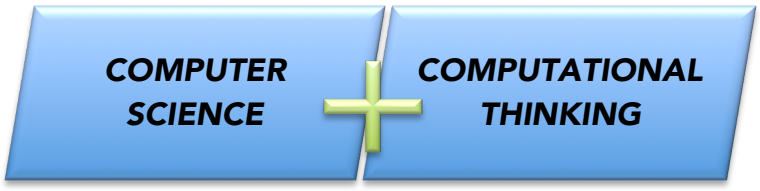

CS+CT Exploratory Meeting

October 3, 2016 in Hickory

MEETING NOTES

ATTENDED: Gina Barrier (The Science House), Donnie Gilbert (WPCOG), Tracie McLemore Salinas (App State), Tony Calamai (App State), Jay Fenwick (App State), Elaine Franklin (Kenan Fellows Program, NCSU), Sam Houston (SMT), Carol Moore (STEM West), Lamar Owen (PARI), Christi Whitworth (PARI), Tim DeLisle (PARI), Enoch Moeller (Google), Jonathan Evans (Shiny Creek), and Steve Saucier (PARI)

NOTES / INSIGHTS / SUGGESTIONS:

- Provide '**activity sites'**, such as Gravity Games, robotics competitions, etc. These types of events are effective and in most cases there is not enough communications between them to know what each other is doing.
- These kinds of activities need to be done in the rural setting to connect to local children.
- Being **computationally literate** is critical in today's world.
- Addressing this issue has to be a process. It is urgent and it is complicated, but we must determine the questions that need to be answered before we jump into action.
- Sam highlighted **education as 3 basic things**:
    - Every graduate should demonstrate through competencies that they can be an **independent learner**, not solitary learner.
    - Act in a **thoughtful way** and be able to analyze. We should introduce to kids as early as possible everything they're going to need to know by the time they graduate.
    - Students should **know what to do when they don't know what to do**.

- This discussion needs to be presented with **economic development** in mind, not just advancing education.
- It is critical that people be **empowered** to make their own decisions, and it's necessary that we accept what those decisions are even if they're different from our expectations.
- Retaining the **community's identity** and respecting that identity, no matter how different or unexpected it may be, is critical to working with that community. There is often a resistance to new ideas because of the fear it will change the community's identity.

- We can possibly learn from the concept of **Ecological Counseling - (https://www.amazon.com/Ecological-Counseling-Conceptualizing-Person-Environment-Interaction/dp/1556201990)**
- By **combining subject matters**, like music and science, we can make these subject matters relevant to students' lives and interests, and engender motivation about learning and using computational thinking. If we can use this kind of approach to **connect to those traditions that WNC values** – music, craft, and agriculture – then we can build from their interests and generate relevancy.
- For many WNC families, there is a **tension between getting a college education and staying at home** in the community: the conflict. It's not always explicit or obvious.
- We have to create a **vision** that builds on what people in those communities care about.
- It will be essential to **engage politicians** and people of influence regionally and locally. It's necessary to begin small and work with those that can influence others and then slowly expand outward.
- Finding a way to work with local **churches** could be very effective. It's important to address fears and the possibility that ideas like CS and CT may be seen as Satanic.
- **Educating the parents** would be helpful in getting CS and CT into the schools.
- In some cases, adding CS and CT programs might have a **negative effect on other electives** such as band. Addressing this issue requires thinking about integrating more; **curricula** have to be developed that involves computational methods. We tend to compartmentalize way too much.
- Computer science is really about **problem solving** and not about the computer. It is not about coding either.
- Computer science and **computer literac**y is not the same thing but often confused. Computer science is not about the physical machine (the computer).
- In WNC, if you can demonstrate to people how they can use CS+CT in things they're familiar with them, they will see its **purpose** and likely adopted it.
- **NSF's recommendations on growing future innovators:**
    - Provide opportunities for excellence – promote more diversity and work across socioeconomic levels
    - Create regional partnerships
    - Work to increase the capacity of individuals and organizations

- Currently, there is no **vertical alignment** within our school systems for preparing students for computer science opportunities. What exists now is mostly a patchwork.
- We need to expand the way we identify talents in students. Currently, the way we **identify talent** is too narrow. We tend to assume certain STEM attributes, or the lack of, based on **ethnicity**.
- The **new innovation** being considered here challenges assumptions that STEM is not part of our culture and our lives.
- In considering STEM ecosystems we have to understand on what basis the members of those ecosystems are connected: **social frameworks, political frameworks, cultural frameworks**, etc.

- **Innovation diffusion** requires some intentional planning and connecting of key stakeholders to be effective and sustainable.
- **High school rivalries** may provide an opportunity to integrate STEM initiatives and cultivate a competitive interest.
- **Entrepreneurship** is very high in WNC. There exists **high levels of self-resilience**, underlying **cultural diversity**, and the **creative arts/traditions**. We don't do enough to draw out creativity when advancing STEM. There are also high levels **of military service**.
- WNC has strong **school networks**. The schools are the community centerpieces fromwhich to advance STEM and CS+CT.
- Community, family structure and retaining that identity are highly **valued**. Many in the community are considered on the same social level – little hierarchical structure. **Independence and self-determinism** are highly valued.
- Within these characteristics are many new opportunities by approaching education through **cultural** approaches.
- **Poverty** still persists and after much research there is no clear answer why.
- **Cultural valu**es influence career development.
- Because of the rich **oral history** of WNC, there is a preference for oral over written information.
- **Family values** over educational opportunity.
- In many WNC communities, **women out perform males** in educational outcomes. This is due to the careers available to women – nursing, teaching. For males it is typical to see careers around certified skills or apprenticeships.
- In WNC, the **universities** must be considered as a resource for advancing STEM.
- **Bartering** is more common than typically realized by most measures of economic activity.
- Often the culture of schools **doesn't match** the culture from where people come from, so people are forced into a position to reconcile that, having either to **acclimate** to the school environment or to **reject** it.
- We need to consider **teacher licensure** in CS+CT.
- There are schools in WNC that don't have a single **certified math teacher** at the middle school level.
- The data show that a student who has **three consecutive years of poor math teacher** will never catch up.
- A niche to look at is **enhanced computational science in what the teachers are already teaching** or expected to achieve. If we can demonstrate positive outcomes than other teachers are more likely to adopt it.
- Currently, in most of our schools classes that incorporate computational thinking often don't include kids from **low SES famil**ies. Additionally, when those kids go home there's no support and often there's **not even Internet connectivity**.
- **Rural Sourcing (https://www.ruralsourcing.com)** - *Rural Sourcing, Inc. was founded with the goal of connecting companies with talented, qualified IT professionals living in tier-2 cities across the United States. Over the last decade, we've bridged the gap between businesses and professionals living and*

working in communities across the country. Because of these employment opportunities, communities are able to retain an educated and experienced workforce while businesses across the US are able to fill important needs and enjoy the benefits of an onshore team.

- **Tech Hire** - https://www.whitehouse.gov/issues/technology/techhire
- A **marketing** initiative about CS+CT would be helpful in building broad-based interest and support.
- Combining **STEM and agriculture** is an untapped opportunity.

➢ Discussion points about possible **'Next Steps**:'

- There was interest in holding a **next level meeting** that included more regional decision-makers and that involved the public at all levels. Broaden **"who**" is at the table - politicians, educators, administrators, families, etc..
- Engage **economic developers** throughout the region - they usually don't see this issue being important yet (currently, not enough examples of success)- What is needed are models of success and role models from WNC communities that people trust.
- Engage the **political arena** at all levels.
- There was great interest in the **Ecosystem approach** and working with **K-12** in new ways. **Map regional assets**.
- Connecting with teachers to find ways to **enhance** what they are already required to teach with computational thinking and computer science opportunities.
- Find a way to work with regional companies to develop **internships**.
- **Link** current STEM activities better - make people in the region more aware of CS+CT and STEM educational activities and programs.
- Explore giving kids **CS badges**
- **Students @ Work** – (http://ncbce.org/students-at-work/) - *Located in the Office of the Governor since 1983, the North Carolina Business Committee for Education (NCBCE) is a nonpartisan, nonprofit comprised of North Carolina's corporate experts. We are the conduit that puts education into context and brings the business voice into the classroom for our students, our teachers and our principals.*
- Work with the **NC Science Festival** - http://www.ncsciencefestival.org
- 1st week of December is **CS Education Week** - https://csedweek.org
- Everyone felt strongly about connecting **economic development with education** in advancing any messaging about this issue.