MEMORANDUM

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

From: Amanda McCammon, Chief of Workforce & STEM Alliances
Jake Koressel, Computer Science Specialist

Date: January 15, 2019

Re: IC 20-30-5-23 (SEA 172) NextLevel Computer Science Program Biannual Report

Senate Enrolled Act 172

This legislation establishes 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. This Act 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.

Requires, not later than August 1, 2018, the State Superintendent of Public Instruction to enter into a contract for professional development services.

Requires 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 15 and January 15 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. (Appendix A)
  - State Board of Education approved IDOE-recommended CS course additions. (Appendix B)
  - Announcement of 2018-2019 STEM Acceleration Grant recipients (Appendix C)
- May 2018
  - First CSforIN Summit: www.CSforIN.org
  - IDOE met with Nextech, the Governor's Office, and other stakeholders to discuss forecasted Nextech budget. (Appendix D)

  - IDOE awarded grants to seven schools to implement the Project Lead The Way (PLTW) Cybersecurity Pilot Program. (Appendix E)
  - IDOE published computer science professional development opportunities (continuously updated): https://www.doe.in.gov/wf-stem/computer-science
- June 2018
  - Computer Science Specialist position begins at IDOE.
  - Memo to the field regarding CS requirements and support (Appendix F)
- July 2018
  - CSforAll Letter of Commitment (Appendix G)
  - SCRIPT Train-the-Trainer Workshop at Pathfinders Institute for IDOE and ESCs
  - 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
  - Partnership with Girls Who Code (Appendix H)
  - Identification of Computer Science Champs (Appendix I)
  - Memo to the field regarding CS requirements and support (Appendix J)
  - Development of two-day "Integrating CS in Middle School" workshop (Appendix K)
  - Updated Computer Science Assignment Codes (Appendix L)
- September 2018
  - In conjunction with OMB and the Governor's office, IDOE amended Nextech contract finalized - additional $600,000 (Appendix M)
  - First IDOE-sponsored Strategic CSforALL Resource and Implementation Planning Tool (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 (Appendix N)
  - Established CS Training Badge for IDOE-sponsored workshop participants (Appendix O)
  - Announcement of 2019-2020 STEM Acceleration Grant recipients (Appendix P)
  - Development of State CS Plan in accordance with the Code.org Advocacy Coalition's Nine Policies
  - Began 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 (Appendix Q)
  - Computer Science Education Week Activities https://www.doe.in.gov/wf-stem/computer-science-education-week-december-3-7-2018

- Call for applicants to participate in "Computational Thinking for Every Educator" online course (Appendix R)
- Approval of the addition of PLTW Cybersecurity to Indiana's Course Description Guide
- Updates to the CTE Funding memo impacting computer science courses (Appendix S)

- January 2019
  - Indiana was named the third state to adopt all nine Code.org Advocacy Coalition Policy Recommendations (Appendix T)
- February 2019
  - Computer Science Curriculum Showcase

Training Snapshot

2018-19 SY Nextech Computer Science Training Progress (current as of 12/18/18)				
Workshop	**Description**	**Minimum to be Trained per Contract Ending 6/30/19**	**# Trained To-Date**	**% Progress Toward Required Minimum**
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	44	100.00%
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	60	100.00%
Integrating CS in Middle School (ICS)	One- or two-day workshop targeting middle school (6-8) teachers	120	53	44.17%
Computer Science Fundamentals (CSF)	One- or two-day workshop targeting elementary (K-5) teachers	520	377	72.50%
SCRIPT	One- or two-day workshop for district teams	16	31	193.75%

Additional considerations:

- The current Nextech contract terminates after June 30, 2019.
- These numbers represent only teachers of public and public charter schools. Additional private/parochial teachers and after school/extracurricular professionals have also been trained.
- SCRIPT numbers reflect districts trained, not individual participants.
- Integrating CS was a need identified by IDOE and was developed in late summer 2018. Workshops began in October 2018.

Status of Public Schools in Meeting Computer Science Curriculum Requirements

Grades K-8

Prior to SEA 172, 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 level.

TEACHERS TRAINED BY IDOE IN CURRICULUM APPROPRIATE FOR ELEMENTARY AND MIDDLE SCHOOL	
Computer Science Discoveries (CSD)	60
Integrating CS in Middle School (ICS)	53
Computer Science Fundamentals (CSF)	377

CODE.ORG COMPUTER SCIENCE FUNDAMENTALS DASHBOARD DATA 2018-2019 SCHOOL YEAR		
	Indiana (Nextech)	National Average of Code.org Regional Partners
Workshops	27	13
Teachers Trained	424	212
Minimum Teachers Who Started Teaching	123	56
Minimum Schools Impacted	171	82
Minimum Districts Impacted	80	32
Minimum Students	10638	5274

RELEVANT MS COURSE ENROLLMENT TRENDS				
Course	**Year**			
	2015	**2016**	**2017**	**2018**
Digital Citizenship	0	2877	4274	4912
Middle-Level Business	23731	19534	17677	17557
Introduction to CS	92	22	22	89

Plans for future K-8 data collection of additional indicators include:

- Questions added to school improvement plans regarding implementation of CS standards
- Creation of middle school computer science course

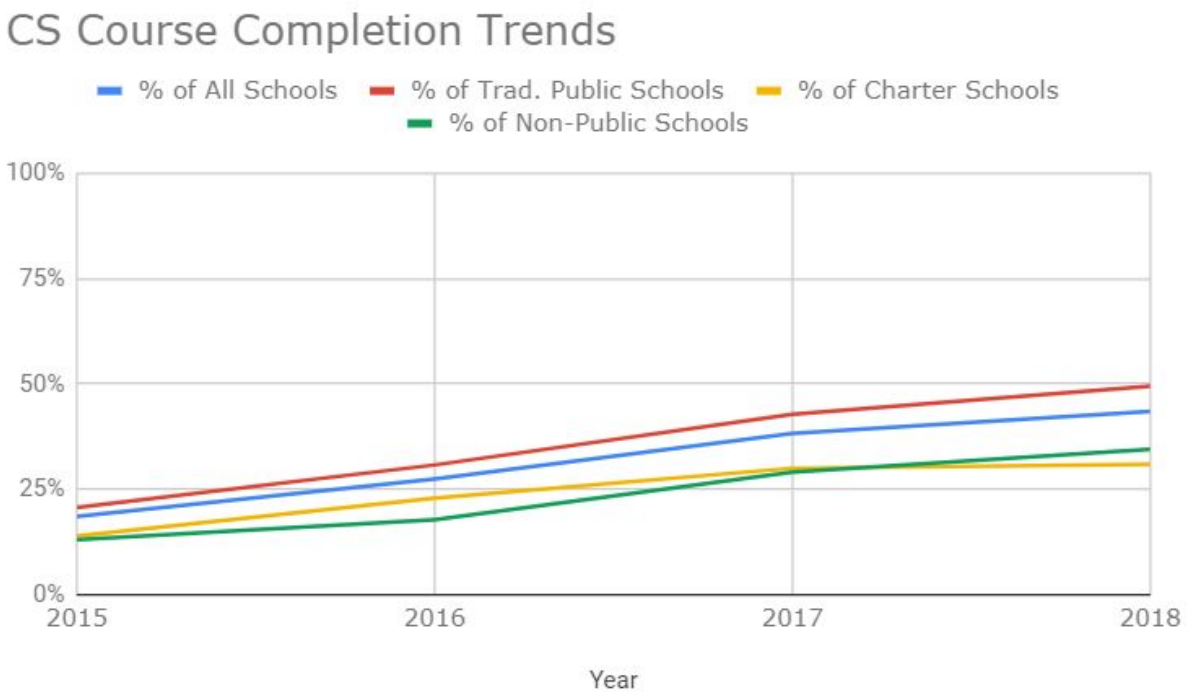
Grades 9-12

ALL SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2014-15	528	98	19%
2015-16	521	143	27%
2016-17	526	201	38%
2017-18	531	231	44%

TRADITIONAL PUBLIC SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2014-15	387	80	21%
2015-16	377	116	31%
2016-17	374	160	43%
2017-18	372	184	49%

CHARTER PUBLIC SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2014-15	43	6	14%
2015-16	48	11	23%
2016-17	50	15	30%
2017-18	55	17	31%

NON-PUBLIC SCHOOLS			
Year	# of Schools	# of Schools Offering At Least 1 CS Course	% of School
2014-15	92	12	13%
2015-16	90	16	18%
2016-17	86	25	29%
2017-18	84	29	35%



STUDENT ENROLLMENT TRENDS BY HIGH SCHOOL COURSE				
Course	Year			
	2015	2016	2017	2018
Introduction to CS	313	1433	2467	3605
CS I	283	1594	3806	3654
CS II	681	754	947	929
CS III: Special Topics	0	37	93	132
CS III: Databases	0	0	1	19
CS III: Informatics	0	1	35	48
CS III: Software Development*	0	0	0	0
CS III: Cybersecurity*	0	0	0	0
PLTW Cybersecurity*	0	0	0	0
AP CS A	900	963	1070	1098
AP CS Principles	0	0	560	789
CS Standard Level, IB	0	28	33	29
CS Higher Level, IB	0	0	0	0
Cambridge International AS & A Level CS*	0	0	0	0
Total	**2177**	**4810**	**9012**	**10303**
*Denotes unavailable until the 2019-2020 school year				

TRADITIONAL PUBLIC SCHOOLS WITHOUT A CS COURSE								
	YEAR							
LOCALE	2015		2016		2017		2018	
	Count	%	Count	%	Count	%	Count	%
City: Large	20	71%	18	67%	11	39%	9	33%
City: Midsize	8	89%	8	89%	8	89%	3	33%
City: Small	22	71%	17	59%	15	52%	11	39%
Suburb: Large	33	58%	25	45%	21	39%	22	41%
Suburb: Midsize	5	83%	3	50%	2	33%	1	17%
Suburb: Small	5	100%	5	100%	5	100%	3	60%
Town: Distant	42	81%	37	74%	29	58%	26	52%
Town: Fringe	18	90%	15	75%	11	55%	11	55%
Town: Remote	2	100%	2	100%	2	100%	1	50%
Rural: Distant	87	86%	82	81%	70	69%	63	62%
Rural: Fringe	52	84%	39	64%	33	54%	31	51%
Rural: Remote	3	75%	3	75%	2	50%	2	50%

CHARTER PUBLIC SCHOOLS WITHOUT A CS COURSE							
2014-15		2015-16		2016-17		2017-18	
Count	%	Count	%	Count	%	Count	%
37	86%	37	77%	35	70%	38	69%

NON-PUBLIC SCHOOLS WITHOUT A CS COURSE							
2014-15		2015-16		2016-17		2017-18	
Count	%	Count	%	Count	%	Count	%
80	87%	74	82%	61	71%	55	65%

2017-18 COUNTIES WITH NO CS OFFERED IN TRAD PUBLIC HS (TWO LESS THAN JULY 2018 REPORT)		
Carroll	Franklin	Parke
Cass	Harrison	Pulaski
Clinton	Jennings	Rush
Daviess	Lawrence	Scott
Decatur	Ohio	Sullivan
Fayette	Owen	Tipton
		Vermillion

Additional Data

- June 2018-Present
  - Computer Science Fundamentals Workshops held (Appendix U)
- October 2018-Present
  - Integrating Computer Science in Middle School Workshops held (Appendix V)
- September 2018-Present
  - SCRIPT Workshops held (Appendix W)
- December 2018
  - Computer Science Pathway Model created (Appendix X)
- August 2018-January 2019
  - IDOE Computer Science Support Activities (Appendix Y)
- January 2017-October 2018
  - IDOE Outcomes Supporting Governor's NextLevel Agenda (Appendix Z)

Appendices

Appendix A - Initial Nextech Contract
Appendix B - Computer Science Course Additions
Appendix C - 2018-2019 STEM Acceleration Grant Recipients
Appendix D - Nextech Forecasted Budget
Appendix E - IDOE/PLTW Cybersecurity Pilot Grant Recipients
Appendix F - First CS Memo to the Field
Appendix G - CSforALL Letter of Commitment
Appendix H - Girls Who Code Partnership
Appendix I - Computer Science Champs
Appendix J - Second CS Memo to the Field
Appendix K - Integrating CS in Middle School Workshop Agenda
Appendix L - Updated Computer Science Assignment Codes
Appendix M - Amended Nextech Contract
Appendix N - Launch of IDOE STEM Six-Year Strategic Plan
Appendix O - CS Training Badge
Appendix P - 2019-2020 STEM Acceleration Grant Recipients
Appendix Q - IDOE/PLTW Cybersecurity Grant Recipients
Appendix R - "Computational Thinking for Every Educator" Course Syllabus
Appendix S - CTE Funding Memo Updates
Appendix T - Code.org Advocacy Coalition's Nine Policies
Appendix U - Computer Science Fundamentals Workshop Offerings
Appendix V - Integrating Computer Science in Middle School Workshop Offerings
Appendix W - SCRIPT Workshop Offerings
Appendix X - Computer Science Pathway Information
Appendix Y - List of Support Activities by IDOE
Appendix Z - IDOE Outcomes Supporting Governor's NextLevel Agenda

If you have any questions, please contact Amanda McCammon, amccammon@doe.in.gov.