



TEACHER'S GUIDE

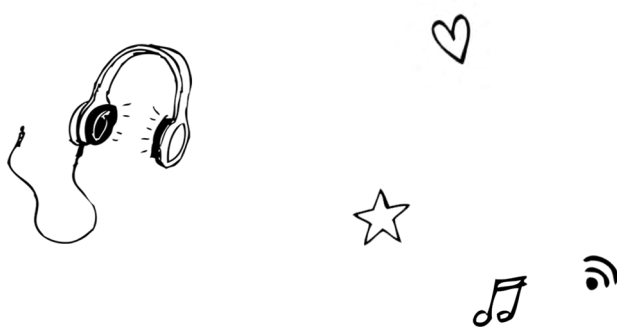
Disney • HYPERION BOOKS

About the Book

Click'd is a thrilling book about a seventh-grade girl named Allie Navarro, who creates an app that goes unexpectedly viral. We meet Allie as she's about to present her prototype to family and friends after her summer coding camp. Impressed with Allie's work, the local coding mentor, Ms. Slade, invites Allie to participate in one of the most exciting teen coding competitions around, Games for Good.

Motivated by the need to impress the Games for Good committee of judges, and persuaded by the compliments of her closest friends, Allie releases her game to her classmates even though she's not quite sure it's ready for a formal launch. In no time, her app spreads more widely than she could have imagined, turning Allie into a school celebrity.

Unfortunately, the glow of her fame starts to fade as an unanticipated bug threatens the privacy of her peers, causing embarrassment and havoc for those closest to her. Will Allie choose to shut down her game, knowing that her place in the Games for Good competition is on the line, or will she try to hide the problems in her application in hopes of being declared the big winner?





Pre-Reading Activities

TECHNOLOGY WORDS AND TERMS

3-D printer A printer that uses plastic instead of ink to create items instead of pictures.

Algorithm A list of steps that can be followed to complete a task.

App (Short for “application.”) The word “app” is usually used to refer to a program that can be quickly run on a phone or mobile device.

Avatar A digital representation of a person or a thing.

Back-end The processing that happens behind the scenes of an application, not directly on the user’s device.

Beta test A test version of a program which is released before it is ready for viewing by the general public.

Bug An error in the code of a program.

Cloud-based Something stored in an external server and accessed directly from that server, rather than your own computer.

Code The instructions that make up a program.

Concurrent users People who are using the same program at the same time.

Data Information stored or used in a program.

Database The place where data is stored.

Debugging Finding and fixing errors in a program.

Demo (Short for “demonstration.”) A preview of a game or app.

Developer Someone involved in the process of developing software.

Glitch An unwanted or unexpected behavior in a program.

Icon An image or symbol used to represent a program or elements of a program.

Login Providing credentials to gain access to a website or program.

Profile The page or area that contains specific information about a user.

Program Can be used to refer to both the set of code that makes up an application or the application itself.

Queue A place to hold data that is “waiting” for some action.

Server A computer whose job is to host information or processes, rather than engage in direct interaction with a user.

Source code The specific code that makes an application work.

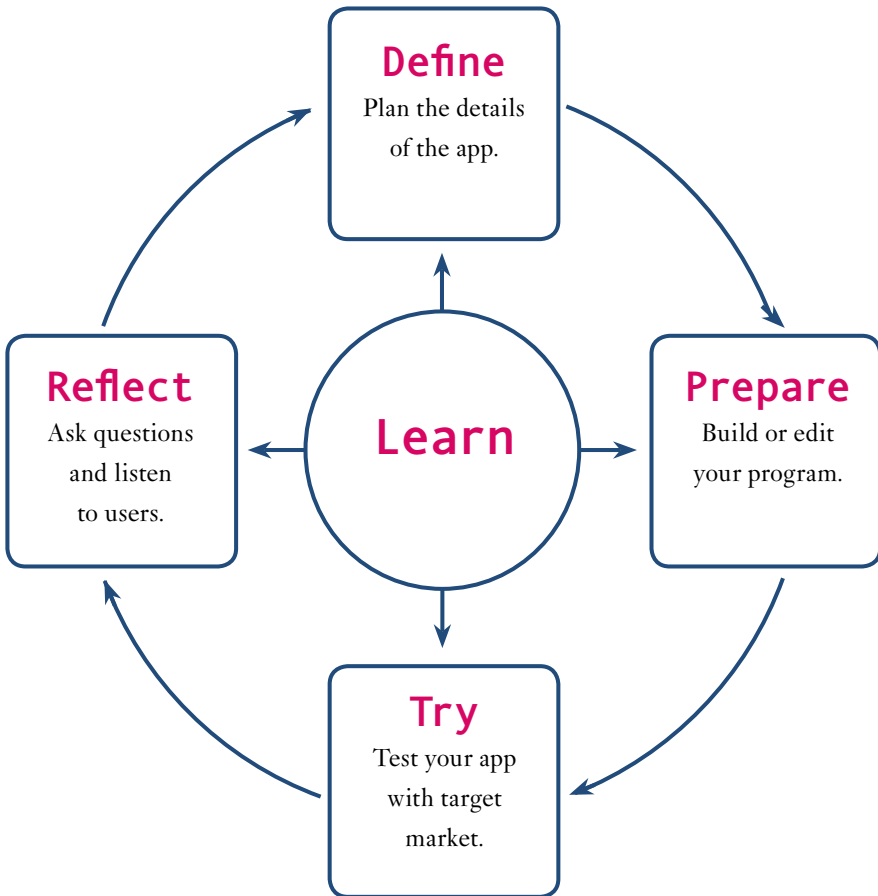
User agreement A contract issued by the creator of an application toward the user of that application, requesting agreement to their terms.


User base The group of people who use a specific application.

Users People who actively use an application.

The Software Development Cycle

In *Click'd*, Allie goes through a period of embarrassment, and later sadness, when she experiences a major glitch in her program. In real life, software developers know that their programs will inevitably encounter bugs and user issues. It takes a long time to get apps to a place where they're ready for public release, and before they are, they go through a process called the software development cycle.





In the beginning, it's a good practice to *define* what you are trying to do. This gives you a roadmap and helps you make decisions when you come to a crossroads.

Once you have a plan, you can *prepare* the first little bit of your app. Most programmers work with small pieces of code at a time so that the program doesn't get too big, too fast.

Things don't usually work perfectly the first time, and even if you think it's perfect, other people might find problems that you didn't notice. To find as many bugs and glitches as possible, make sure you *try* your app with others.

Once you've played with your app a bit and had other people review it for you, make sure that you listen to the comments and advice that your users provide. Don't be afraid to ask questions that might bring negative answers. Those are the responses that let you *reflect* on what you've done and help you figure out the improvements that most need to be made!

Armed with serious reflections, it's time to hit the planning process again to *define* the changes that you want to incorporate, and start the whole cycle over!

Preliminary “Get Excited” Activity

To build empathy for the protagonist of *Click'd* and get students excited about the book that they're about to read, get your class up and moving and have them take a quiz similar to what they would experience if they played with Allie's app.

Start by asking students the quiz questions on the next page. Once you have completed the quiz on paper, have students wander around the room, comparing answers with classmates. When they have a match, have them write down how many matches they experienced, and the name of the person they matched with. Next, have them look for someone who has even more items in common. Keep going for a specific amount of time (ten minutes?) or until every student has talked to every other student. In the end, bring the class back together and get students to share the highest number of answers that they matched with someone else.

Quiz

1 Which of these colors do you like the best?

- a. Red
- b. Blue
- c. Green
- d. Yellow



2 Which of these animals is your favorite?

- a. Cat
- b. Dog
- c. Bird
- d. Sloth



3 To which of these countries would you like to travel?

- a. Africa
- b. France
- c. Ireland
- d. China



4 Which of these foods could you eat the most of?

- a. Sushi
- b. Broccoli
- c. Ice Cream
- d. Bread



5 How would you prefer to spend a Saturday?

- a. Watching a movie
- b. Reading a book
- c. Playing with animals
- d. Making money

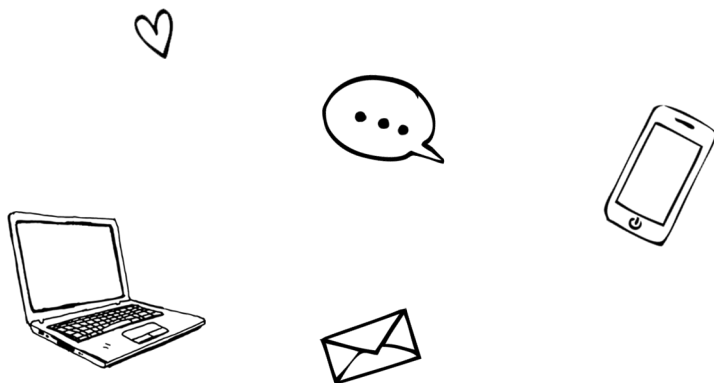
Discussion Questions



- 1 Why did Allie decide to create Click'd?
- 2 When the book opens, Allie is presenting her app to a room full of people. What type of preparation do you think went into that presentation?
- 3 Allie's first users were girls that were very similar to herself, with similar talents and similar hobbies. Do you think this was a good group for her first beta test? Why or why not?
- 4 How do you think Allie felt the first time she got negative feedback on her game? What do you think would have happened if she had stopped working on it the first time someone said something bad?
- 5 Allie and Nathan are competitors, even though their apps are very different. Can you list some good things about working side by side with your competition on a daily basis, even when you can't copy their code?



- 6 At one point, Nathan and Allie trade code and look at each other's apps with fresh eyes. This is a practice that computer scientists use all the time. Why might it be helpful to have someone else look at your project, even though they don't know it as well as you do?
- 7 If you found a glitch in your code that presented a security issue to your user and you had to decide between shutting it down or hiding it, what would you do and why?
- 8 Allie experienced some backlash due to the security issues of her app, but they could have been so much worse. What is the worst thing that you can think of that might have happened if Allie hadn't fixed her glitch?
- 9 Allie didn't get to present her app on stage at the Games for Good competition, but she did get to describe her app to lots of people out on the show floor. How could she have used that time to help make her app better?
- 10 Imagine Allie coming back to Mercer Middle School for eighth grade. Do you think she kept coding? Do you think she entered Games for Good again? What do you think happened?



Classroom Connections

WRITING

Think about being part of the summer coding camp with Allie. What kind of an app would you have wanted to work on? Write up a proposal that would persuade team members to join you.

Student proposals should include the following sections:

- App name
- Description of app
- Why the app is important to the student



When students are done, they should post their proposals on the wall for other students to read.

Allow the class a couple of days to leisurely read each app proposal, then ask students which one (besides their own) sticks out in their mind the most. Why?

Allie had the opportunity to see some of her classmate's private information. When you realize that many app developers can do the same with your personal and private information, what does that teach you about downloading applications from unknown sources or oversharing?

Make a list of some of the pros and cons of installing “free” software from untrusted sites, then compare with a classmate. Can you figure out what to do to make sure that you don't become a victim?

- Have students work in pairs to answer the question above, then pair share with another couple.
- Have student groups share out the combined suggestions from both sets of pairs.
- After each group has shared, ask the class to identify one thing that really resonated with them.

CODING

Creating an app similar to Click'd is easier than you might think using tools like Code.org's App Lab. Follow these instructions to go online and make your own quiz app.

- The quiz app in the video linked below has been formatted using Code.org's App Lab.
<https://ro.code.org/educate/applab>
- For simplicity, detailed instructions have been provided via YouTube.
https://youtu.be/CMvvr9w_29A

Follow the software development cycle to create a game of your own! This game can be anything you want it to be, but keep in mind that software takes a long time to develop; start with something simple and you can build on top of it later if you want to add more.

- A detailed lesson plan for this item can be found as part of Code.org's Computer Science Fundamentals, Course F.
<https://studio.code.org/s/coursef>

ART

Allie loved the logo for her game, but she seemed a little jealous of how polished Nathan's images were. Suppose you were helping Allie to come up with a new logo. Create two or three logos that you think represent her game well. Why did you create the logos you chose?

This is a great activity for learning digital art. If you have access to a computer lab with Photoshop (or its free counterpart, GIMP), let students give this a try digitally.

- Instruct them to start with canvases that are 800px by 800px, at 300dpi resolution, using a CMYK color space. These settings will create images that can be printed out, but won't overtax the computer.

If you don't have access to design computers, have students start by drawing their images on paper with pencil, then trace with ink before coloring in.

- Remember, for logos, simple is better!



Pretend that you had created your own app for the Games for Good competition and were displaying it down on the showroom floor. Give your app a name and create a poster (or digital slideshow) that describes the point of your program so that you can collect as many votes as possible!

For a poster: Have students divide their poster into sections where they can represent:

- The name and logo for their app
- The audience for their program
- The purpose and description of their program



For a slideshow: Instruct students to create enough slides to explain:

- The name and logo for their app
- The audience for their program
- The purpose and description of their program

MATH

Word of Allie's game spread quickly across Mercer Middle School, but it could have spread much faster! Suppose that each person who installed her app convinced two other people to install the app each hour. If there were five users in the first hour, how many would there be in the third? How many in the fifth? The tenth? Now what would happen if each user convinced three more players instead of just two?

- Let students solve this problem in groups. Have them use tables and physical props like beans or cereal to come up with their own solutions. Can they use those solutions to make a formula? Can they use their formula to solve the problem if it involves a HUGE number of hours (like 1000)?

Suppose Allie's quiz had four questions and each question had four possible answers. If you and a friend both took the quiz by answering randomly, what are the odds that you and your friend would get at least one match? What are the odds that you would match on every question?

- Let students solve this problem in groups. Have them figure out the odds of answering the same on a one-question quiz with only two answers first, then a one-question quiz with four answers. How about a two-question quiz with two answers? Then a two-question quiz with four answers? Now can you create a formula that will help you answer the original problem?

About the Author



Tamara Ireland Stone (TamaraIrelandStone.com)

is the author of *Time and Time Again*, a collection of her two novels *Time Between Us* and *Time After Time*, and the *New York Times* best seller *Every Last Word*. A Silicon Valley-native, she has worked in the technology industry all her life, first testing Atari game boards in her parents' garage, and later, cofounding a women-owned marketing strategy firm where she worked with some of the world's largest software companies. She enjoys skiing, hiking, and spending time with her husband and two children.



Q&A with the Author


- 1 Now that it's been written, *Click'd* feels so timely and necessary. What gave you the idea to write this book?

I've been fascinated with technology all my life. I grew up in Silicon Valley and worked as a marketing executive in the software industry for nearly twenty years before I began writing fiction for children and teens.

When I worked in the software industry, my job was to make complex technology easy for everyday people to understand. I applied that experience to the way I approached *Click'd*.

The *Click'd* story has been taking shape in my mind for many years. I didn't know the details, but I always knew my main character would be named Allie and she'd be a bit like, well . . . twelve-year-old *me*—driven, independent, and passionate about creating new things.

Writing this series gave me a chance to go back to my tech roots with a fun friendship story that I hope will also get kids—and especially girls—excited about coding. I'm not a software programmer myself, but I'm hoping to make a difference using the tool I know best: storytelling.

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- 2 This book is so funny and easy to read, but it is also extremely authentic in the way it presents the situations and vocabulary around app development. How did you strike such a natural balance?

Remember back in 2012, when there was this huge and sudden interest in archery among teen girls? It wasn't because they'd all read a book about archery; it was because they all read a book called *The Hunger Games*, about a girl named Katniss Everdeen who had some serious skills with a bow and arrow.

That's what I was going for with *Click'd*. I never set out to write a book *about* coding; I set out to write a book about a seventh grader with great friends and empowering role models, who loves soccer and her dog, and who also happens to be a brilliant coder.


Click'd is a story about friendships and first crushes, dealing with pressure and handling failure—things I think every middle schooler can relate to. If readers leave feeling like this book inspired them to try something new, like dancing, painting, coding, or a new sport . . . even better.

- 3 In *Click'd*, Allie had access to computing classes in middle school, and she chose to embrace it, even though her closest friends didn't seem at all interested. At one point, she even had to make the decision to abandon her soccer team so that she could pursue a coding camp over the summer. How do you think a middle school student of today might fortify herself against the fear of “being different” when facing a decision like that?

I tend to write about brave and daring kids because when I was young, I was the exact opposite. Unlike Allie, I probably would have picked soccer camp over coding camp because I didn't want my friends to make fun of me.

Looking back, I wish I hadn't put so much stock in what my friends thought. It took me a while to realize that our passions and interests make us unique and interesting, and who we are. And if we don't embrace them, we're the only ones who miss out.

Now, I feel like I have an opportunity to empower kids to be brave by showing positive examples of how friendship *is supposed* to work. Allie should be able to love soccer *and* coding. She should be able to hang out in the quad at lunch on some days,



and work in the computer lab on others. It should be totally okay for her to make new friends at coding camp without her three best friends getting jealous about it.

Some may see this as more aspirational than realistic, but I'm not so sure. I look around my kids and their friends, who are so much more tolerant and respectful of each other's differences than kids were when I was young. Younger generations are often kinder and more open-minded than adults often give them credit for.

- 4 This book showcases the power of girls that code, while leaving out the tirade taken by similar pieces with regard to the gender lopsidedness of computer science. In what way do you think that your choice to present programming as an equal-opportunity activity will shape the perceptions of those that read *Click'd*?

I thought a lot about this as I was writing this book. It's no secret that misogyny exists in the technology industry, but it sadly exists in almost *every* industry—in politics, medicine, law, etc. I don't think we should tell young women to shy away from traditionally male-dominated careers. I think we should prepare them to go in expecting to be treated equally, but be ready to stand up for themselves if they aren't.

I've certainly experienced my share of misogyny in the tech industry, and I know it's a lot harder for women engineers than it is for women in other roles. I was fortunate to work for companies that treated men and women equally, and for the last fifteen years, I was the cofounder of a women-owned business, so we made the rules and made them equitably. Always.

Click'd doesn't specifically talk about the challenges women in technology face, but it does envision a world where women are powerful visionaries and successful leaders. There are two role models I hope readers draw inspiration from: (1) the CEO of Spyglass Games, who is a strong, opinionated leader and an extremely respected woman in the industry, and (2) Allie's computer science teacher, Ms. Slade, a developer who hit it big in a hot startup and now teaches computer science. They're modeled after men I know in similar roles—why not women?

- 5 *Click'd* offered lots of opportunity to dive into the deep and scary worlds of Internet safety and digital citizenship. What were your hopes and thoughts as you wrote these situations (like where Maddie asked Allie to provide confidential information about Chris's answers)?

I'm a parent. I've had a lot of discussions with my kids about the dangers of the Internet. But I didn't want *Click'd* to feel like a cautionary tale.

I was a voracious reader as a kid, but if you told me a book was supposed to teach me something, that was the kiss of death. I didn't read to learn, I read to be entertained. Of course, looking back, the books I loved most also taught me something important along the way. Their authors, like my childhood literary hero, Judy Blume, just did it subtly.

Allie's game gives her access to a wealth of information—personal data, photos, and secrets. I wanted to see what she'd do with all that power. I gave her every opportunity to cheat, to give in to her friends, and to take the easy way out. On several occasions, I forced her to check her moral compass. And I showed her doing the right thing, even though it was the harder path.

That's what's so wonderful about fiction. It gives us an opportunity to pass information along to young people in a way that inherently respects their ability to process and learn from it on their own. I want my readers to take something of lasting value away from my books, but I also want to keep them turning pages, excited to see what will happen next. If I felt myself getting too geeky or fixating on the technical stuff, I'd stop and ask myself, "What would Judy do?"



Kiki Prottzman is a champion for responsible computing and equity in both computer science employment and education, working with many organizations to improve the experience of girls and women in STEM. She currently sits on the Advisory Board for Wonder Workshop Robotics as well as the Code: SciGirls! project. In her spare time, Kiki writes books and makes YouTube videos about computer science.

Many more teacher's guides can be found on the Disney • Hyperion website at disneybooks.com.



Click'd

Hardcover

978-1-4847-8497-6

\$16.99

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