

School and Library Programming to Teach Children Basic Privacy and Security Concepts

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MD Tech Connect | December 8, 2022

My connection to MD libraries



BCPL – Catonsville Branch



Albin O. Kuhn Library (UMBC)



Enoch Pratt Library (Baltimore)

My background

I've researched tech & privacy for last 12 years:

- Privacy perceptions
- Privacy violations
- Privacy & ethics of new tech
- Building privacy-preserving tools
- Developing digital literacy
- Building tools to teach children about privacy & security



Dr. Jessica Vitak
UMD



Dr. Marshini Chetty
UChicago



Dr. Mega Subramaniam
UMD



Dr. Tammy Clegg
UMD



Priya Kumar
Penn State



Nisa
Asgarali-Hoffman
UMD



Today's talk

How can schools and libraries help children develop digital literacy skills to better navigate new technologies while keeping their personal data private and secure?



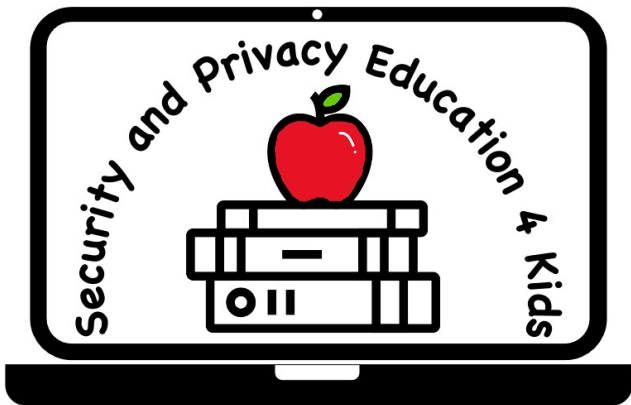
Project: Safe Data, Safe Families

Funding: IMLS (2016-2021)

Collaborators: Mega Subramaniam, Nisa Asgarali-Hoffman, Priya Kumar

Website: <https://safedata.umd.edu>

Goal: Develop training and resources for public library staff to increase their understanding of privacy and security and better help patrons who use public computers to complete everyday tasks.



Project: Security and Privacy Education 4 Kids (SPE4K)

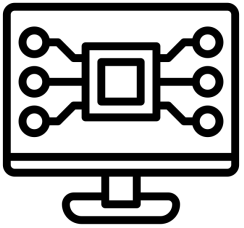
Funding: NSF (2020-2023); Google (2016-2019)

Collaborators: Tammy Clegg, Marshini Chetty, Priya Kumar, Elana Blinder

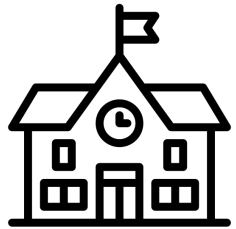
Website: <https://SPE4K.umd.edu>

Goal: Develop lessons for elementary school teachers, parents, and children that explains core concepts around digital privacy and security, as well as the internet and digital citizenship more broadly. Resources will be age appropriate and connect to kids' everyday lived experiences.

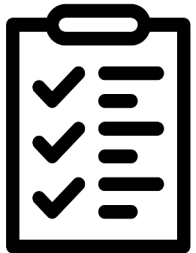
What problems do these projects address?



- Low digital literacy
- Reliance on public or shared devices
- Privacy & security are not prioritized



- Teachers may not be tech savvy
- Increasing reliance on technology for learning
- Lessons don't span home and school contexts

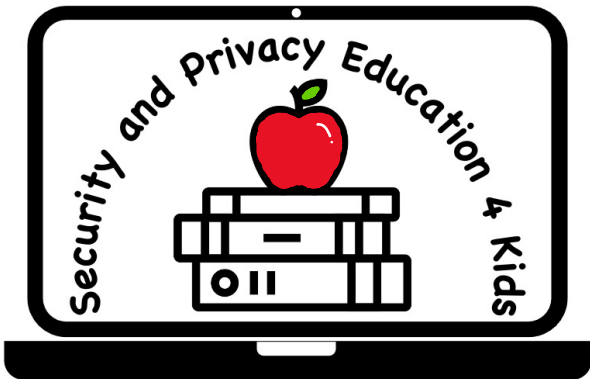


- Checklist approaches provide rules and structure but don't explain **why** people should/shouldn't do something.
- Existing resources may be too technical or created for older kids.

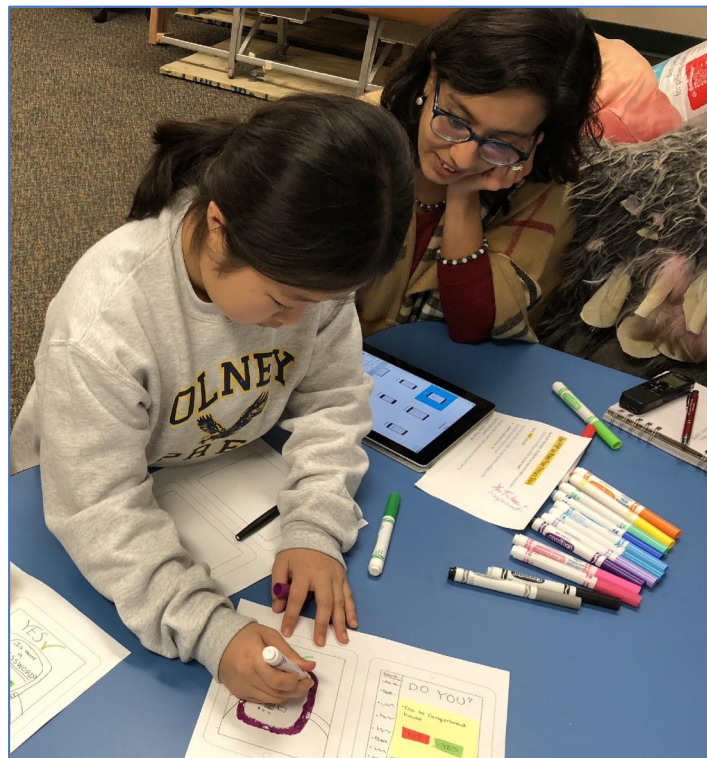
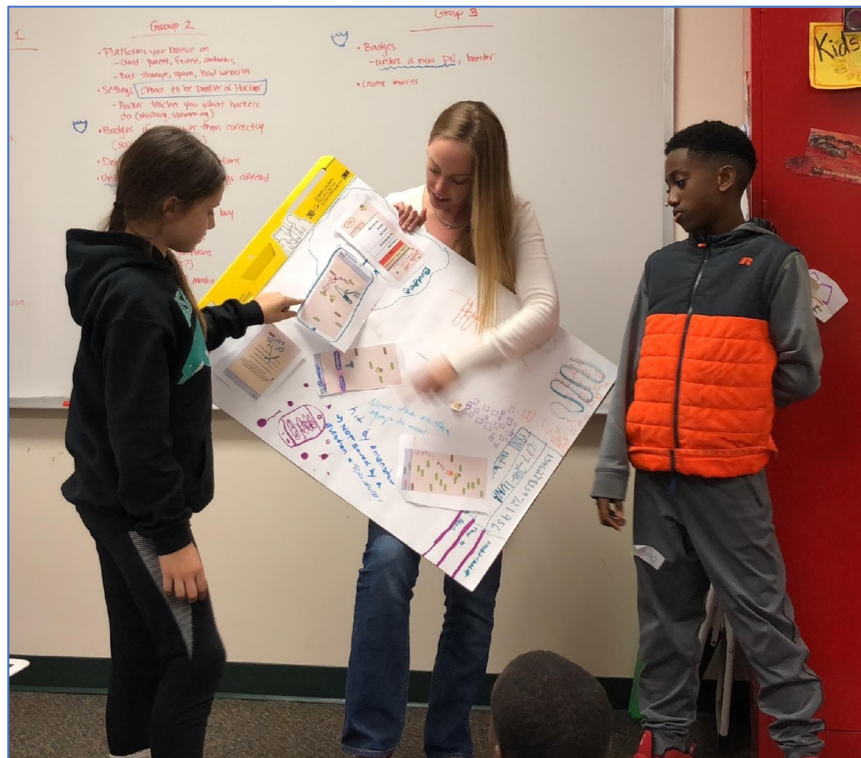
Methods & Data



- Focus groups with library staff from across US
- Interviews with library patrons at four Maryland libraries serving low-income residents
- Participatory design with children ages 6-14 (KidsTeam)



- Interviews with elementary school children and parents
- Focus groups and co-design sessions with teachers
- Participatory design with children ages 6-14 (KidsTeam)



Lessons Learned from Designing With Children, For Children (2018-2022)

For more information on KidsTeam, see <https://hcil.umd.edu/children-as-design-partners/>

PRIOR WORK



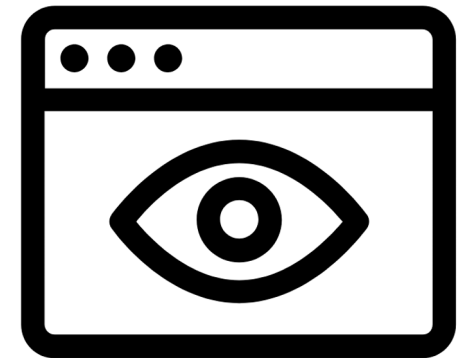
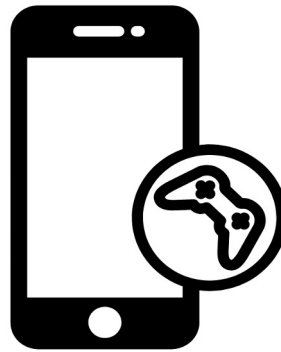
Raynes-Goldie & Allen (2014)



Zhang-Kennedy et al. (2017)

OUR WORK

How can co-designing games and interactive narratives with children inform the development of privacy-focused educational resources?



Example 1: Modding an existing game

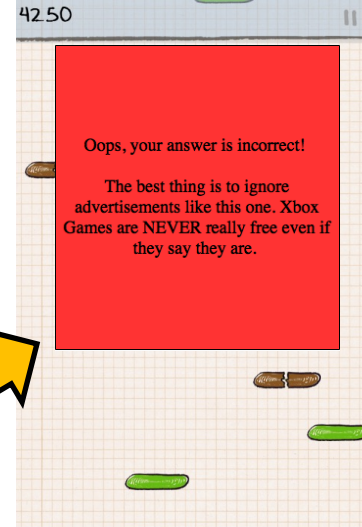
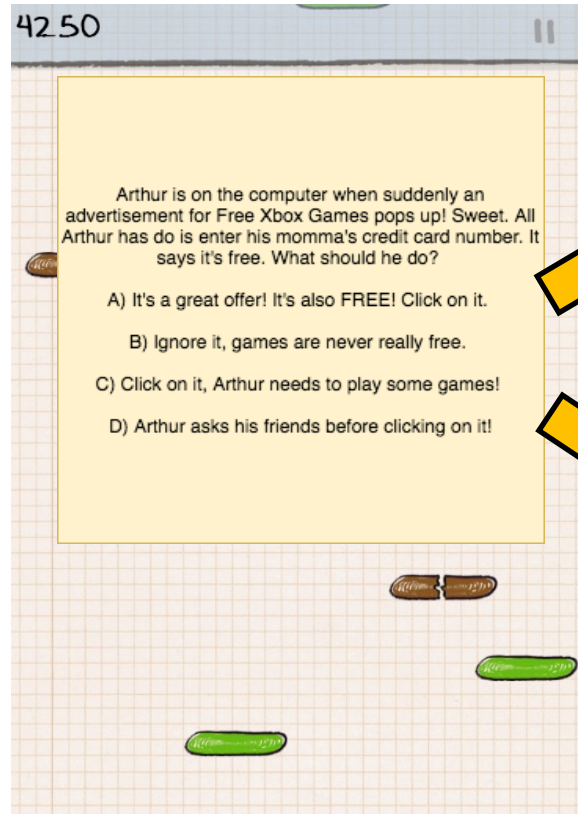
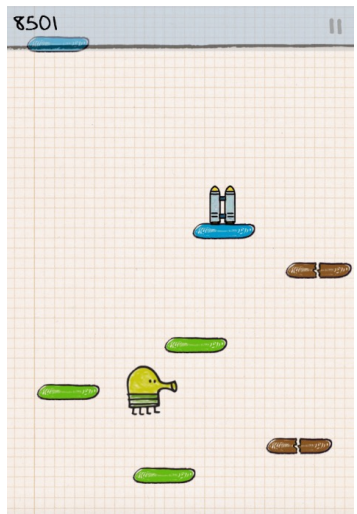
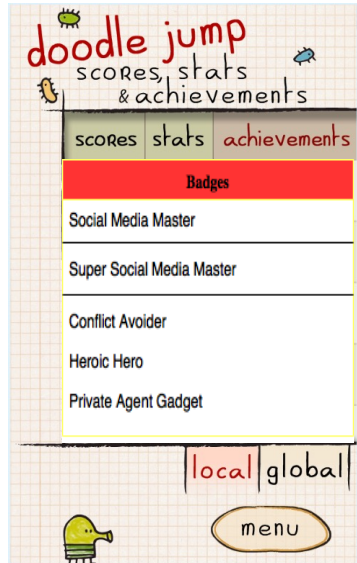
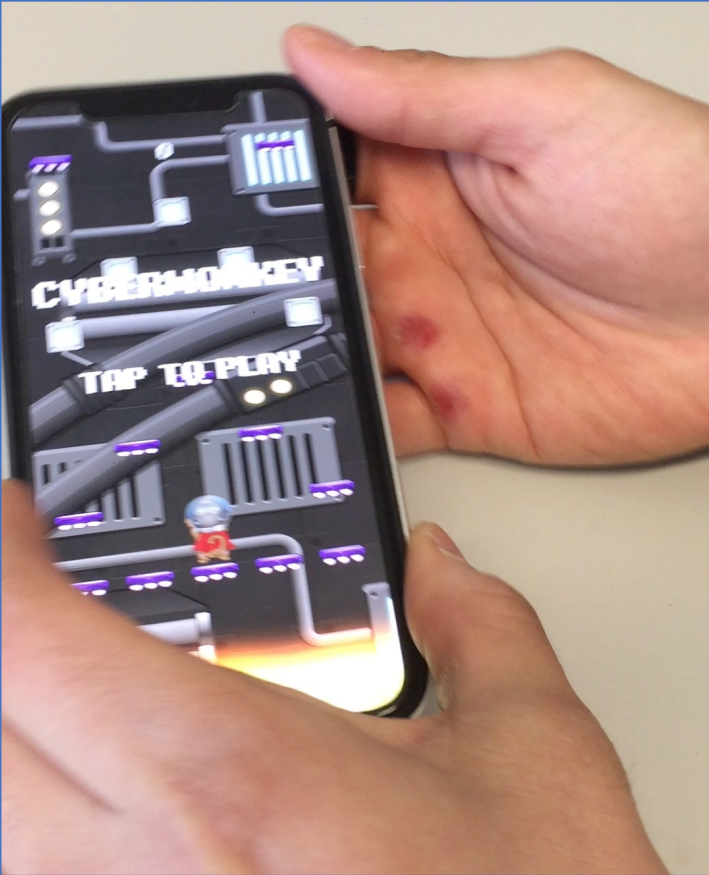


Image © Lima Sky

Doodle Jump is a platform scroller mobile game: players continue jumping upward from platform to platform to get the highest score.

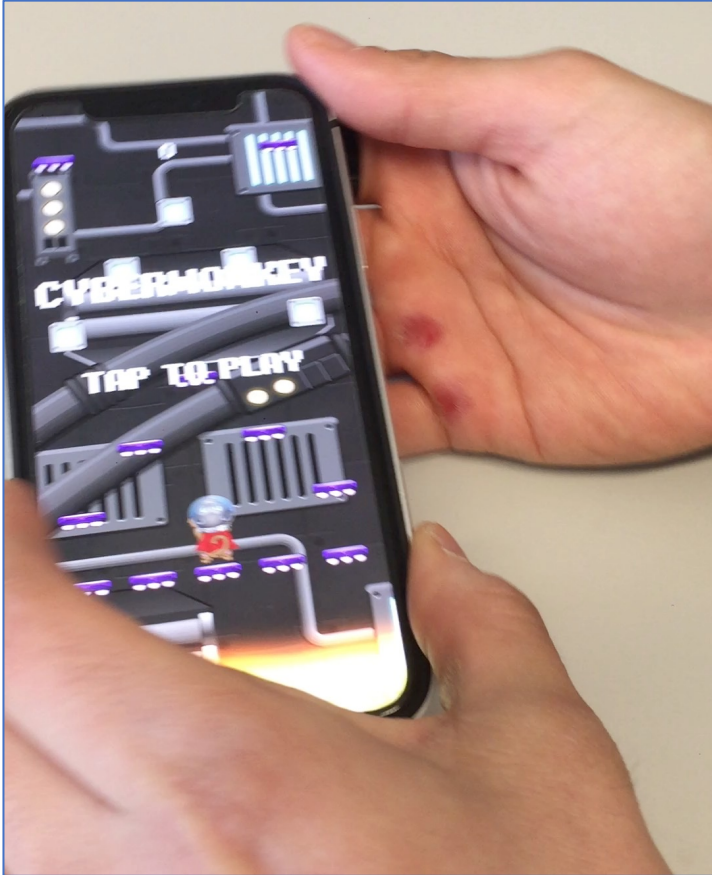
KidsTeam Session (Dec 2017): Child partners annotated a low-fidelity prototype of a modified version of Doodle Jump.

Example 1: Modding an existing game



We also built and tested Cybernaut, a platform scroller like Doodle Jump but set inside a computer.

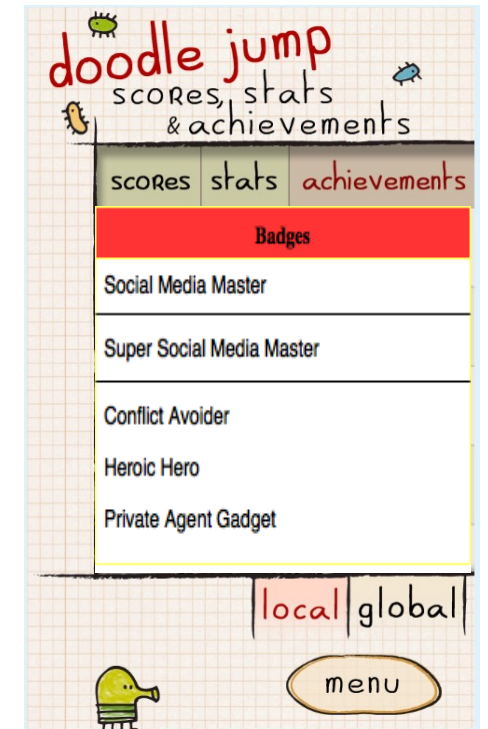
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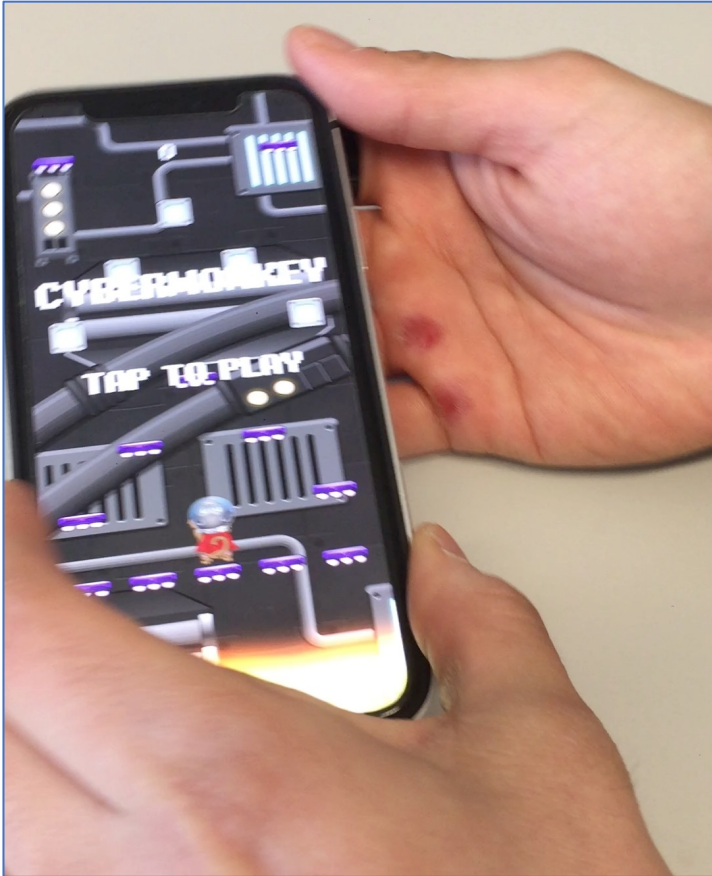
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Main takeaways:

- Include customization features to keep kids engaged.



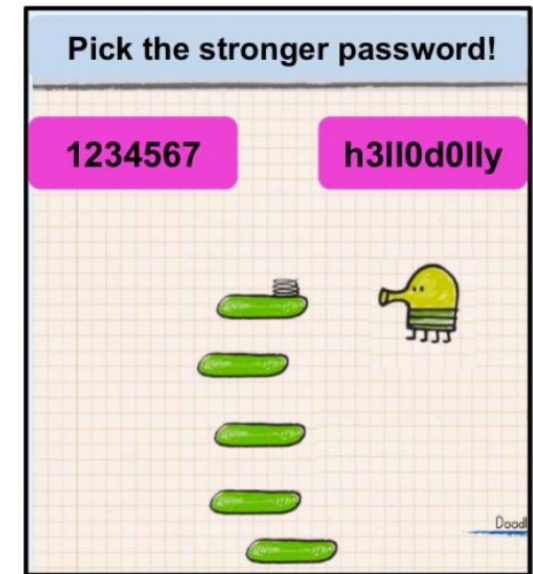
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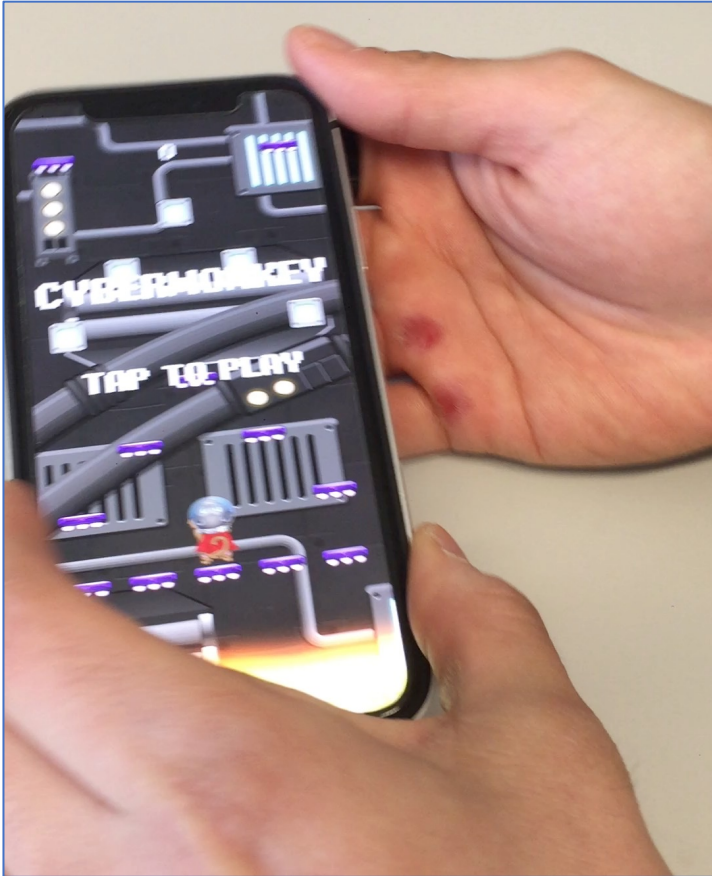
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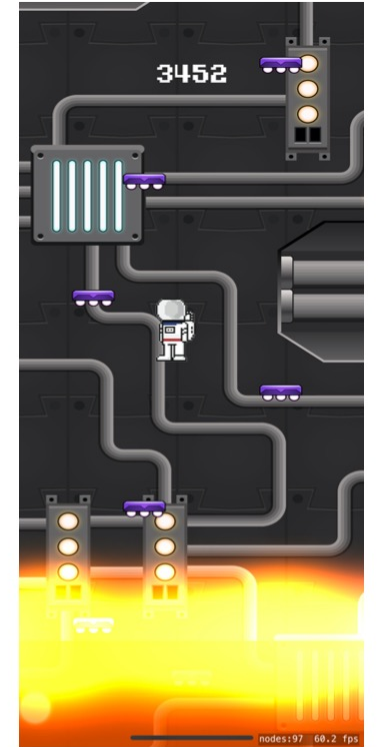
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- Expand educational components beyond questions to reinforce lessons.



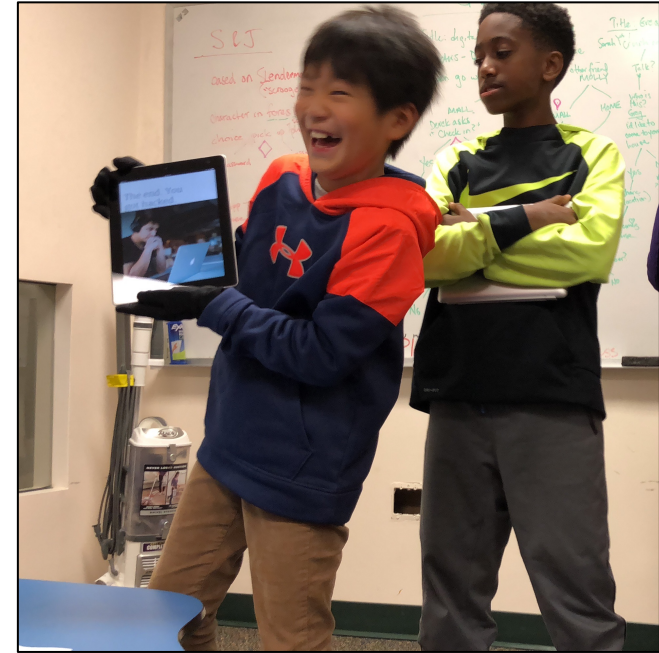
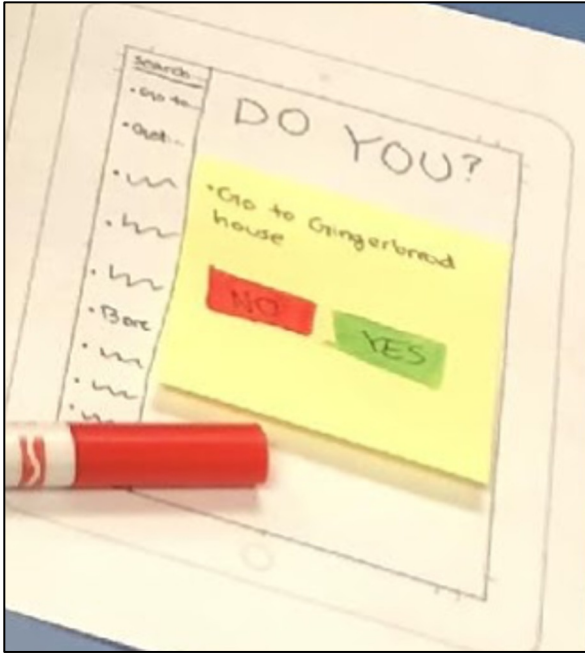
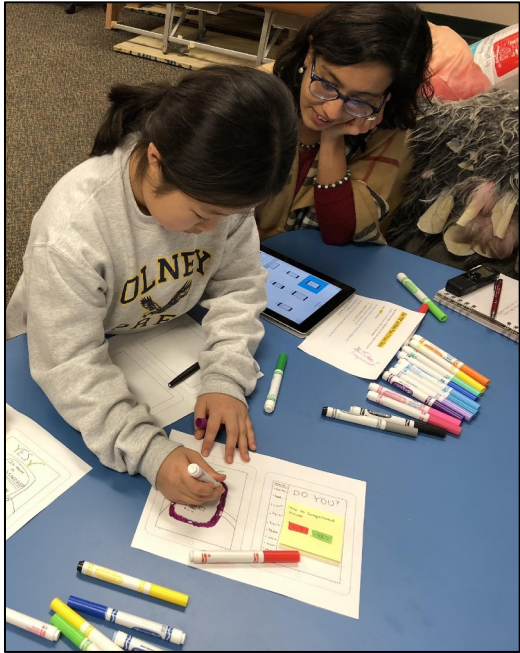
Example 2: Choose Your Own Adventure



[Overview of POP app](#)

Session #1 with KidsTeam:
Training child design partners on how to use the POP App.

Example 2: Choose Your Own Adventure



Use paper prototyping + POP app to create a story about digital safety with multiple decision points. Two yes/no items were required:

- *Would you like to switch on your location settings so it's possible to know where you are?*
- *Would you like to store your password so you don't have to type it in the future?*

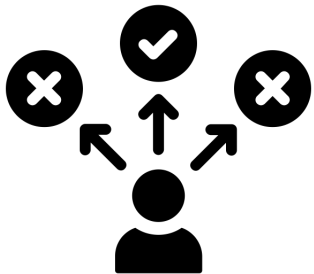
Example 2: Choose Your Own Adventure



Use privacy scenarios related to children's everyday lives.



Expose children to a range of privacy lessons with positive and negative consequences.



Equip children to learn privacy decision-making skills.

CYOA Interactive Story: Marco's Surprise Party

Available on safedata.umd.edu under "Resources for Families."

- Available in English and Spanish.
- Audio recordings so kids can listen to story.

Potential deployment: in class or during library specials (topic: digital citizenship)

Marco's Surprise Party: A Choose Your Own Adventure Game

Written and Illustrated by: S. Nisa Asgarali-Hoffman

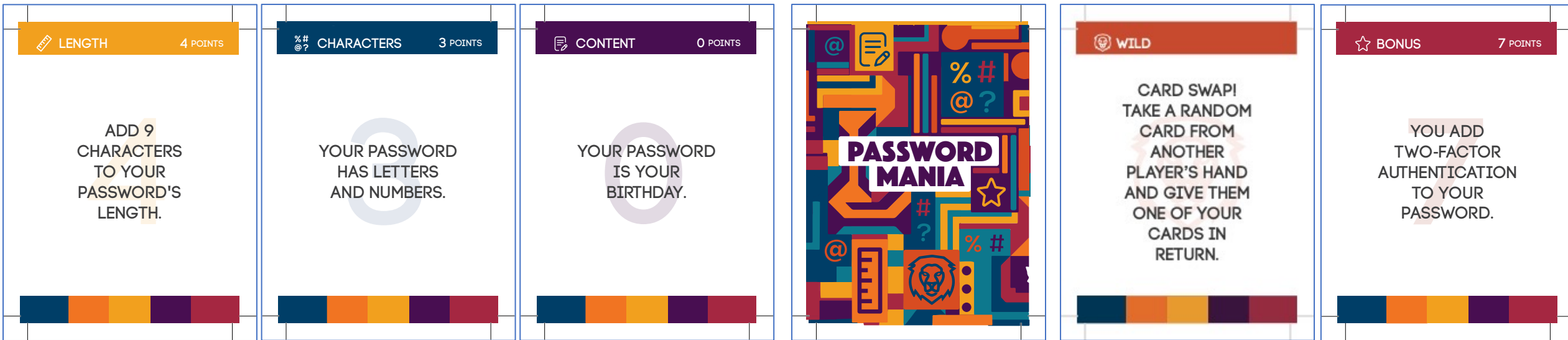


Story: You're planning a super secret surprise birthday party for your best friend, Marco. Marco knows you really well, and suspects you're planning this surprise party. He's very impatient and wants to find out all the details. He's also good with technology and social media. In this game, you want to keep Marco from finding out about his party while you pick up supplies and get everything ready. Can you run all of your errands and get to the party location before Marco figures out what's happening?

Example 3: Password Mania card game

Goal: Develop simple card game that could reinforce good password habits.

Potential deployment: libraries & classrooms (with supplemental lesson)



Three categories of password strength:
length, characters, content.

Wild cards
add element
of fun.

Bonus cards
highlight
related
behaviors.

























Example 4: Password Worksheets

Passwords are the first line of defense in protecting your personal information and children may need to start using passwords from an early age. These worksheets* help children build better passwords by focusing on the most important factor in password strength: length. The instructions ask the child to select four images then write a story to connect them. This worksheet is appropriate for children ages 8+.

Worksheets are available for download on safedata.umd.edu under Resources for Families.

**Worksheets inspired by this [xkcd comic](#).*

What makes a password strong?
The length of a password is the most important thing in determining its strength. One of the easiest ways to build a strong password is to mash together several random words. This could be hard to remember though, so you could try to come up with a story to help you remember the words. Let's practice! Choose four pictures from below, then write a short story that connects the four pictures.

 Plane	 Glasses	 Bandage	 Clock	 Alien	 Button
 Watch	 Ghost	 Apple	 Artist	 Science	 Baby
 Peace	 Bread	 Sword	 Fairy	 Banana	 Check
 Rocket	 Pencil	 Bee	 Dragon	 Barn	 Flower

My four words are: _____

Story based on words: _____

This worksheet was created by the Safe Data Safe Families Project
<https://safedata.umd.edu> | CC BY-NC 4.0 | 2021

Example 5: Virtual Escape Room

Island Escape is an escape room-style game using Google Forms and is intended for children ages 8-11. In this game, the player wakes up on a beach, with instructions to get to a helicopter on the other side of the island before they are caught by the bad guys. The player must solve a variety of password and location data challenges (by answering multiple choice questions) to reach the helicopter safely.

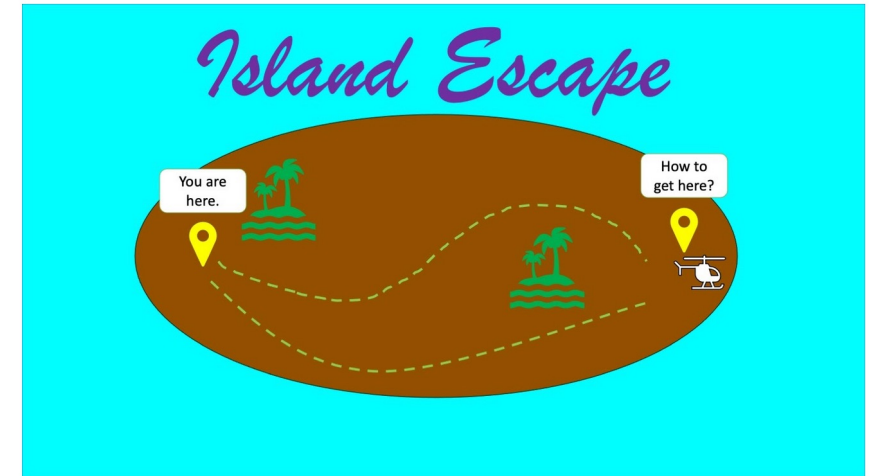
The game is available on safedata.umd.edu under Resources for Families.

Island Escape: Privacy Challenge!

Can you and your friends get to the helicopter in time to escape this island before the bad guys find you?

[Sign in to Google](#) to save your progress. [Learn more](#)

Island Map



You wake up on the beach, not knowing how you got there. You sit up and realize there's a note in your hand, gripped tight. The note reads, "Get to the eastern shore by 6pm; a helicopter will be waiting here. Avoid anyone in black. They want what's on your phone." You look at your watch; it's 5:00 already! You wake up your friends and start heading east, knowing you have just one hour to get there.



Designing With Teachers & School Librarians (2018-present)

What do elementary school teachers/staff think about privacy and security in the classroom?



Privacy and security is managing student data responsibly.



Privacy and security is minimizing inappropriate use of technology.



Privacy and security lessons should also be happening at home.

How can educators support students in learning about privacy and security concepts?

Would You Rather is a popular game that combines a topic-specific provocation with forced-choice scaffolding. Research has found it is useful in playfully “eliciting mental models and values, producing focused yet animated discussions.”

Potential deployments: (1) as part of Social & Emotional Learning curriculum; (2) as a warm-up activity for after-school programs.



Example of Would You Rather scenario from virtual co-design session.



Key Takeaways

- Schools and libraries are environments where children can become more confident navigating technology and protecting their data.
- Teachers, parents, and library staff can help scaffold learning starting when children are young.
- Connecting learning objectives to children's everyday lived experiences will help lessons stick.

Thank You!

For more information on my lab (with links to papers and research projects), visit <https://pearl.umd.edu>.

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