HB 170 COMPUTER SCIENCE
TESTIMONY BY TEACHING & LEARNING COLLABORATIVE
EXECUTIVE DIRECTOR
KELLI SHREWSBERRY
OHIO HOUSE OF REPRESENTATIVES
EDUCATION AND CAREER READINESS COMMITTEE
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Chairman Brenner, Vice Chairwoman Slaby, and Ranking Member Fedor: thank you for the opportunity to provide testimony today on HB 170.

My name is Kelli Shrewsberry and I am the Executive Director of the Teaching & Learning Collaborative (TLC). TLC is a nonprofit organization located in Worthington, Ohio and our mission is to provide high-quality, innovative professional development and support in mathematics, science, and technology for preK-Grade 12 educators.

Formerly known as the Science & Mathematics Network in operation since 1996, TLC is a coalition of school districts, organizations, businesses, and government agencies with whom we collaborate to design and carry out our work. TLC works at a variety of levels, from the classroom to the state and national level, to ensure that all students have access to a quality education.

Our work in designing professional development for Ohio's educators focuses on finding the intersection among what the research says about how children learn; what the state expects children to know; what constitutes content expertise for preK-Grade 12 teachers; and what we understand about how teachers learn.

The classroom teacher is one of the single most important variables in impacting student achievement. In that context, it is exciting that HB 170 contains language to support the potential for professional development programs for Ohio's preK-12 educators in computer science.

Availability of professional development typically isn't the issue. Researchers have found that while 90% of teachers report participating in professional development, most attended one-time workshops, which often are the most prevalent model for delivery. One-time workshops may spark excitement for a new topic, but often have a limited track record for changing teacher practice and improving student achievement. Research further states that programs that are less than 14 hours have no effect on student achievement or change teacher practice.

Professional development must be significant and ongoing, allowing time for teachers to learn and implement new strategies. Studies have shown that teachers participating in programs providing 80 or more hours of professional development were significantly more likely to use the teaching practice learned than teachers who had less than 80 hours. The associated impact on student achievement in relation to the number of hours of professional development can also be documented.

Teachers need access to high quality, effective professional development focused on the implementation of effective computer science programs and designed using research on effective practices for increasing student achievement. Additionally, professional development experiences need to have **all** students and their learning as a core focus.

It is often suggested that computer science should be a taught as a separate school subject in the K-12 curriculum. Successes and challenges of such programs have been studied, however many of those programs focus on the middle school and high school, where a separate course can be designed, implemented, and taught by a trained computer science teacher.

The structure of an elementary classroom is much different than that of a middle or high school classroom, yet equally important in preparing students. Finding ways to effectively integrate

computer science and computational thinking into a content area for elementary grades is an important effort in ensuring that computer science is embedded in Ohio's elementary classrooms as well as middle and high school.

This is also supported by research studies showing that early math skills are predictors of later successes, underscoring the importance of thinking about computer science opportunities for *all students in all grades.*

One example in Ohio at the elementary level is a statewide professional development program called E^{4}Tech. Developed in collaboration with TECH CORPS, Cleveland State University and Franklin University, E^{4}Tech is a professional development model and curriculum focused on the integration of Computer Science and Computational Thinking into Mathematics for grades 3-4. In E^{4}Tech, teachers participate in 120 hours of professional development and are provided support during implementation in the classroom. Professional development programs such as E^{4}Tech focus on closing student achievement gaps in elementary school mathematics through the lens of computer science so that students have success in higher-level mathematics and computer science experiences in the later years. Investing in professional development programs, such as E^{4}Tech, for Ohio's teachers ultimately supports our largest collective goal as a state - preparing students for their future.

I would like to thank Rep. Duffey and Rep. Carfagna for the time and energy they have invested in this critical issue.

Thank you Chairman for allowing me this opportunity to speak about HB 170. At this time, I would be happy to answer any questions that you might have.