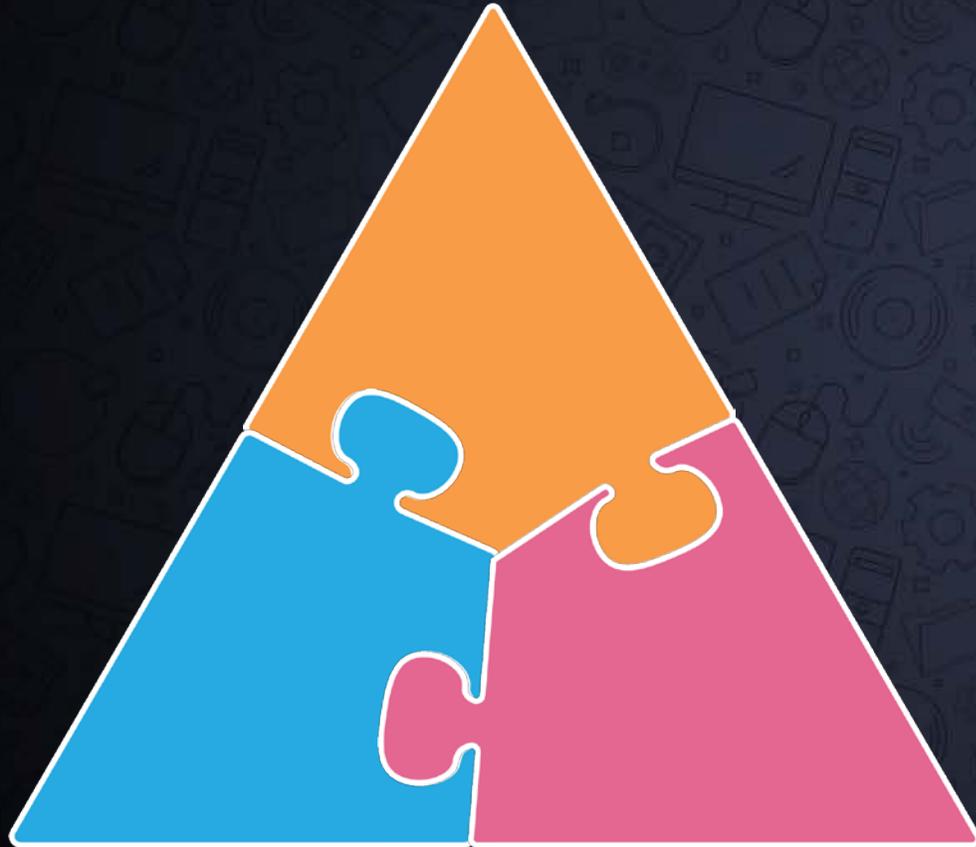# 3 Equally Important Goals of CT Integration

Provide early experiences with computing to develop foundational proficiency in computing

Increase equity of access to computing education

Advance science and engineering understanding

Ketelhut, D.J. & Cabrera, L. (2020). *The Integration of Computational Thinking in Early Childhood and Elementary Science and Engineering Education.*

State of the Field & Remaining Questions

Early Lessons

Goal is mostly met but with variability in what constitutes early computing experience: from "calling out existing CT" to introducing block-based programming.

Are there differences in how each type of experience promotes interest, confidence, and proficiency in computing?

Equity

Difficult to assess goal's progress due to lack of demographic reporting. Projects are often not focusing explicitly on equity, risk providing learning opportunities only to those already interested.

How do we engage students from typically underrepresented groups or with little prior computational experiences in authentic computing experiences within science and engineering?

Science

In most cases, science and engineering were simply the context for isolated CT activities. Studies successfully promoting this goal required extensive researcher support, specialized tools, and instructional time.

How can we leverage authentic CT practices as a method to learn disciplinary content leveraging existing classroom resources?

The million-dollar question:
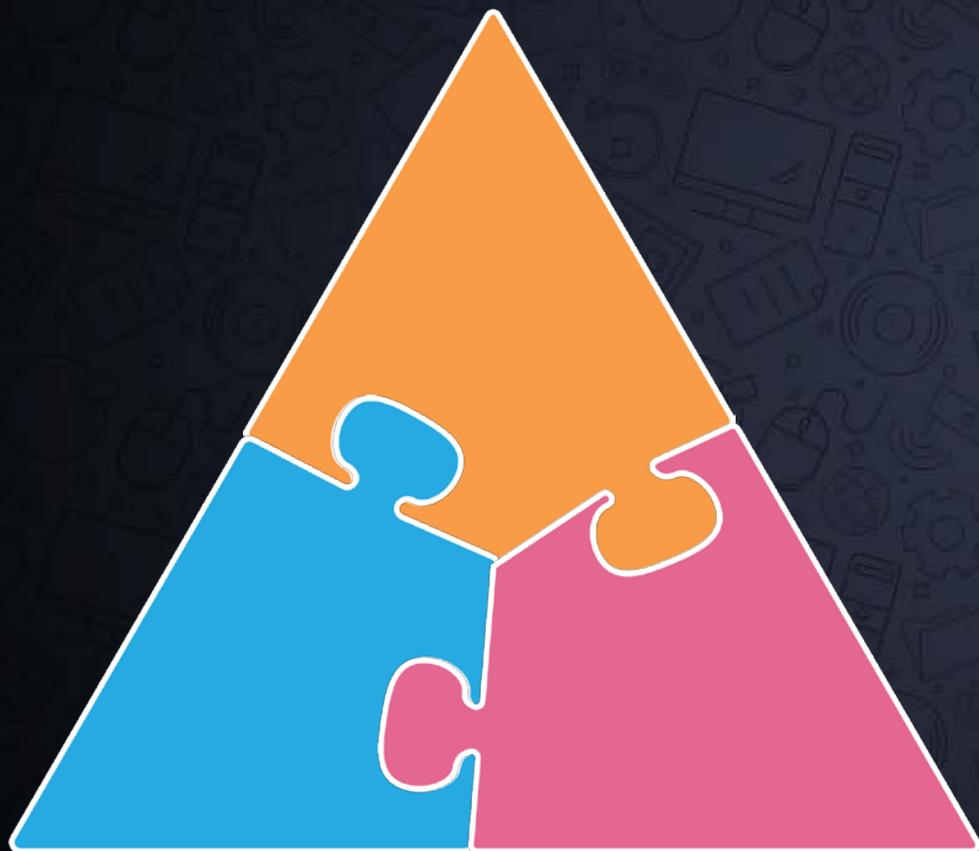
How do we prepare teachers, schools, and stakeholders to integrate CT in a way that promotes all three goals at the same time?

Ketelhut, D.J. & Cabrera, L. (2020). *The Integration of Computational Thinking in Early Childhood and Elementary Science and Engineering Education.*