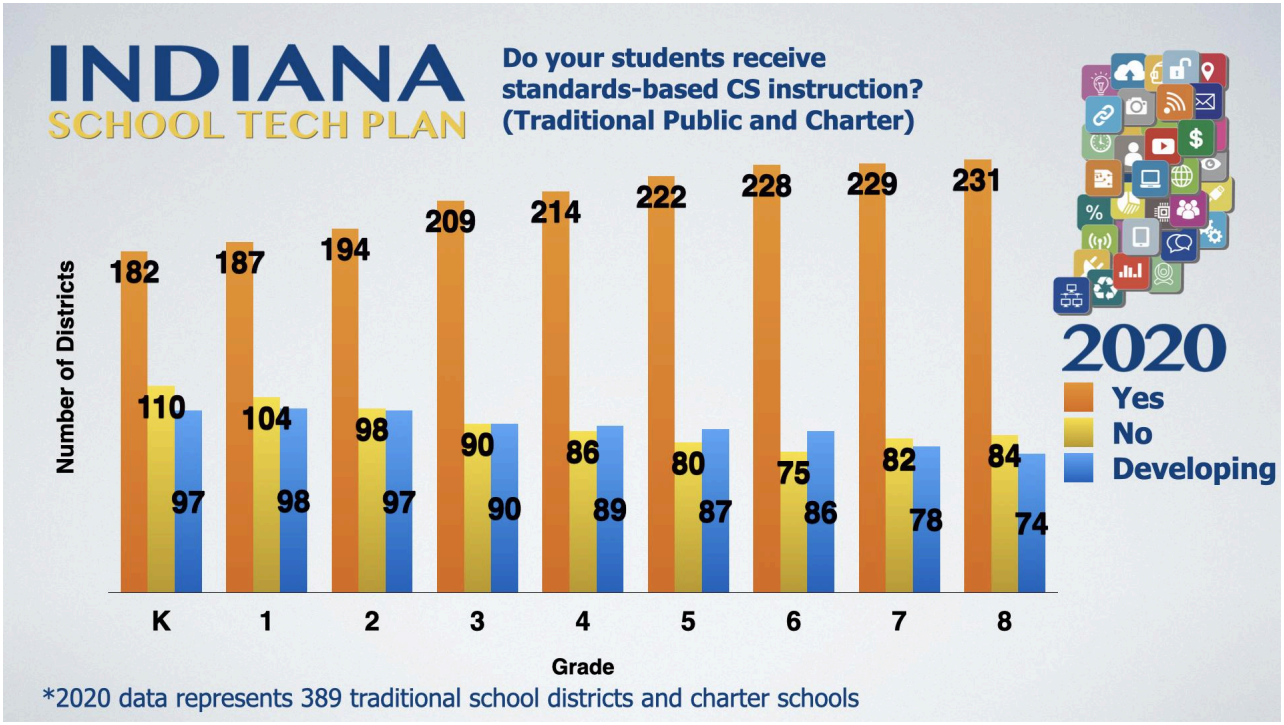
Prior to SEA 172 (2018), there was limited availability of computer science-specific data for grades K-8. IDOE has identified the following as currently available indicators of progress at the K-8 levels.

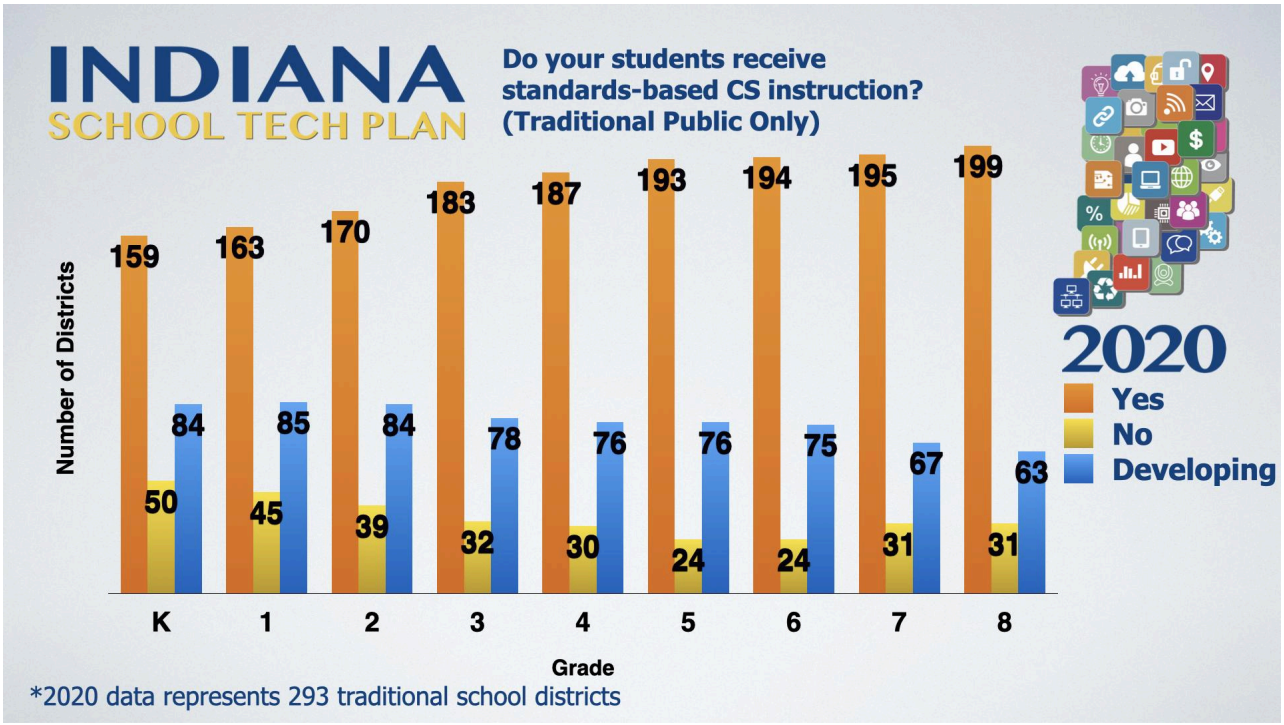
TEACHERS TRAINED IN CURRICULUM APPROPRIATE FOR MIDDLE SCHOOL (Projections through Summer 2020)	
Computer Science Discoveries	119
Integrating CS in Middle School	233
Computer Science Fundamentals	1303
CS for Innovators and Makers	25
App Creators	22

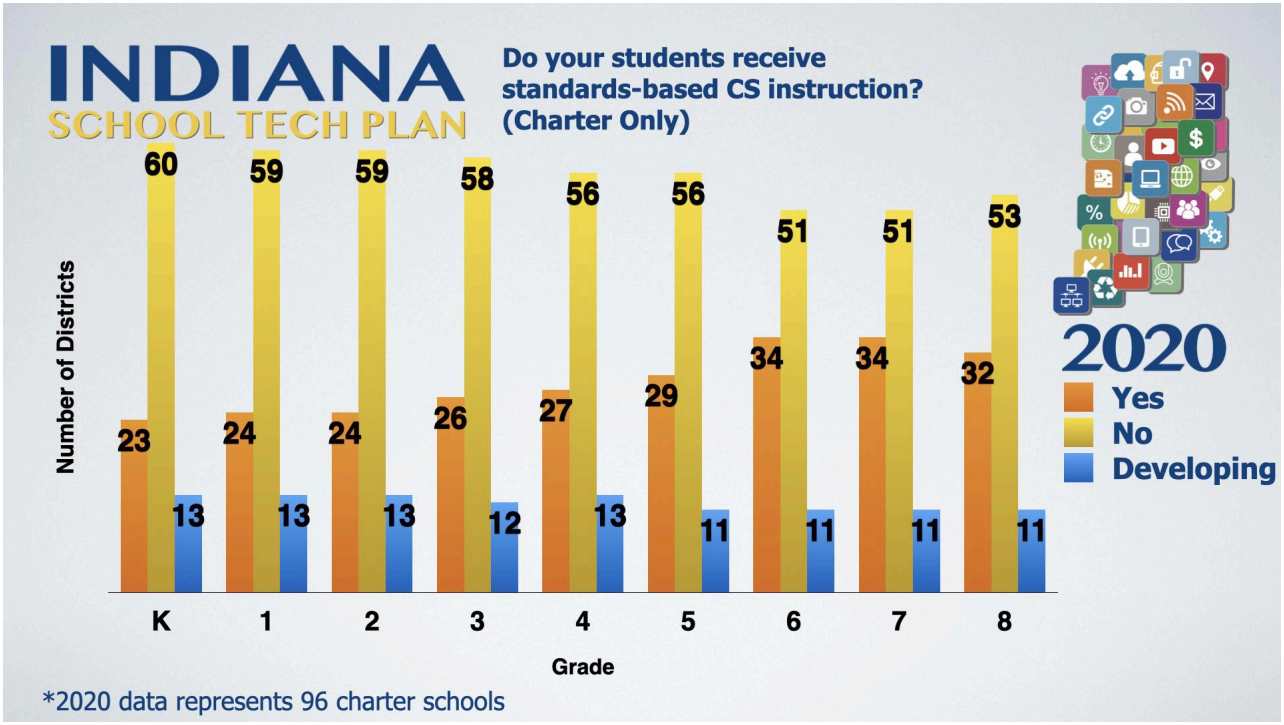
RELEVANT MS COURSE ENROLLMENT TRENDS						
Course	Year					
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-2020
Middle Level CS	-	-	-	-	-	8714
Introduction to CS	311	1	21	80	250	1084

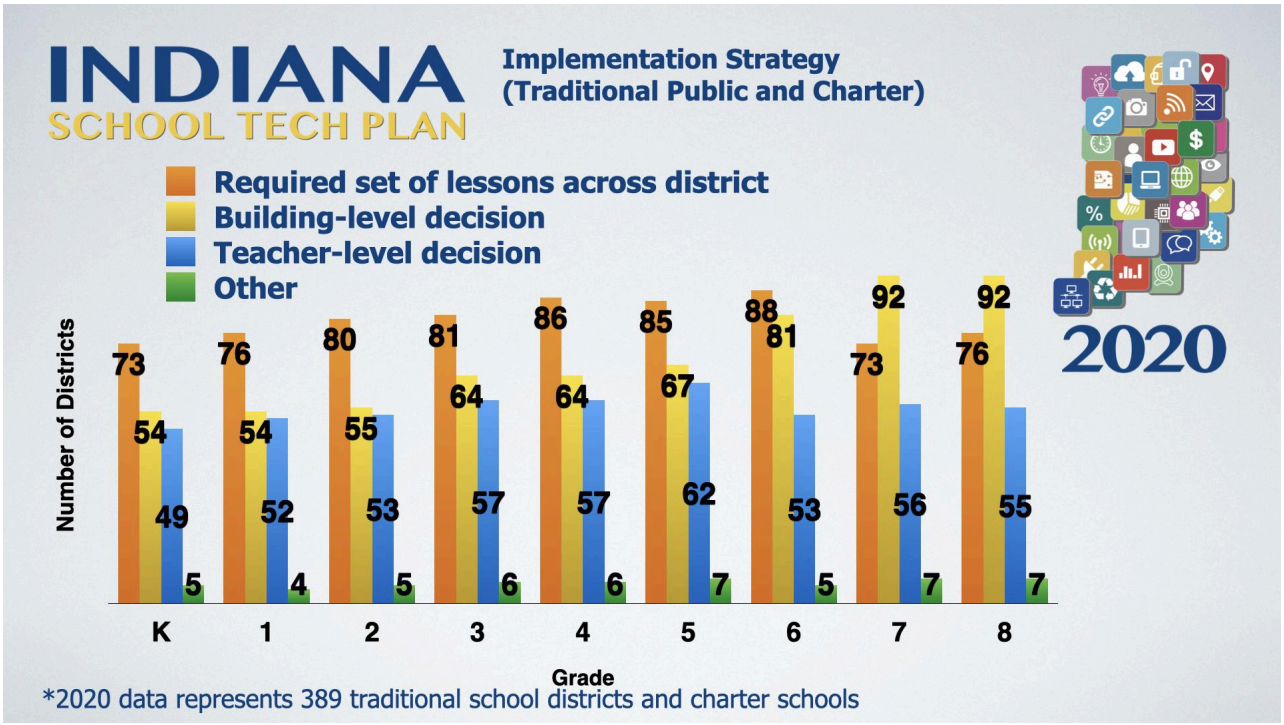
Additionally, IDOE added K-8 computer science-related questions to the annual Tech Plan Survey. Visual representations of the results can be found below.

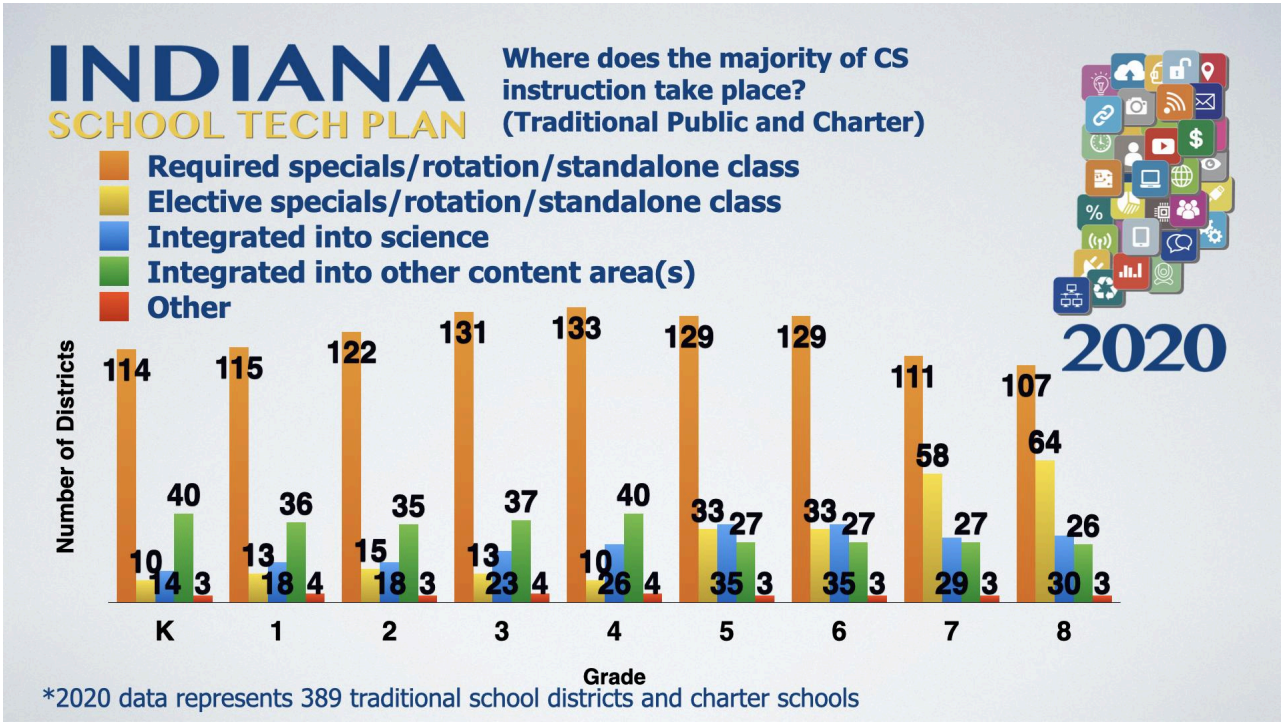


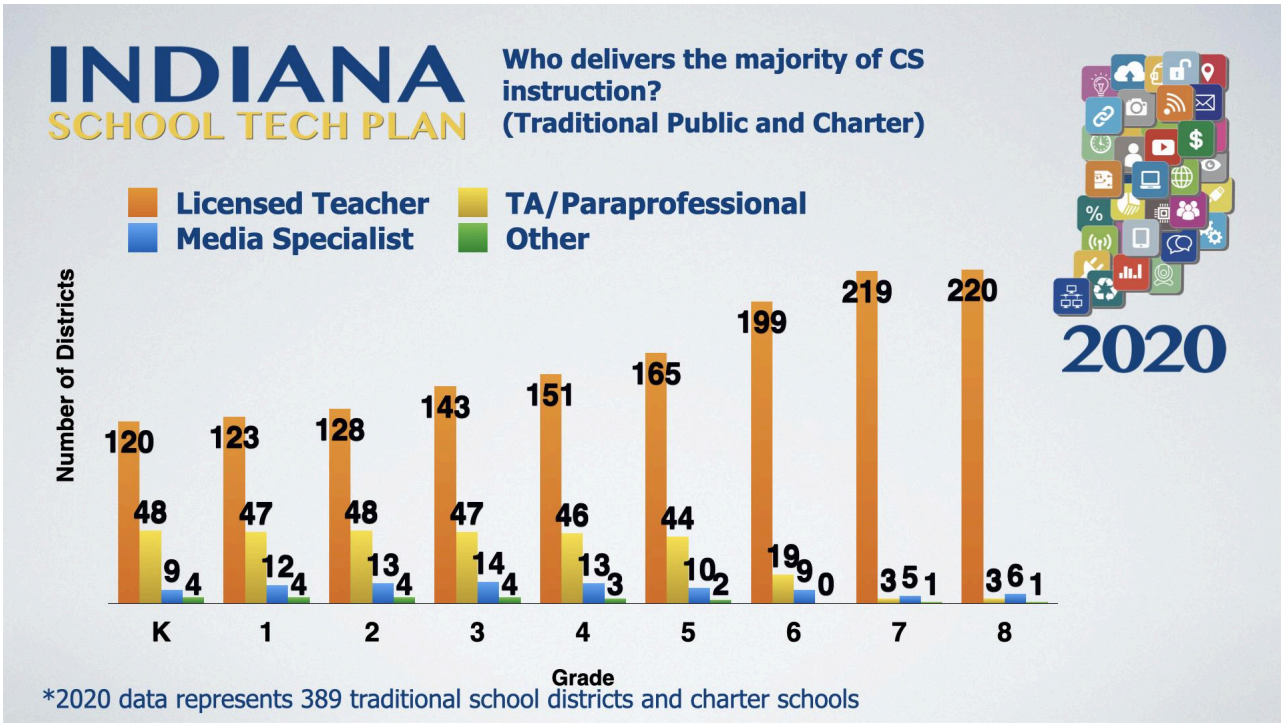

INDIANA
SCHOOL TECH PLAN
Do your students receive standards-based CS instruction? (Traditional Public and Charter)
Number of Districts
182 110 97
187 104 98
194 98 97
209 90 90
214 86 89
222 80 87
228 75 86
229 82 78
231 84 74
K 1 2 3 4 5 6 7 8
Grade
2020
Yes
No
Developing
*2020 data represents 389 traditional school districts and charter schools

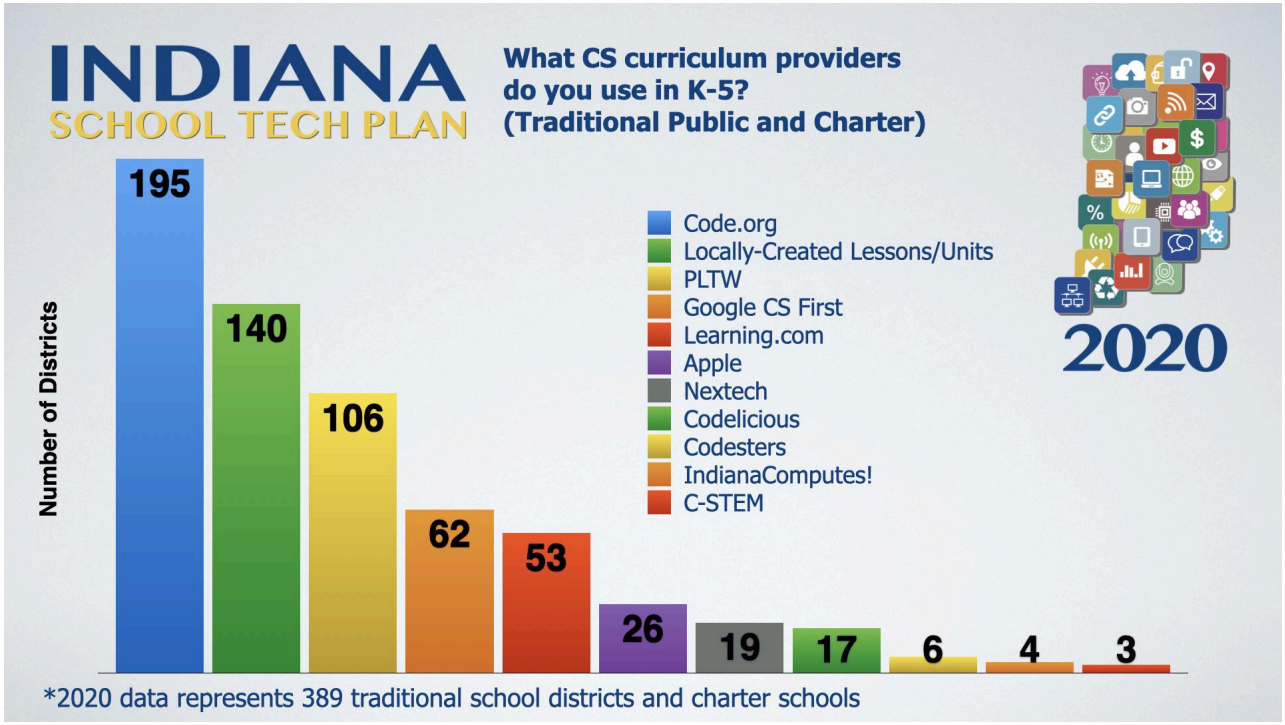

INDIANA
SCHOOL TECH PLAN
Do your students receive standards-based CS instruction? (Traditional Public Only)
Number of Districts
159 50 84
163 45 85
170 39 84
183 32 78
187 30 76
193 24 76
194 24 75
195 31 67
199 31 63
K 1 2 3 4 5 6 7 8
Grade
2020
Yes
No
Developing
*2020 data represents 293 traditional school districts

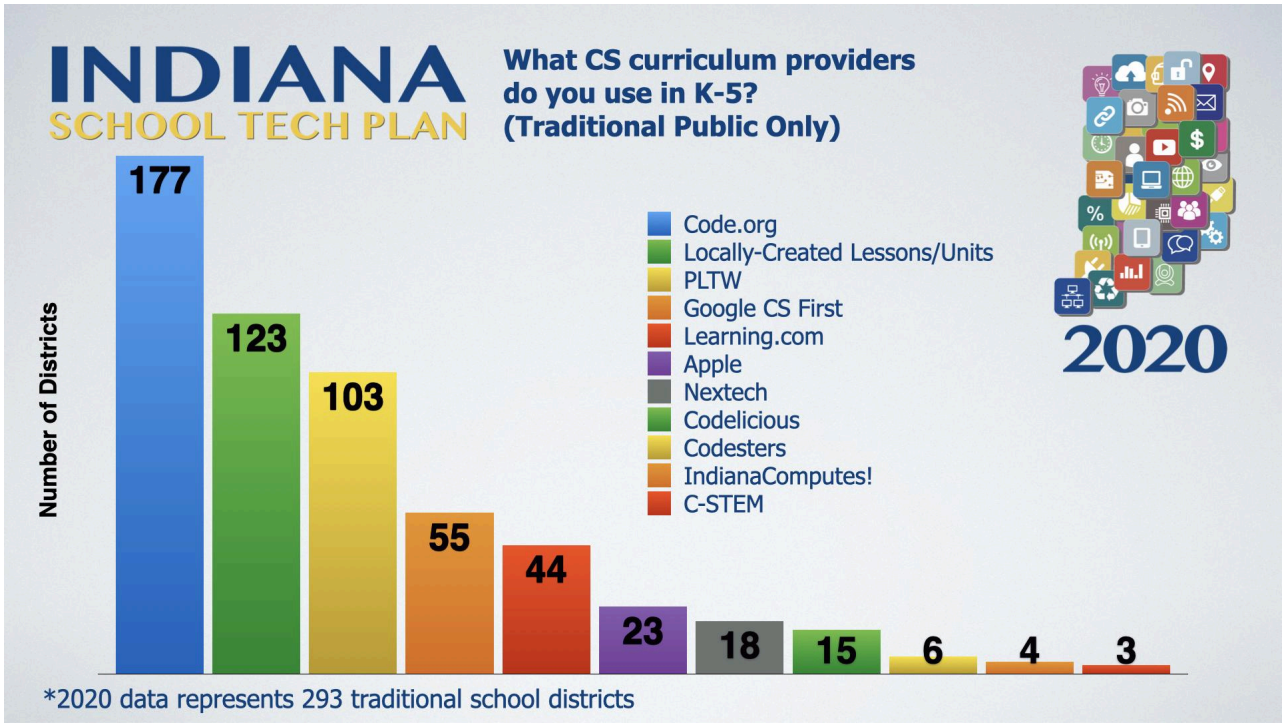

INDIANA
SCHOOL TECH PLAN
Do your students receive standards-based CS instruction? (Charter Only)
Number of Districts
Grade
K 1 2 3 4 5 6 7 8
23 24 24 26 27 29 34 34 32
60 59 59 58 56 56 51 51 53
13 13 13 12 13 11 11 11 11
2020
Yes
No
Developing
*2020 data represents 96 charter schools


INDIANA
SCHOOL TECH PLAN
Implementation Strategy (Traditional Public and Charter)
Required set of lessons across district
Building-level decision
Teacher-level decision
Other
Number of Districts
Grade
K 1 2 3 4 5 6 7 8
73 76 80 81 86 85 88 92 92
54 54 55 64 64 67 81 73 76
49 52 53 57 57 62 53 56 55
5 4 5 6 6 7 5 7 7
2020
*2020 data represents 389 traditional school districts and charter schools


INDIANA
SCHOOL TECH PLAN
Where does the majority of CS instruction take place?
(Traditional Public and Charter)
Required specials/rotation/standalone class
Elective specials/rotation/standalone class
Integrated into science
Integrated into other content area(s)
Other
2020
Number of Districts
K 1 2 3 4 5 6 7 8
114 10 14 40 3
115 13 18 36 4
122 15 18 35 3
131 13 23 37 4
133 10 26 40 4
129 33 35 27 3
129 33 35 27 3
111 58 29 27 3
107 64 30 26 3
Grade
*2020 data represents 389 traditional school districts and charter schools


INDIANA
SCHOOL TECH PLAN
Who delivers the majority of CS instruction?
(Traditional Public and Charter)
Licensed Teacher
TA/Paraprofessional
Media Specialist
Other
2020
Number of Districts
K 1 2 3 4 5 6 7 8
120 48 9 4
123 47 12 4
128 48 13 4
143 47 14 4
151 46 13 3
165 44 10 2
199 19 9 0
219 3 5 1
220 3 6 1
Grade
*2020 data represents 389 traditional school districts and charter schools


INDIANA
SCHOOL TECH PLAN
What CS curriculum providers do you use in K-5? (Traditional Public and Charter)
Number of Districts
195
140
106
62
53
26
19
17
6
4
3
Code.org
Locally-Created Lessons/Units
PLTW
Google CS First
Learning.com
Apple
Nextech
Codelicious
Codesters
IndianaComputes!
C-STEM
2020
*2020 data represents 389 traditional school districts and charter schools


INDIANA
SCHOOL TECH PLAN
What CS curriculum providers do you use in K-5? (Traditional Public Only)
Number of Districts
177
123
103
55
44
23
18
15
6
4
3
Code.org
Locally-Created Lessons/Units
PLTW
Google CS First
Learning.com
Apple
Nextech
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C-STEM
2020
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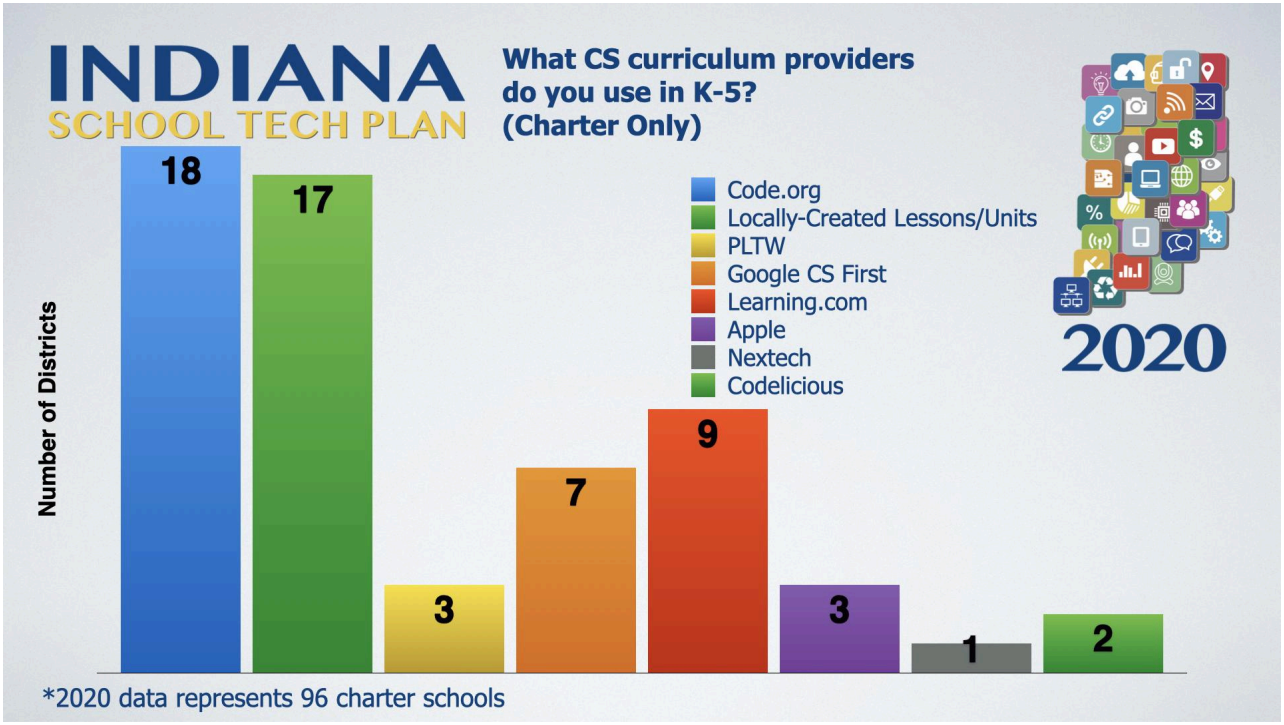
INDIANA
SCHOOL TECH PLAN
What CS curriculum providers do you use in K-5? (Charter Only)
Number of Districts
18
17
3
7
9
3
1
2
Code.org
Locally-Created Lessons/Units
PLTW
Google CS First
Learning.com
Apple
Nextech
Codelicious
2020
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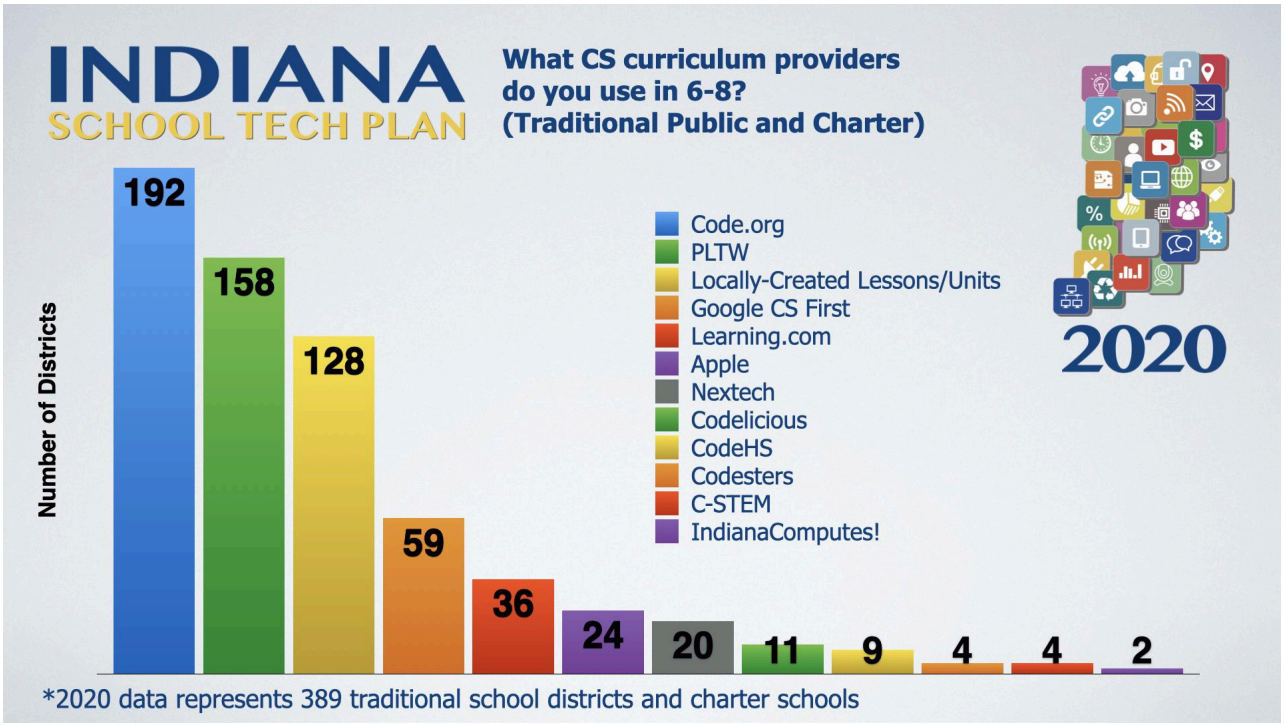
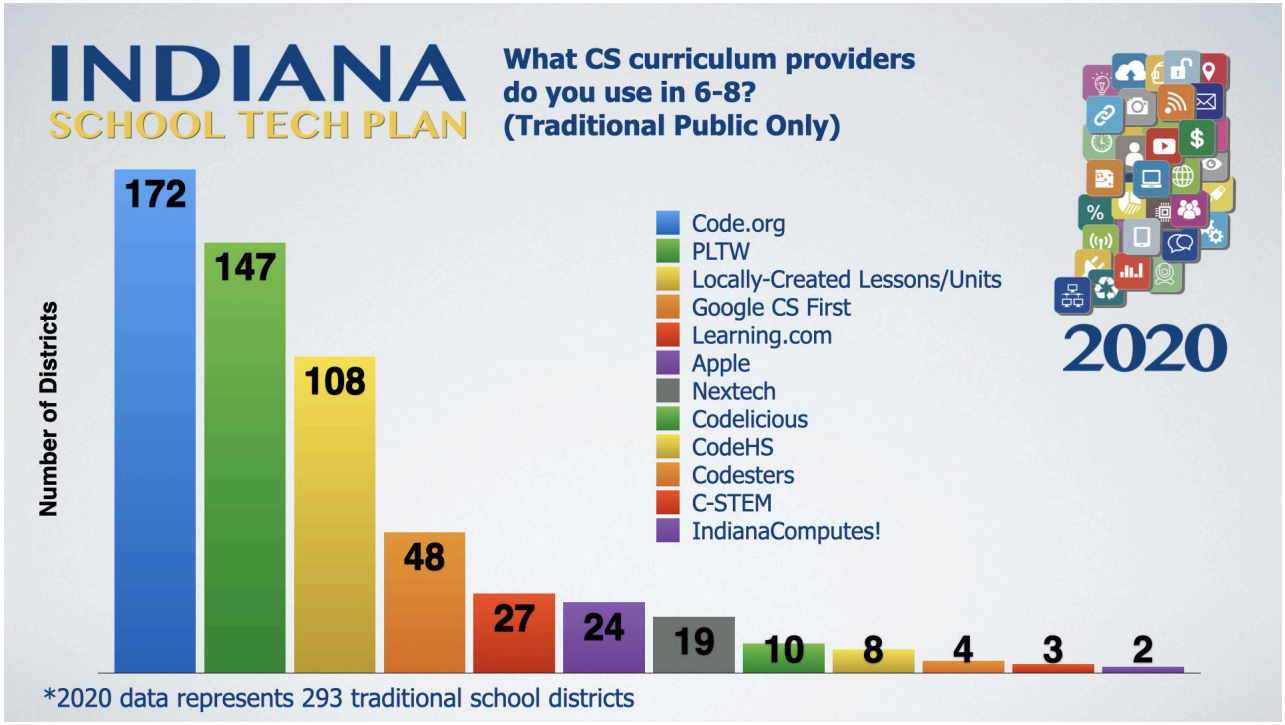
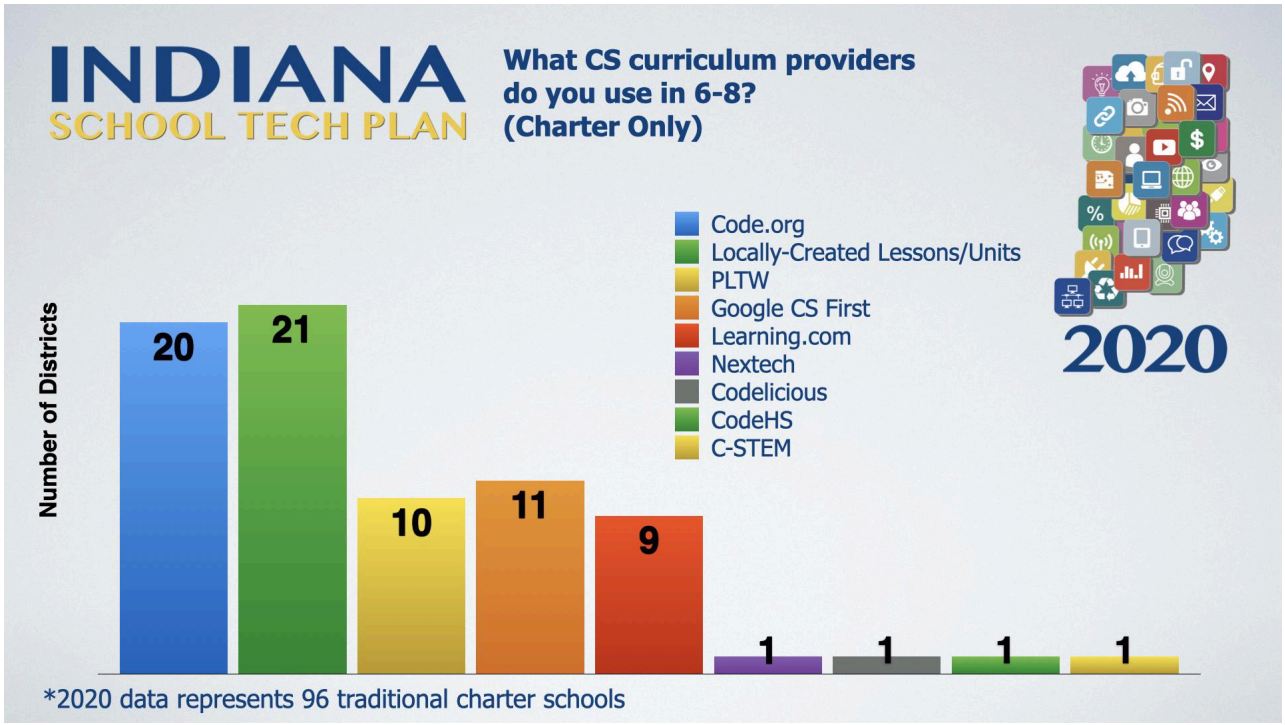

INDIANA
SCHOOL TECH PLAN
What CS curriculum providers do you use in 6-8? (Traditional Public and Charter)
Number of Districts
192
158
128
59
36
24
20
11
9
4
4
2
Code.org
PLTW
Locally-Created Lessons/Units
Google CS First
Learning.com
Apple
Nextech
Codelicious
CodeHS
Codesters
C-STEM
IndianaComputes!
2020
*2020 data represents 389 traditional school districts and charter schools





**The next round of Tech Plan data will be collected in the spring of 2021

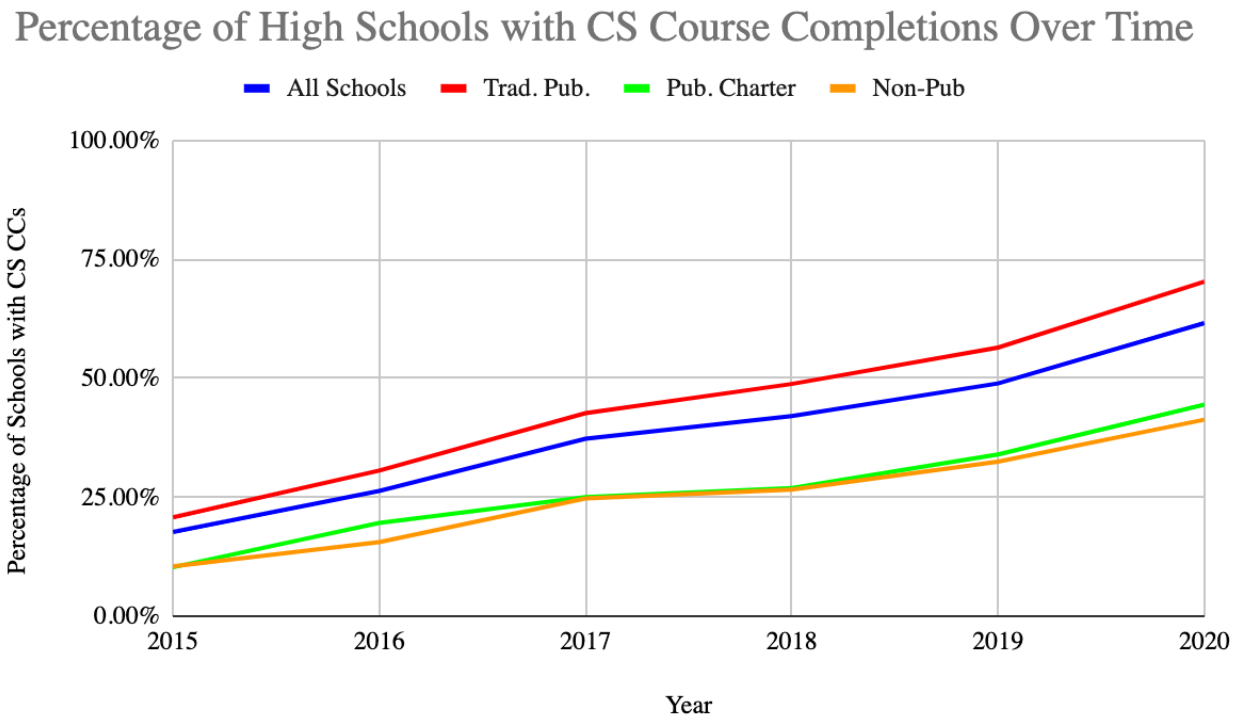
Grades 9-12

ALL SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2015	532	94	18%
2016	536	141	26%
2017	534	199	37%
2018	545	229	42%
2019	548	268	49%
2020	544	335	62%

TRADITIONAL PUBLICS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2015	376	78	21%
2016	376	115	31%
2017	375	160	43%
2018	373	182	49%
2019	372	210	56%
2020	374	263	70%

CHARTER PUBLICS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2015	39	4	10%
2016	46	9	20%
2017	48	12	25%
2018	52	14	27%
2019	53	18	34%
2020	54	24	44%

NON PUBLIC SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2015	105	11	10%
2016	103	16	16%
2017	101	25	25%
2018	109	29	27%
2019	114	37	32%
2020	109	45	41%

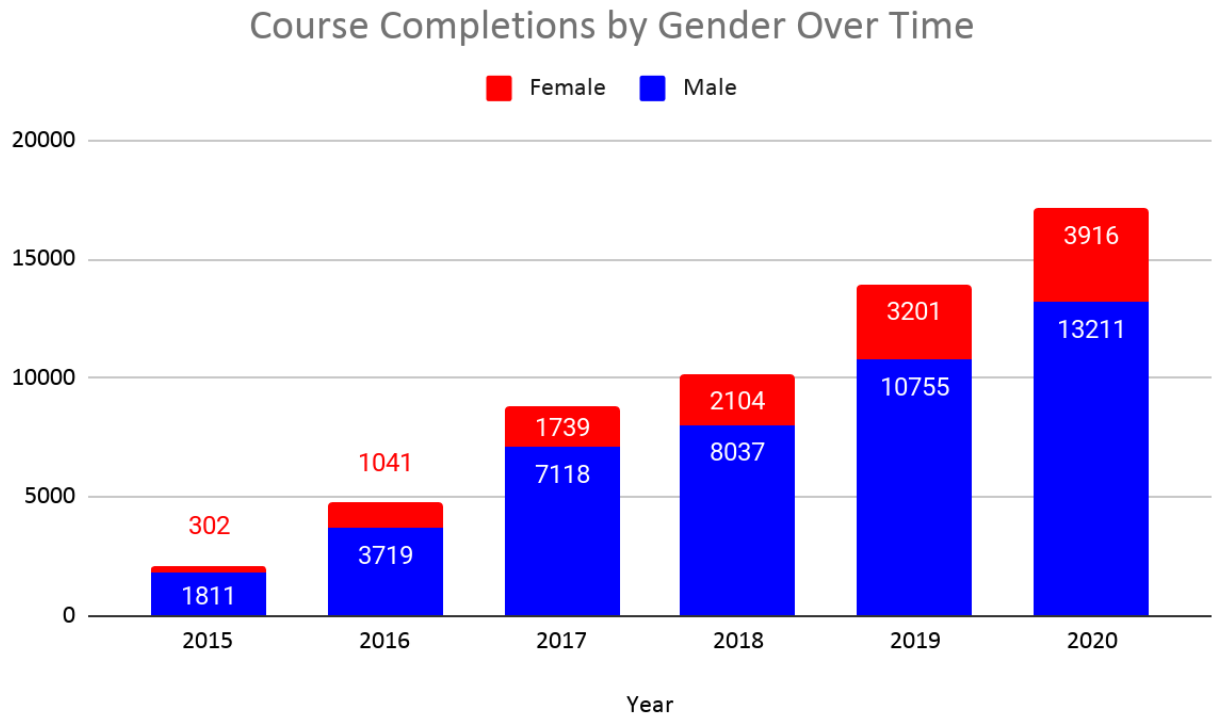


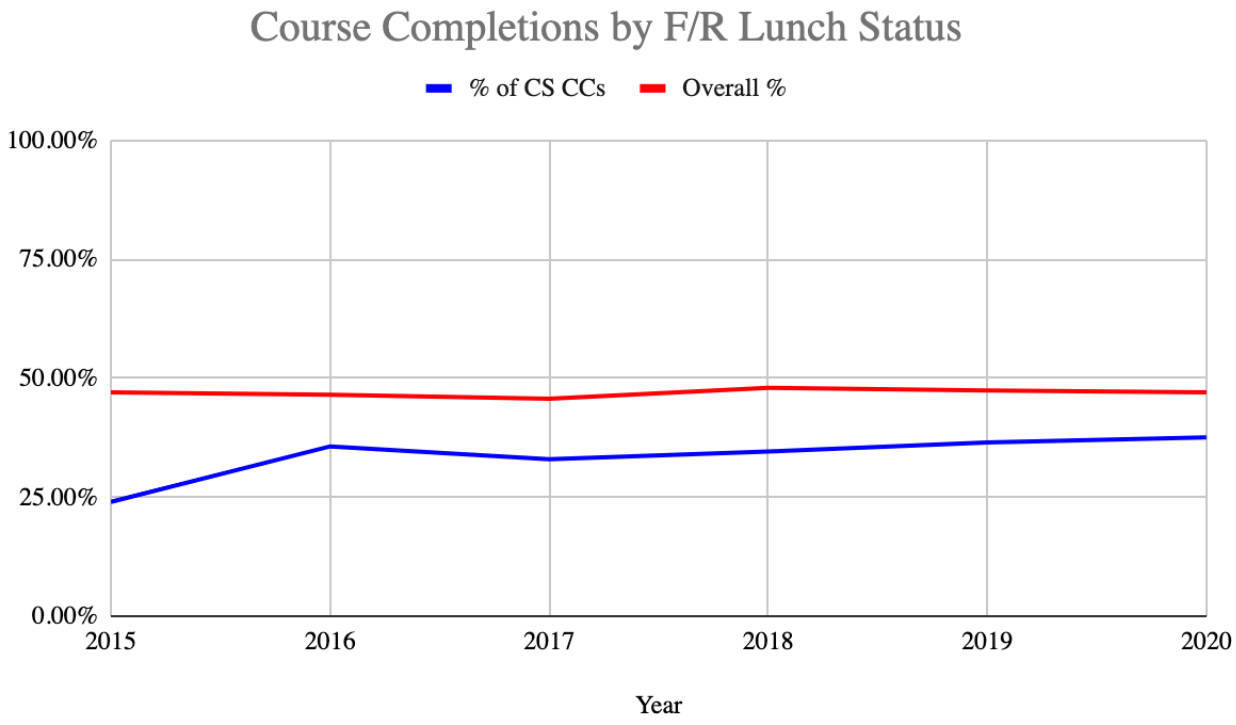
CHARTER PUBLIC SCHOOLS WITHOUT A CS COURSE											
2014-15		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
37	86%	37	77%	35	70%	38	69%	35	66%	30	56%

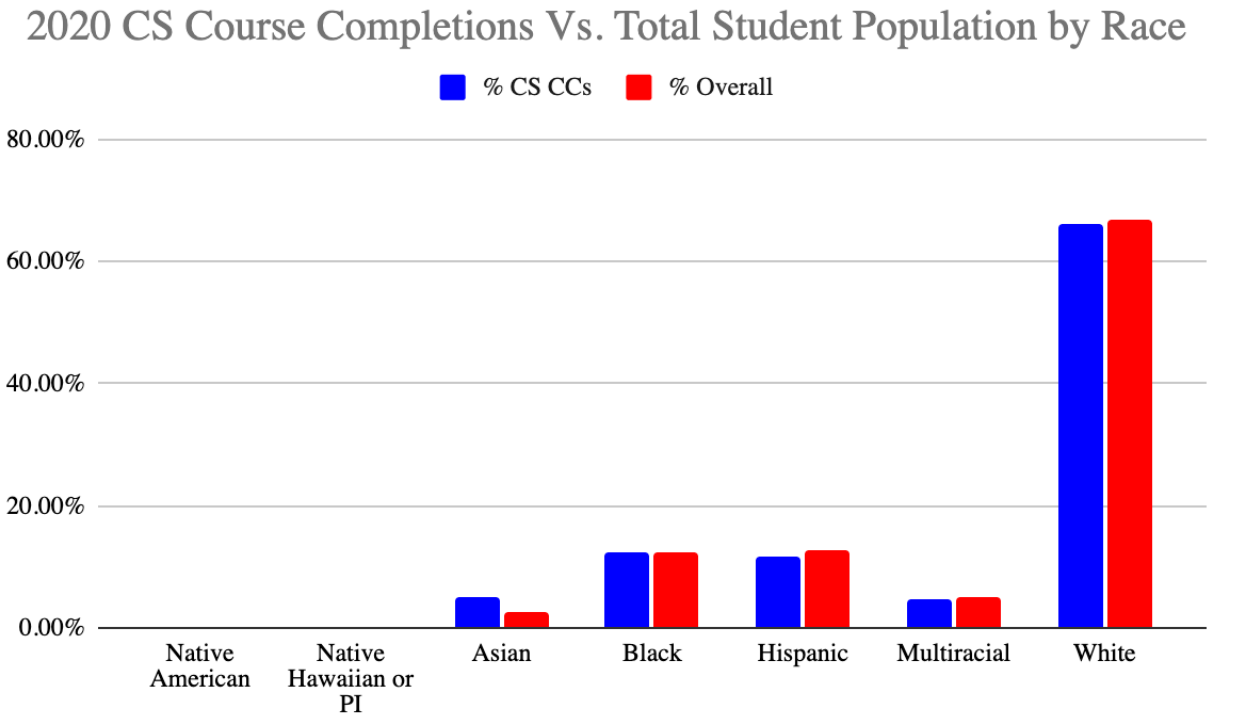
NON-PUBLIC SCHOOLS WITHOUT A CS COURSE											
2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
80	87%	74	82%	61	71%	55	65%	68	63%	64	59%

2019-2020 COUNTIES WITH NO CS OFFERED IN TRAD PUBLIC HS (Eight less than 2018-2019)		
Blackford	Rush	Union
Park	Starke	Vermillion
		Warren

All Schools Course Completions by High School Course						
Course	School Year					
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Introduction to CS	292	1428	2448	3553	5357	7585
CS I	283	1592	3779	3596	4877	5100
CS II	638	753	935	914	956	1035
CS III: Special Topics	0	0	0	120	195	0
CS III: Software Dev	0	0	0	0	0	18
CS III: Databases	0	0	0	19	34	0
CS III: Informatics	0	1	35	48	15	138
CS III: Cybersecurity	0	0	0	0	11	315
AP CS A	900	958	1070	1098	1180	1247
AP CS Principles	0	0	559	764	1301	1659
CS Standard Level, IB		28	33	29	30	30
CS Higher Level, IB	0	0	0	0	0	0
Cambridge Int AS and A	0	0	0	0	0	0
Total	**2113**	**4760**	**8859**	**10141**	**13956**	**17127**




Course Completions by F/R Lunch Status
% of CS CCs
Overall %
100.00%
75.00%
50.00%
25.00%
0.00%
2015
2016
2017
2018
2019
2020
Year


2020 CS Course Completions Vs. Total Student Population by Race
% CS CCs
% Overall
80.00%
60.00%
40.00%
20.00%
0.00%
Native American
Native Hawaiian or PI
Asian
Black
Hispanic
Multiracial
White

Plans for Continued Growth

- Continue to reach out to schools/counties not offering CS to ensure awareness of professional development opportunities and other resources, placing a special emphasis on counties where no CS is offered.
- Develop a comprehensive outreach plan and support strategy to address the remaining compliance gap.
- Identify additional strategies for supporting and engaging late adopters.
- Develop K-5 Computer Science Framework complete with grade-specific standards interpretations, aligned activities, and opportunities for interdisciplinary connections.
- Continue existing partnerships with organizations like Girls Who Code, Expanding Computing Education Pathways Alliance, CSforIN, professional development partners, etc. to continue scaling CS education across Indiana and making equity a priority.
- Leverage Expanding Access to Well-Rounded Courses Grant to develop creative solutions for offering CS courses in non-traditional ways.
- Maintain a high level of support and technical assistance for schools and districts.

Appendices

Appendix A - Nextech Contract (June 1, 2018 - July 31, 2019)

Appendix B - CodeHS Contract (October 1, 2019 - July 31, 2021)

Appendix C - Indiana University Contract (October 1, 2019 - July 31, 2021)

Appendix D - Nextech Contract (October 1, 2020 - July 2021)

Appendix E - Notre Dame Contract (February 10, 2020 - July 31, 2021)

Appendix F - Project Lead The Way Contract (May 1, 2020 - July 2021)

Please contact Jake Koressel (jkoressel@doe.in.gov) with any questions.