Testimony of Kirsten Baesler
North Dakota Superintendent of Public Instruction
House Education Committee
In Support of HB 1398
Tuesday, Feb 14, 2023

Chairman Heinert and members of the House Education Committee.

My name is Kirsten Baesler. I am the North Dakota Superintendent of Public Instruction, and I am here to speak in support of House Bill 1398.

Good morning, everyone. It has been a while since I have been in front of you. The last time was during the NDDPI presentation during the first days of the session. During that first day, I said you would not see me testify often – and that the NDDPI team would provide **information** on the bills you consider instead of giving testimony in "opposition to" or "support of" legislation.

I said that day that the only bills you will likely hear me take a position on are those that will have a DIRECT impact on children and their future.

This is one of those issues.

The ND Constitution, Article V Section 2, explicitly identifies the Superintendent of Public Instruction as the constitutional officer overseeing public education in our state, acting only through the authority prescribed by law through the legislative assembly.

Article VIII Section 1 of the North Dakota Constitution states that the **Legislative Assembly** "shall make provision for the establishment of a **system** of public schools which shall be open to all children of the state of North Dakota…" and Section 2, "The legislative assembly **shall** provide for a uniform system of free

public schools throughout the state, beginning with the primary and extending through all grades up to and including schools of higher education…"

What this means is that the **legislative assembly** is the primary stakeholder in the state's public education system. The Superintendent of Public Instruction is a secondary stakeholder overseeing the execution of the state's K12 education laws and expectations, acting only on the authority prescribed by the legislative assembly.

An important contributor to implementing the will of the legislative assembly is the public school systems, including teachers, administrators, school boards, and all school staff in partnership with parents.

As the bill's sponsor said during its introduction, during the 2021 special session, HB 1507 was passed, in which a new duty was added to NDCC 15.1-02-04, the Superintendent of public instruction – Duties. The new **requirement** that the legislative assembly directed that its constitutional officer accomplish stated that the Superintendent "**Shall** collaborate with workforce development stakeholders and the kindergarten through grade twelve education coordination council to determine **how best to** integrate computer science and cybersecurity into elementary, middle, and high school."

The directive given by the legislative assembly wasn't "if" this should be done. It wasn't a study to consider this. It is a clear directive to work together to determine "how to best" get it done.

I took that directive seriously, and a task force was formed. The many groups who contributed to this bill worked hard to collaborate and compromise to deliver this solution to you.

I ask that you do not amend the bill except for the amendments suggested by the bill sponsor, to insert a section of the bill that was inadvertently omitted by the legislative council during official drafting, and allow guidance to be written to enable efficient delivery of the grant funding. What you see before you is the result of over a year of meetings, statewide travel, and, simply put, a **long journey** to find language that is acceptable to our educators, business chambers, cyber defense experts, industry, and families. But **most importantly,** what you have is a bill that serves the needs of our children based on the needs of **their** future.

Here is a summary of the history of this journey.

History of Computer Science and Cybersecurity Timeline

October 2015 – North Dakota Department of Public Instruction forms a working group of diverse stakeholders, including legislators, to work on a plan for K-12 education relating to computer science and cybersecurity needs.

January 2017 – Working group presents the plan to the 2017 Legislative Assembly.

September 2018 – North Dakota computer science and cybersecurity educators from our K-12 schools and university system, as well as industry experts, began developing CS and Cybersecurity Standards. The writing committee's draft was made available for public comment, which generated valuable opinions from

teachers, administrators, parents, and the community. A panel of business and community leaders and public representatives provided another layer of review.

February 2019 – North Dakota adopted the nation's first K-12 Computer Science & Cybersecurity Standards. https://www.nd.gov/dpi/sites/www/files/documents/Academic%20Support/CSCS2019.pdf

April 2019 - The 2019 legislative assembly gave the superintendent of public instruction authority to create computer science and cybersecurity credentials for educators to add to their teaching licenses.

April 2020 – ND Administrative Code 67-11-22 established three levels of CS and Cybersecurity Credentials

- Level 3 – allows integration of CS/Cyber within other content areas.
- Level 2 – allows teaching of intro level CS/Cyber courses.
- Level 1 – allows teaching of more advanced CS/cyber courses that result in Carnegie course credits

Nov 2021 – conclusion of 67th Special Session

- Tasked the State Superintendent to "collaborate with workforce development stakeholders and the kindergarten through grade twelve education coordination council to determine how best to integrate computer science and cybersecurity
- Established co-chairs of the task force.
    - ✓ James Leiman - Commissioner, Department of Commerce
    - ✓ Shawn Riley – State Chief Information Officer
    - ✓ Kirsten Baesler – State Superintendent

December 2021 – Identified task force members to ensure all impacted/concerned entities were represented

Feb 2022 - Initial Meeting

- Divided into subcommittees.
  1. Technical Subcommittee
  2. Awareness Subcommittee

Mar/Apr 2022 – established document repositories and email channels to drive future agendas.

May 6, 2022 – Technical Subcommittee meeting

May 13, 2022 – Awareness subcommittee meeting

- Subcommittees looked at the needs of:
  1. Students – how to best prepare them for future success regardless of career path.
  2. Current teachers – what support and professional development are required?
  3. Preservice teachers – how to prepare them to educate the 21st-century student.
  4. School administration – how to ease their burden and allow for differences at each location.

Jun/Jul/Aug – 2022- worked on shared documents/drove to upcoming meeting agenda.

Aug 3, 2022 – Full task force meeting

- Reviewed discussions and recommendations from each subcommittee.
- Formulated final recommendations.

September 2022 – task force finalized recommendations and verified consensus among members.

October 2022 - presented final recommendations to Legislative Interim Policy Committee.

- Interim committee requested more work be done to provide compromise and a higher degree of comfort among school administrators and directed Superintendent Baesler to bring it back to the legislative assembly during the 2023 regular session.

October 2022- January 2023 – Superintendent Baesler travels to meet with numerous stakeholders across the state, including school administrators, principals, teachers, families, and business leaders, to develop consensus on the bill's language.

A copy of the task force members and their September 2022 recommendations are provided with this testimony.

This process and the resulting language in this bill are the perfect examples of complying with the ND Constitution and honoring the tradition of local control.

1. The Legislative assembly has the right – and the responsibility - to establish expectations for a uniform education system available to all children.
2. The constitution directs the assembly to prescribe laws for the Superintendent of public instruction to execute and achieve those expectations.
3. Local control is provided for local school boards, administrators, and teachers to decide how to best implement daily operations to meet the state's expectations.

During this process, one thing that was clear among all participants – no one, not a single task force member or any stakeholder member I talked to during this journey, has disagreed with the **importance** of ensuring that all students have access to and receive instruction in computer science and cybersecurity. In fact, they all agree wholeheartedly that it is very important. The challenge came when the discussion turned to what adults must do to make that happen for our students. That's when the discussion got hard. And it got hard because it required adults to do something different, to figure out a way to do something differently, and think about schedules, training, and delivery differently. Doing something different is not always easy. I get that, and I understand that. But student outcomes don't change -will never change - until adult behaviors change. And public education is not here to serve the needs of adults; it exists to prepare students for their future. If we all agree that it is the right thing to do, but we don't do it because it is hard – then shame on us. Adults must find the answer that is best for children, not adults.

To demonstrate how solutions can be and have been found, I share with you an exchange that I had with one educational leader:

1. A graduate today should have a background in computer science and especially cyber security. Ask employers about how much money they spend on cyber security.
2. But these are some problems posed to me by colleagues and maybe something for you to think about solving:
    a. financial burden on small schools that will have to pay ND Center for Distance Ed to offer the course. How can we help these schools? My cousin's kids go to a small school in SW ND, and should have the same opportunities as mine. For the 2023-2025 biennium, NDDPI has allocated $600,000 from its ESSER (Covid funding) to grant to NDCDE to cover the Center's estimated costs to educate students who do

not have a teacher in their school to teach the course. Covering this first biennium will give schools time to get one of their teachers trained and will provide time to determine a baseline amount of funding that CDE would need in the future to continue this support to our small schools for this course.

b. Personnel problems in schools the size of XXX. We may now have extra science teachers because kids won't take as many science classes, but we will need to train or hire someone new. Could we offer some training with pay in the summer for teachers who want to become credentialed? DPI is allocating $2M in ESSER funding to train and credential one CSC teacher per 200 students. This equates to 720 teachers across ND. We currently have more than 400 credentialed teachers.
    i. For the past two summers (2021, 2022), NDDPI and NDIT EduTech have partnered with Bismarck State College to host a 4-day IgniteND Summit on BSC Campus. After those four days, teachers will have enough hours to have earned their Level III Computer Science and Cybersecurity Credential to add to their teaching license. NDDPI provides scholarships to all interested teachers that cover the cost of registration, BSC housing, and food and pays the teacher a $500 stipend for their time. IgniteND 2023 Summit will be held this June again.
    ii. ND Dept of Commerce has scholarships available to teachers wishing to complete the Cyber Educator training program at BSC.
    iii. NDIT EduTech has dozens of courses - most at $0 cost and available online – that educators can take to get credentialed. See here for a list NDIT-EduTech Training
c. We FINALLY have a computer science teacher at XHS, after being unable to find someone for multiple years. Imagine a Beulah or Scranton trying to find someone. If we require this for graduation, we will have to train or hire someone besides our existing teacher. What happens if we can't find anyone who wants the training? If a school district cannot find a willing teacher to receive training, then CDE could be utilized. Another option might be to leverage the Community Expert teacher authorized under 15.1-18-10 or the Learn

Everywhere opportunities authorized under 15.1-07-35 to meet the requirements of this bill.

i. I say this realizing my hypocrisy in that in business and industry if the organization doesn't adapt, it dies. We are training kids for the real world!

Educators will say you are taking local control away from School Boards. The legislative assembly has always set the minimum expectations of what schools must offer to be approved to operate in North Dakota. These are listed in 15.1-21-01 (Required Instruction) and 15.1-21-02 (Required Units.) Further, the state legislature has always been the authority in determining the minimum requirements for students to earn a North Dakota high school diploma, 15.1-21-02.2. This is to fulfill Article VIII of our State Constitutions that states, "The legislative assembly shall make provision for the establishment and maintenance of a system of public schools which shall be open to all children of the state of North Dakota …." And "The legislative assembly shall provide for **a uniform system** of free public schools throughout the state,"
This bill does respect the long-standing tradition of local control by allowing school boards to decide **how** to meet the basic requirements set forth by the legislative assembly by developing a Computer Science Cyber Security integration plan that fits the local context of each community. The language in the bill states, "Develop a computer science and cybersecurity integration plan to ensure introduction to computer science and cybersecurity knowledge. The **board** of the public school or school district **shall approve** a plan by July 1, 2024."

Members of the Committee, North Dakota must keep its children from falling further behind. Other states and countries already require this. As the bill sponsor mentioned earlier, 25 out of 29 European countries have computer science in their mandatory curriculum, with 17 countries making it mandatory in both primary and secondary schools.

Five states require computer science for graduation, and that number is growing. Since the 2021 special legislative assembly added this to the superintendent's duties, state legislatures across the U.S. have enacted laws to make this a requirement, and more are considering it this winter.

You have heard that this learning is foundational. It is imperative to our children's success – and safety. One of the most common kindergarten activities is to have the students plant a seed in a cup of soil at the beginning of the year. We do because we want them to know that a seed that is placed in soil, when given the right of sunlight and water, grows into a plant that becomes our food. We don't do this because we want all 5-year-olds to grow up to be farmers or agronomists. We do it because food is a part of every child's daily life, and they need to understand how it works. Every fifth-grade student learns about electricity and the electrical circuit. We don't do this because we want them to grow up to be electricians or electrical engineers. We do it because they need to know how that powerful element in our lives can be harnessed for good to help improve our lives instead of hurting us. We have come to that point with computer science and cybersecurity. It is part of our everyday lives. We need to know how and why it works. And we need to teach our children how to harness it for good, not let it hurt them.

You have heard about some good programs today. And I, too, get to see many good programs in the state, but after nearly eight years of incentivizing and providing state support to scale and grow access to computer science, only 44% of ND high schools even offer a computer science course – which is below the national average. It is right for the legislative assembly to exercise its

constitutional responsibility to establish the expectations of every school to establish a uniform education system available to ALL students. Every child has ability – but what they lack most severely in rural states like North Dakota is **access to opportunity**!

The state with the highest number of computer science or cyber security jobs in the nation is California. That makes sense with Silicon Valley, right? But guess what location is the second highest? It's remote. You can work from anywhere. You can ranch your family's land, volunteer for the community fire department or ambulance service, and still make $70-$80,000 a year. Imagine what this could mean to our young people and to this state. While over 14,000 Native American students attend high schools in North Dakota (11.13% of the population), only 133 are taking a computer science course. We should not be satisfied with that number. We can do better.

We have reached a point where computer science and cybersecurity are as important as reading and mastery of 8th-grade math became in the early 1900s.

Student outcomes don't change until adult behaviors change.

Mr. Chairman and members of the committee, I urge a "do pass" vote on HB 1398.

I welcome any questions you may have.

Every Student, Cyber Literate Act

2021-2022 school year

- 89 high schools (of 177 public and 16 nonpublic schools) offered CS and Cybersecurity courses
- 6,850 (of 117,000 public and 8,500 nonpublic students) took CS and Cyber courses

Definitions

Computer Science refers to the study of computers and algorithmic processes, including their principles, their hardware and software designs, their [implementation], and their impact on society.

Educational Technology is the process of integrating technology into education in a way that promotes a more diverse learning environment and a way for students to learn how to use technology as well as their common assignments.

Digital Citizenship refers to the appropriate and responsible use of technology, such as choosing an appropriate password and keeping it secure.

Information Technology often overlaps with computer science but is mainly focused on industrial applications of computer science, such as installing and operating software rather than creating it. Information technology professionals often have a background in computer science.

Computational Thinking is a way of solving problems, designing systems, and understanding human behavior that draws on concepts fundamental to computer science. Defining characteristics of computational thinking include comprehension of algorithms as well as decomposition, pattern recognition, and data representation.

Cybersecurity is a set of techniques used to protect the integrity of networks, programs, and data from attack, damage, or unauthorized access.

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CS and Cybersecurity Taskforce – Synopsis of Recommendations

Importance of CS and Cybersecurity

Unanimous consensus among the group that Computer Science and Cybersecurity has become foundational knowledge for all K12 students regardless of the occupation they pursue.

Implementation of CS and Cybersecurity

Concern: Larger schools have the available staffing to offer courses in CS and Cyber while smaller schools don't have the same staffing levels; this puts students who attend these smaller schools at a disadvantage

Solution: Center for Distance Education (CDE) can fill that void; CDE has committed to adding staff as needed to offer CS and Cyber courses

Concern: Integration of CS and Cybersecurity standards into other content areas may have a longer lasting, wider affect than a few stand-alone courses

Concern: Each district has different strengths and weaknesses; a 'one-size fits all' integration plan won't work for everyone

Solution: Each district can develop their own plan to integrate CS and Cybersecurity Standards

2. The school board, will approve each district's integration plan. (After meeting with ND School Board representative this was changed to be approved at the local district level. This aligns with the Learning Continuum Graduation Pathway philosophy of local approval.)

3. EduTech will develop template integration plans and a rubric that may be used for evaluating each district's plan. Development of the templates and rubric will occur with input from:
   - ND Department of Public Instruction.
   - The ND CS/Cyber Integration Taskforce.
   - The ND K-20W Working Group.
   - Other non-profit K-12 computer science and cybersecurity educational partners.

4. Key categories within the templates and rubric will include, but will not be limited to:
   - Computer Science and Cybersecurity Curriculum Integration
   - Teacher Training and Certifications/Certificates
   - After-school programs or clubs
   - Cyber Hygiene Programs for Staff Safety

5. The rubric is to ensure both awareness and technical application of computer science and cybersecurity knowledge is being integrated.

Concern: Adding another course requirement will take away from other electives

Solution:

1. CS and Cybersecurity course work could qualify for existing Math and/or Science courses therefore elective options wouldn't be impacted.

2. The integration of CS and Cybersecurity standards into other content areas allows students to receive some knowledge of CS and Cybersecurity while taking other math, science or electives.

Concern: How fast would this change need to be in place?
Solution: The course offerings (with the help of CDE) could be made available immediately; the integration plan would have a phased (multi-year) implementation.

1. The sample timeline for Every Student, Cyber Literate Act will be as follows:
   - Rubric developed and delivered to school districts by January 2023
   - School district implementation plans due to **School Board** by December 2023
   - School districts to begin implementing integration plan by 2024-2025 school year

2. The schools will utilize their Continuous Improvement Strategy Map for self-evaluation of their integration plan annually with formal review of the district implementation plan every three years by the board.

Concern: How will teachers receive training and professional development?
Solution: EduTech (a division of NDIT) has been providing training to school staff in the areas of CS and Cyber. They have been actively promoting their willingness to bring the training to schools.
Currently, over 400 ND teachers have received a CS or Cyber credential to add to their license.
EduTech has multiple training paths and work with schools to adapt their training to the specific needs of the schools.

Bismarck State College has developed a professional development track to provide teachers knowledge and skills to teach CS and Cybersecurity. Other ND colleges are developing similar programs.

Microsoft TEALS program places industry professionals alongside teachers for multiple years to jointly provide content with the intent of providing teachers knowledge and confidence to teach on their own

Concern: Cost to implement?
Solution: Funding awarded to NDIT (*grant directly to EduTech*) from NDDPI for purpose of providing professional development in computer science and cybersecurity, paying educators $500 stipend and covering all registration and lodging costs.

Concern: What is the credentialling requirement?
Solution: Elementary and Middle school teachers – recommend a CS and Cyber Level 3 or Level 2 credential, but not required

High school teachers – recommend a CS and Cyber Level 2 or Level 1 credential, but not required unless teaching a standalone course