

Information Overload: Navigating CS Resources Without Reinventing the Wheel



Cynthia L. Blitz, Ph.D.
cindy.blitz@gse.rutgers.edu
732-564-9100, xt 21

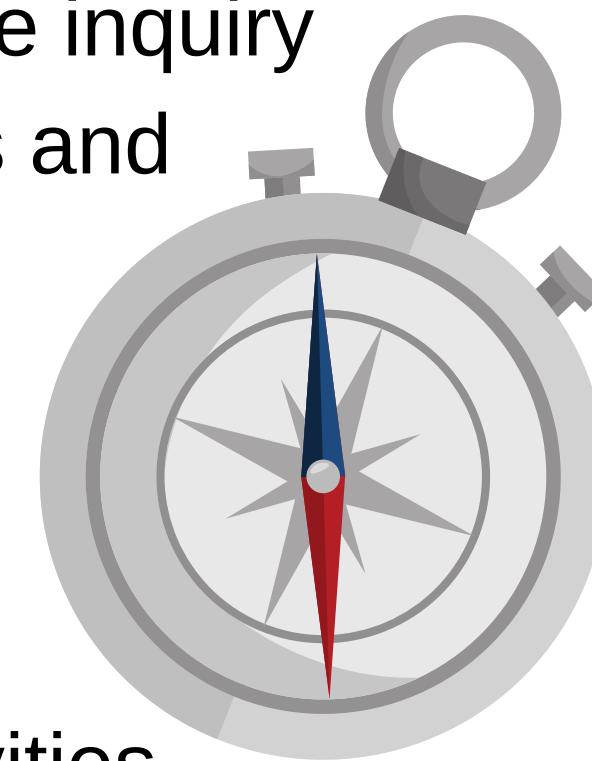
OVERVIEW

This NSF-funded project builds the capacity of an established research practice partnership (RPP) to address equity in CS education for underrepresented students. The Computer Science Teaching and Learning Collaboratory (CS-TLC) is a curated forum of a diverse group of education stakeholders designed to facilitate and leverage the exchange of knowledge and expertise and to promote collective inquiry regarding the most efficient and effective way to navigate existing resources and opportunities in CS.

THE CHALLENGE OF INFORMATION OVERLOAD

There are already many excellent CS curricula and resources including lesson plans and classroom activities available to both novice and experienced CS teachers. There is also a plethora of professional learning opportunities they can choose from. The challenge is how to make an informed choice about CS resources that provide the best match to the unique needs and circumstances of teachers and students.

This is not a new problem. Information overload is a well-documented unintended effect of today's complex and rich information environment (1), which increasingly impedes users' ability to access and retrieve relevant resources in a timely and efficient manner (2). Modern information retrieval requires searching, identifying, finding, and evaluating relevant information, and then organizing it in a way that ensures efficient and effective use (3). In theory, information and communication technology can greatly improve this process, but ultimately it is the way users use such technology that determine its usefulness. It is therefore common to engage users themselves in the process of co-designing and testing such knowledge management and collaboration platforms. An important goal of CS-TLC is to engage members of the RPP in a co-design process that will ensure the end product is both useful and sustainable.



THE CO-DESIGN PROCESS

The extant information science literature provides numerous prescriptions regarding how to individuals can manage information overload (4). However, such user-oriented solutions are useful only to the extent that the systems people interact with are user-friendly. Engaging users themselves in a systematic process co-designing the system they will ultimately use is increasingly considered best practice (5). This iterative process progresses through a series of five steps, which each step building on the previous one:

- Step 1:** needs assessment (understanding the needs of diverse group of users, e.g., novice vs. experienced CS teachers).
- Step 2:** access (taking stock and curating available resources or existing repositories of resources)
- Step 3:** knowledge management (classifying and organizing resources in the most intuitive way to users and their needs)
- Step 4:** ranking (screening and ranking available resources for quality, relevance, and potential for broad application)
- Step 5:** maintenance (setting procedures and tools for users to add and share additional resources, including the one they create).

VISION ARTICULATION

One of the first steps of the co-design process is conducting an exercise where users are asked to envision what the end program will look like. Below are ideas raised by the group:



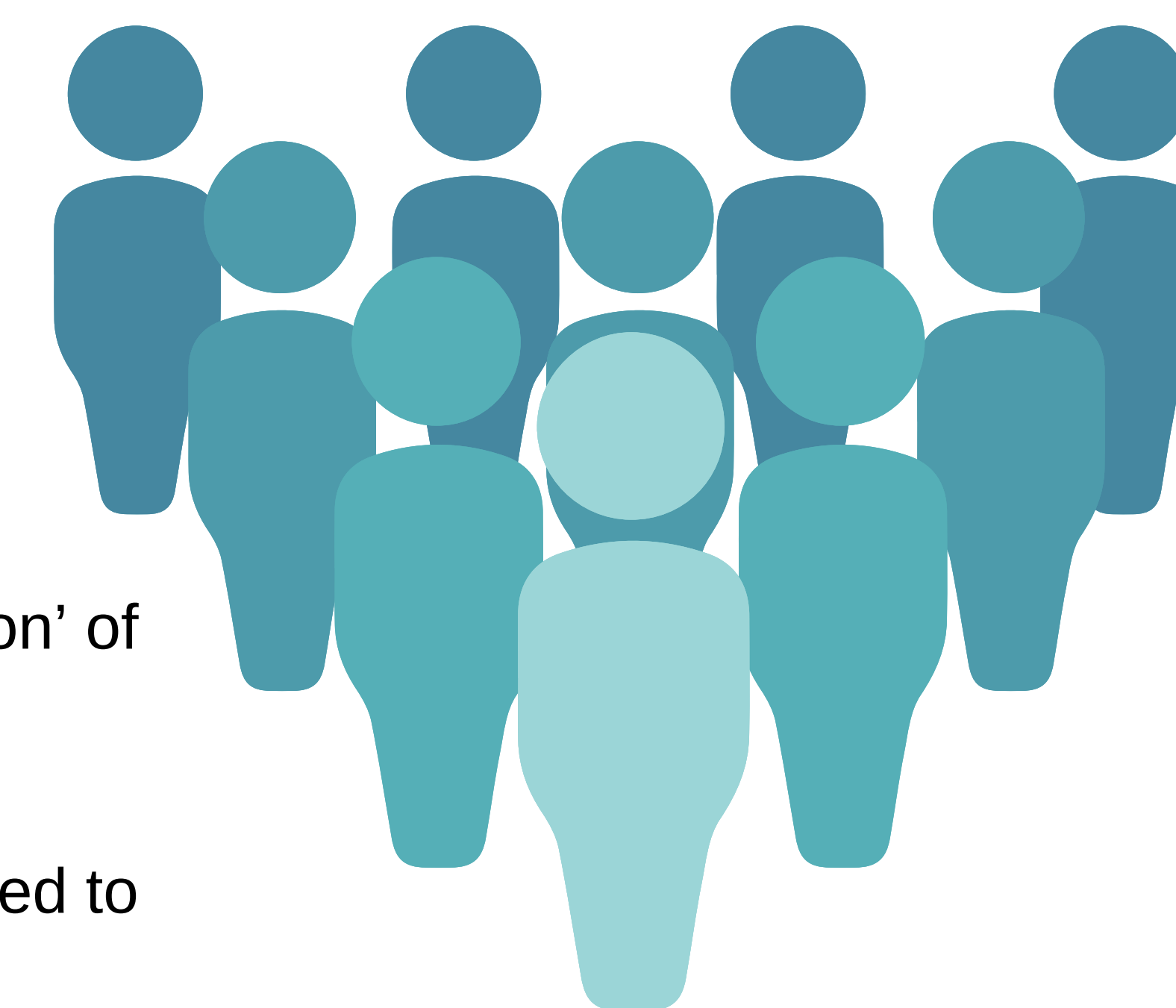
Given information is ever changing, should we have guidelines on how often to update our sources?



Can we create a 'capsule collection' of CS resources?

What are the basic pieces you need to underpin everything else?

What are the most versatile and foundational items?



Should each teacher be free to access and use any resource they want?

Or do different circumstances warrant different norms and procedures?

Is there a place for a PLC team to support choices about CS resource use?

The critical question...

How does one take control of their CS resource environment?

References

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Information Overload: Navigating Existing CS Resources Without Reinventing the Wheel

Cynthia Blitz, Ph.D.
Center for Effective School Practices (CESP)
Graduate School of Education
Rutgers University
80 Cottontail Lane, Suite 410
Somerset, NJ 08873
cindy.blitz@gse.rutgers.edu

Abstract—We are all in a state of information overload and often do not know where to begin. For teachers and schools/districts new to computer science, getting started can be overwhelming. We are working within a Research Practice Partnership (RPP) to try to address some of this stress rather than add to it. We are attempting to do this by creating a curated forum so that educators (from all levels of the system) can share with each other directly while working with them to efficiently and effectively navigate existing resources and opportunities in CS with a focus on how to best structure a program, a class, or a club to encourage equity and inclusion in the CS work that they do.

Keywords—computer science, equity, RPP, information, communication

I." INTRODUCTION

There is so much information, so many resources, so many groups/networks, so many webinars, so many emails that we receive each day that it becomes overwhelming. Many of us are in a state of information overload and become paralyzed – as we rather consider nothing than all of possibilities open to us.

II." BACKGROUND

We have been awarded a CS for ALL grant that builds on an existing research practice partnership (RPP)—the Computer Science Teaching and Learning Collaboratory (CS-TLC)—that brings together computer science (CS) educators, educational researchers, and industry partners to provide targeted, differentiated professional development (PD) and ongoing virtual support to high school CS teachers and schools.

CS-TLC aims to (a) develop and deliver high-quality CS PD for teachers that enhances their ability to deliver instruction responsive to their students' level of CS skill development, interests, and cultural backgrounds; (b) invest in building the capacity of school and district leaders to plan, implement, manage, and evaluate programs and policies that can support rigor and equity in CS education; and (c) engage in research and community-building activities that can improve the performance, effectiveness, and sustainability of the RPP as well as expand the size and diversity of its membership. The team will focus on expanding pedagogical content knowledge as well as tailoring activities and assignments to address the different needs and experiences of these students providing them with opportunities for rigorous and engaging CS instruction.

III." ADDRESSING INFORMATIONAL OVERLOAD

A large part of what we are doing is to provide a forum for educators to learn from each other but also to share resources and ways to navigate the many CS resources out there already. the components of the lightning talk. We have not yet found the perfect platform to share and cultivate these resources but are very interested in figuring out what works best and what platform (and processes) might work to make this useful over the long-term.

My idea for the Lightning Talk is as follows. I propose to have 4 slides (the first 3 taking up 35 seconds each and the last one taking 15 seconds).

My current thoughts on slides.

First slide: Information overload (picture of too much data, system overload, or simply words – information overload) – focus will be on simply this that we all have access to so much information now – so many resources, so many groups/networks to join, so many webinars to watch/participate in, so many email requests to be part of things that many of us have gotten to a point of inactivity, don't know where to start.

Second slide: Picture indicating RPP/network/PLC/collaborative group work OR words such as – research practice partnership –mention our CS for All grant, have an RPP and resources/support to share but don't want to be yet another thing that educators have to deal with (not just another resource), information that they need to take in, we want them to join us, find it useful, and sustain their participation.

Third Slide: How can we be useful – curated forum (with all aspects of good PLC/collab work – trust, communication, etc. and multiple levels involved at each district/entity) AND culled resources/help navigate – not recreating the wheel, not giving them a curriculum or a program to follow – but helping navigate. School with no CS program, let us help take you through the process.

Fourth Slide: Contact Information – interested in talking about any of this, especially in ways to best cull/share information – need 'that' platform. Also, always looking for collaborators and thought partners.