



The Game Jam Guide

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PART I

Introduction

Welcome to the Game Jam Guide, a comprehensive handbook that will help you organize and run interactive, hands-on game design activities for students around real-world issues!

This guide includes over 20 unique lessons and activities developed by digital learning organizations in the Hive NYC network. The lessons can be used individually, to inspire new curricular tools, or for game jam events. This curriculum was used in four Moveable Game Jams that were run in 2016-2017 as part of the Games for Change (G4C) Student Challenge, an annual game design program for students in cities across the United States.

Each activity in this guide has been implemented and iterated on based on student feedback into a “one hour lesson plan.” The guide is meant to be a resource to educators running game design activities with their students, and show the potential of teaching game design using real-world stories, issues and assets.

This document has two sections: the first section includes background about the G4C Student Challenge and social issue game themes, Moveable Game Jams, and a description of the game jam format used in 2016-17 and the second section contains 16 activities developed in 2016-17 as well as some of the best activities used in past game jams. In the guide, we reference several handouts, and either link to those documents’ original locations or to this openly shared

[Google Drive](#)

Folder (<https://drive.google.com/drive/folders/0B9kunZCntE5HeXZ0SkgxLTBWMU0>).

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The Games for Change Student Challenge

A **game jam** is a gathering of people — youth, adults, professional game developers, or really anyone — to design and prototype one or more games in a short timespan. The model is similar to that of a hackathon, where participants have a limited amount of time to work on a project using an iterative design process.

The Moveable Game Jam is an innovative take on the game jam event model, developed by a team of learning and game experts in NYC. Moveable Game Jams are one-day events where students come together to play, hack and make games in ‘activity stations’ facilitated by learning partners and subject area experts. A group of Hive NYC organizations have been collaboratively running Moveable Game Jams since 2014. In 2016-17, four Moveable Game Jams were run as a part of the G4C Student Challenge in NYC, with themes that aligned with the Challenge’s three social issue topics.

The game jam activities in this guide can be used as one-off lessons, to help you facilitate game jams, or used for other learning events. We encourage you to be creative, and adapt them to your needs!

The Moveable Game Jam event has three main components:

- All students engage in guided activities that introduce them to some basic game design principles.
- Students choose to engage in one or two of four available stations, each of which contains a different game design activity and is run by a different organization. This component comprises the bulk of the time in the game jam. This component will have different organizations running different of stations in each game jam, thus making both the content and location “movable.”
- There is a final showcase event in which students show the games that they have made to parents and other students in some kind of format that makes sense for the space. In total, a typical moveable game jam can run for 3-4 hours.

The events in this document also add a fourth element to the game jam- they added a theme around which to design games, and all game stations were related to that theme in some way. This extended to total time of the event to 6 hours by added lectures and activities in the morning by theme-based experts.

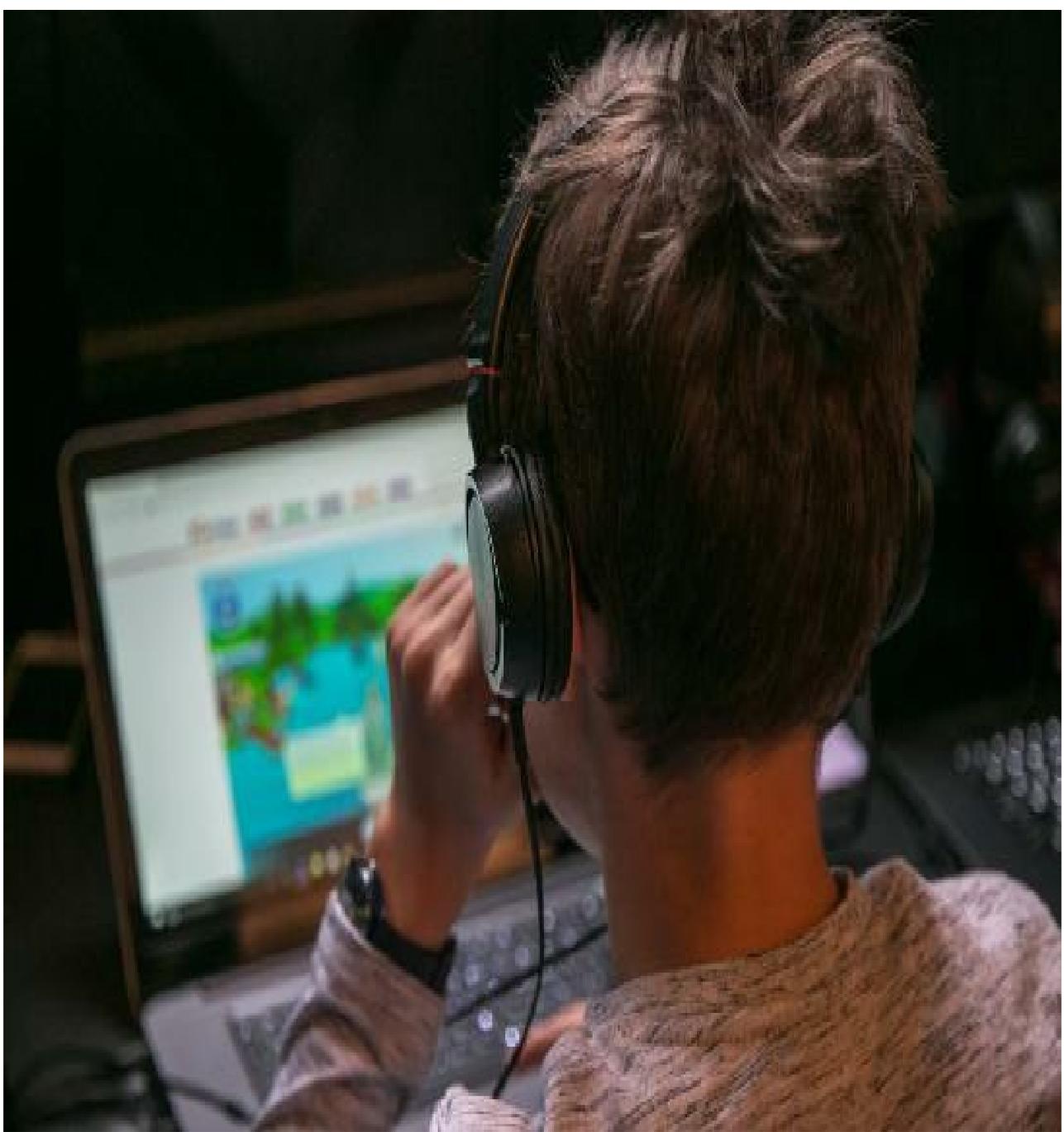
Moveable Game Jams

Everyone involved benefits, and Moveable Game Jams bring many stakeholders together around creative game making. Students get to pursue interests in gaming in a constructive context that builds valuable 21st century skills. Organizations and educators get to share ideas and workloads, connecting and supporting each other's students as well as learning best practices from each other. And educators also get to try out new activities with interested students.

The skills in the [P21 Framework for 21st Century Learning](http://www.p21.org/about-us/p21-framework) (<http://www.p21.org/about-us/p21-framework>) align with current game-based learning research. The P21 Framework includes the necessary skills students should possess to be able to compete in today's global economy, which include critical thinking, problem solving, communication, collaboration, creativity, and innovation.

The interconnected systems of games model 21st century skills, such as design thinking and systems thinking. According to [Rufo-Tepper, Salen, Shapiro, Torres, & Wolozin](https://mitpress.mit.edu/books/quest-learn) (<https://mitpress.mit.edu/books/quest-learn>), when students are making and playing games, they “pay explicit attention to the status of games as dynamic learning systems, as rule-based models supporting specific ways of knowing and doing.” The ability to understand interconnected systems is a 21st century skill that games can be used to teach effectively. As the [Framework for 21st Century Learning](http://www.p21.org/about-us/p21-framework) states (<http://www.p21.org/about-us/p21-framework>), a systems thinker is able to “analyze how parts of a whole interact with each other to produce overall outcomes in complex systems.

Playing, modifying existing rules, and designing new games are methods to teach systems thinking experientially. Part of the engagement of games includes the persistence required to find solutions to meaningful problems. Game-based learning proponents note the potential games have in bolstering a child's creativity, innovative thinking, and problem solving abilities—all of which are 21st century skills. The Moveable Game Jam model was specifically designed as a low cost format that could boost these 21st century skills as much as possible in a one-off event.



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A Brief History of Game Jams

Sande Chen

On any given weekend, there is a game jam happening somewhere in the world. Professionals and students alike converge on these game jam sites to further their skills, to foster community, and to experiment with game design. These game jams may focus on a social cause or a specific technology. The developers may want to explore a theme and use a word or some starting point to spark creativity. No matter the direction, the goal of the participants is to create a playable game within the constraints in a relatively short period of time.

The earliest known game jam, dubbed the 0th Indie Game Jam, was founded by Chris Hecker and Sean Barrett in March 2002. Intent on encouraging innovation and experimentation within the game industry, they invited a select crowd of well-known designers and programmers to develop games for a specialized engine. Indie Game Jam, which continued in subsequent years, tended to focus on technology-driven constraints. Participants worked on their own, on multiple projects, or in a team.

The following month, in April 2002, Ludum Dare (from the Latin “To give a game”), the first virtual game jam, was launched. The idea for it had grown organically from the Internet forum of the same name. Ludum Dare, which now has solo and team tracks, challenges participants to create a game based on a theme rather than conforming to a technological constraint. Themes are suggested and voted on by the Ludum Dare community. Its community also determines which games are the winners, according to various judging standards. Though source code is required to be uploaded, participants retain all rights to their games. In more recent years, participants have broadcast livestreams on Twitch or created a time-lapse video of their game development progress during the event.

These early examples from 2002 were informal affairs. Nordic Game Jam, which would later grow to be one of the largest single-site game jams in the world, began in 2006 as a

collaboration between the Denmark chapter of the International Game Developers Association (IGDA), IT University of Copenhagen, and local game companies. The organizers there emphasized the spirit of collaboration and sometimes would not release the theme until teams were formed. Once given the theme and restrictions, teams had just 48 hours to complete a working prototype. Participants of all skill levels were encouraged to come, stressing the educational aspect of the game jam.

Inspired by Indie Game Jam, Ludum Dare, and Nordic Game Jam, Global Game Jam (GGJ) holds the Guinness World Record for the largest game jam in the world. Founded by Susan Gold, Ian Schreiber, and Gorm Lai in 2008, GGJ is a multi-site game jam with many of the same characteristics of its predecessors. Participants may work alone, though teams are more common, to create a game based on a theme and optional diversifiers. In 2017, over 36,000 participants in 702 sites in 95 countries attended, making over 7000 games in one weekend. The games, all available for play on the GGJ site, range from tabletop games to virtual reality, Kinect games, handhelds and tablets, console games, and traditional PC games.

It's clear why educators often recommend that aspiring game developers attend game jams. Not only do the events foster creativity, collaboration, and community, but they also instill the fast prototyping and iterative design culture found in many game companies. Participants learn the lessons of "failing early" in order to perfect a game. They must work with teammates within a time constraint and are exposed to a diverse set of skills and personalities. They come face to face with production realities, which force them to decide which game features remain or must go. There may not be any monetary gain from game jams, but the entire experience of completing a game and learning from others may be priceless.

PART II

How to Run a Game Jam

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General Game Jam Format

1. Intro icebreaker (30 min)
2. Theme partners presentation (90-120 min)
3. Lunch (30-45 min)
4. Introductory activity to the Principles of Game Design (30-45 min)
5. Open design time
 - Session 1 (50 min. at a station of the student's choice)
 - Break (10 min)
 - Session 2 (50 min. at a second station of the student's choice)
6. Feedback survey for students, Share Out prep time for staff (15 min)
7. Share Out event (30 min)

Based on the above agenda, a Moveable Game Jam event should go for about six hours. The event has three essential components: an introductory section, an open design time, and a share out. The theme partner presentation offers an ideal way to bring a theme to the event, but is not necessary if you would like to run a shorter three- to four-hour event.

Introductory Section: This component starts with a welcome and introduction of staff, but the majority of the time is spent in a game design activity. That activity serves two purposes, first to act as an icebreaker, and second to introduce students to principles and terminology in game design. Staff and students should be able to refer back to concepts and terms introduced in this activity throughout the event.

As part of the introductory activity make sure students are familiar with the 5 parts of a game, or sometimes called the 5 principles of game design:

- **SPACE:** Where the game takes place.
- **GOAL:** What is the objective of the game? What are you trying to do?
- **COMPONENTS:** What are all the objects or actors in the game?
- **MECHANICS:** What actions take place in the game. What are the verbs involved?

- **RULES:** What can or can't you do in the game? What defines boundaries? Does play happen in real time or do you take turns?

Be sure to ask students what they already know about these terms or see what educated guesses they may have before giving the answers away.

Open Design Time: The meat of the event. Students choose stations to attend to build designs of their choice. Student agency is important here, which means both allowing students choice of where to go, and what to do at each station. No two student creations should look alike- this is a chance for a student to create something new and original with staff guidance and support. The main portion of this book describes activities to be used in this portion of the game jam.

Share Out Event: Facilitators, volunteers, and (if available) parents will spend the final 30 minutes checking out the student's game designs in some kind of share out format. This allows everyone a chance to both share their design with others, and to get personalized feedback from other peers, staff, and parents.



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Three Introductory Activities

Picture Talk, You are the Game, Hack Tic Tac Toe

This section describes three activities that are used with the whole group in the beginning of the game jam section. These activities all have been thoroughly tested in the game jam model and work well for this format. In particular, each of these activities has the following features: 1) introduces students to the 5 principle of game design, 2) works well for any sized group of any age, 3) is material-light, making it easy to do in any given space, and easy to clean up and transition to the main activity section, 4) allows structured creativity in a short period of time, and 5) fits in a 45 min period including time for a few groups to present their designs.

Whenever possible, we linked to outside documents needed for the activity to keep this guide as concise as possible. We either linked to those documents' original locations, or when necessary we placed the documents in this openly shared [Google Drive Folder](https://drive.google.com/drive/folders/0B9kunZCnTE5HeXZ0SkgxLTBWMU0) (<https://drive.google.com/drive/folders/0B9kunZCnTE5HeXZ0SkgxLTBWMU0>).

PICTURE TALK

(Originally developed by Institute of Play)

DESCRIPTION

- A light, fun and very engaging introduction to games and game modding through group play

SET-UP

- Printed and cut out blank cards
- Printed and cut out filled in cards
- Pens, pencils, or colored pencils
- Scratch paper
- All materials and instructions for the game are in this folder:

Activity

- Introduce the 5 parts of a game. (10 min)
- Call students up to play the game as the describer, explaining the rules. (10 min)
 - The entire group acts as the copiers.
 - Make sure to demo some easy, medium, and hard cards.
 - Alternatively, you can have kids play in small groups.
- Task students with making some of their own cards. (10-15 min)
 - Pass out the blank cards at this point.
 - Note that in the framework, we are modding the game by making our own components.
- Students can then act as a describer for other student-made cards. (10-15).
 - Take the time after a correct guess to have the group reflect on what made that card either a good or bad one, or what made it easy or difficult. Develop their ability to see games with a critical eye.

YOU ARE THE GAME

(Originally developed by Kevin Miklasz and Alex Fleming specifically for Moveable Game Jams)

DESCRIPTION

- A structured game design activity that allows students to design their own analog game, played with their own body, by shaping the core elements of the game.
- Allows ample space for each student game to be original and different from the rest, without being too open-ended.

SET-UP

- Scrap paper
- Pencils, for writing down rules
- Chart paper or whiteboard, with the following prewritten
 - SPACE: this room
 - GOAL: Get the most points
 - COMPONENTS: Hands, Feet, Paper
 - MECHANICS: Walking, Throwing, Guessing
 - RULES: ??

Activity

- Introduce the 5 parts of a game. (10 min)
- Introduce the constraint for their game. (5 min)
 - Bring out the whiteboard or chart paper. Note that the Space and Goals are already set for their game, but we don't know what it means to "get points" and they'll need to figure that out.
 - For the Components and Mechanics, their game has to involve at least one of the three items listed for each of those categories (if can involve more than one). So the game must be played with Hands, Feet, or Paper (pencils not allowed) and must involve either Walking, Throwing or Guessing.
 - There are no constraints on the rules- they need to come up with whatever makes their game work.
- Break students into groups of 2-4 to design their game. (20 min)
 - Encourage creative thinking and remixing- one of the great parts of this activity is how different every student's game is, even though they start with the same constraints!
- Share out games. (10 min)
 - You can usually have 3-4 groups share out their game by explaining the rules and demoing gameplay.
 - After the demo, make sure groups point out with components and mechanics they chose to use.

HACK TIC TAC TOE

(Originally developed by Global Kids)

DESCRIPTION

- A quick modding activity around a classic game, that is highly structured around the 5 parts of a game
- A special note- this activity works equally well with Rock, Paper, Scissors, and then does not require the scratch paper and pens/pencils

SET-UP

- Pens, pencils, or colored pencils
- Scratch paper
- Whiteboard or chart paper, with the 5 principles of game design written on it

Activity

- Introduce the 5 parts of a game. (10 min)
- Have students play tic tac toe. (2 min)
- Break tic tac toe into its game design principles on the whiteboard. (5 min)
 - Goal: Get 3 in a row
 - Space: 3×3 grid, on paper
 - Components: x, o, pencil, 2 players
 - Rules: take turns, if no one can play it's a draw, etc
 - Mechanics: drawing
- Challenge class to redesign this classic game. (3 min)
 - Note that this game isn't too fun- how could they change it to make it more fun?
 - Have students pick one principle of Tic Tac Toe to redesign, to make the game more interesting. They will probably have to change more than just that one component to make the game playable, but have them start with one thing they want to change (change the Space by making a bigger grid, change the Rules by making simultaneous turns), and then move on from there.
- Students redesign tic tac toe in pairs. (15-20 min)
- Share out of designs. (5-10 min)
 - You can usually have 3-4 groups share out their game by explaining the changes they made and demoing gameplay
 - After the demo, make sure groups point out with principle they initially chose to focus on, and what other principles they also had to change as a result

Tips and Tricks for Running a Successful Moveable Game Jam

Incorporating Playtesting

Playtesting is a crucial component to the events. We have tried many formats of encouraging playtesting in our events, and no method has proven best. Sometimes playtesting is baked into the station itself, sometimes playtesting has occurred outside the stations in a designated playtesting space. Playtesting should always be done by the students creating the game, but can also be done by other students at their station, other students at a different station, or by the facilitators running the event or station. Playtesting can also be formalized or be done very informal. Deciding between these concerns depends on the activities being used and the layout of the physical space. But one thing that should always occur is that the facilitators should reiterate a heavy emphasis on playtesting to students throughout the event.

Number of Stations

It's also worth noting that the activities themselves are meant to be very modular, and that any given game jam could use any four activities, and that any given classroom or afterschool setting could also incorporate these activities too. In this guide, the activities are grouped by theme and so work well in these pairings for themed events. It has been noted that for a game jam, it works well to give students sufficient choice to specialize in their interest, and 4 stations really provide that best. Two or three stations don't really provide enough choice, and more than four really creates greater staffing needs without necessarily addition benefits to student agency. If you cannot run four stations, only running one station, especially with a smaller group of students, is recommended.

Facilitation Tips

When creating and leading an activity make sure that you have both an easy entry point for a student to engage in your activity with little to no previous experience, and more challenging options for those who have some experience or who move through the content more quickly. It can be difficult for young people to come up with ideas for activities that are too open ended, so

make sure to refine your activity so that the creative decisions are focused, for example, creating a scratch game from the ground up can be intimidating to those who do not come to the event with an idea in mind, but remixing an existing game by modifying one or two specific mechanics is much more doable.

Whenever possible, try to take advantage of peer learning and peer leadership. Those who speed through an activity can help explain what to do for those who are having trouble getting started.

When leading an activity, make sure to stay engaged with each student as they are moving through the activity, don't simply show them how to use a tool and expect them to fly completely on their own. Students can benefit from guidance applied in small doses along the way to being able to create their finished product. Check in periodically as they move through the steps of the activity. Ask questions that connect the activity the 5 principles of game design covered in the intro activity at the start of the day like "What are the components of your game?" and "What mechanics does your game have?"



Sharing Out Student Work

We've run several different "share out" formats. We typically choose the format based on the layout of the space, the age group of students, the number of attendees, and the types of activities used. Here are some of the formats used:

Group presentations: Students that want to present their games can do so in front of the entire group. This format works best when your physical space has a stage that is viewable by all participants, and when your participants are not shy presenters. This also works best with small events- with larger events, you won't have the time to get to every student and some will feel left out with this format.

Gallery Walk: The event organizers lead the entire group around from station to station. The

facilitators at each station describe what their station was about, and 1-3 students present their work. Typically the facilitators will specifically reach out to students with particularly interesting projects asking them to share, but like the first format will not give every student the chance to share their work. This is also nice because it let's everyone see the work of every station. This is probably the most flexible format that can work with most group sizes and age groups and has been used the most by us as a result, though it can't work in every physical space. It works especially well with stations that have one group-made game.

Science Fair: In this format, each student has the option to either a) stand by a station and present their prototype or b) walk around and see other students' prototypes. Facilitators and parents also act as walkers. This format is scalable to any number of attendees, and works best with stations that feature individual work. It also works well with younger students, who are more likely to have parents show up and to want to show parents their individual work. This also works best in places where all stations are in one open space, and it's easy to walk between stations. The biggest plus to this format is that every student who wants to share their work can do so. A warning though: this is definitely the most chaotic share out format, but works great when done well (there is such a thing as productive chaos).

Group discussion: Here, the event organizers prepare a few reflection questions to pose to the group as a whole, and have students answer questions in a group discussion. This can work with any number of attendees of any age and any station types, and works in most physical spaces. The main issue is that it is probably the least engaging share out format and gives students very little chance to showcase their actual work, and so we have mostly reserved this one if none of the other share out formats are feasible, or if we run short on time.

PART III

Universal Game Jam Activities

This section describes nine activities that introduce different aspects of the game design process, in contrast to the later sections that teach the game design process in reference to a specific social or civic issue. This section features good approachable activities that allow practice of different specific elements of game design, or ones that act as good introductory activities to new tools.

The first three activities (“Remixing Fluxx”, “Classic Characters Makeovers” and “It’s the Remix”) are described in a generic way in this book, but are easily adaptable to focus on different topics or themes, including the themes used in this years G4C Student Challenge or any theme you might want to come up with. In other words, a thematic element can be added quite easily to these highly flexible activities.

The next three activities (“Games Based on Movies”, “PixelPress and iPads”, and “Sonic Scavenger Hunt and Monster Mashup”) offer an introduction to the beginning aspect of the game design process, idea formation and prototyping. These activities focusing either on diving deeply into one specific aspect of games design (like level design with “PixelPress with Ipads” or audio with “Sonic Scavengers”), or focusing in a broad way on developing game concepts into mechanics (like in “Games Based on Movies”).

The final three activities (“Mod a Classic Video Game: Pong”, “Modding Musical Chairs”, and “BrickBreaker”) are all focused on modding, or changing up, existing games. By starting with a well-formed game, student are able to learn about games as systems, and how changing one element requires rebalancing other elements to keep the game well structured. This focuses more on the later stages of the game design process: improving an existing design through iteration.

7

Remixing Fluxx (Card Game)

Theme-able Activities

(Originally developed by AJ Webster & Christy Durham; Presented by Matthew Farber & Kevin Miklasz)

AGE

- Elementary/Middle School

GOAL(S)

- Kids redesign a version of the card game Fluxx, based around a specific theme

SET-UP

- Printed blank card sheets
- Pens, colored pencils
- Index cards labeled for each suit: Keeper, Goal, Action, New Rule
- Black markers
- 8 copies of Fluxx 5.0 (<http://www.looneylabs.com/games/fluxx>)
- Comparison chart showing all the main Actions and New Rules in all Fluxx versions, and which versions have which cards. You'll see that many decks have many cards in common, though they don't all include EVERY Action or New Rule we've come up with
- *Author's Note:* This is a chart of what we have loosely called "complexity factors" for each version. It also includes the ratio of card types for each version, so you can see there is some variation there as well: <https://docs.google.com/spreadsheets/d/1npMl3jGhQr-HpTAtQAtvk-NLSTk2lmbZ-McMtXtDCt8/edit?usp=sharing>

WARM-UP

- Introduce Fluxx, and have 4 students play a round of the game, while everyone else

watches. (15 min)

- Break game into 5 components, following what happened in the intro activity. (5-10 min)
 - Goal – Match your keepers to a goal card
 - Components – The cards in the deck
 - Space – Hands of cards and play area
 - Rules – Draw 3, play 1. Plus new rules added by the components
 - Mechanics – Drawing and playing cards

MAIN ACTIVITY (30 min)

- Students begin redesigning their game as a group. They should start with designing the Components or Nouns. Then can work on the Rules, or Verbs.
- Explain that for this activity, the Mechanics, Space, Goal, and base rules will stay the same. It is their job to redesign the game by Changing the components (i.e. cards) in the deck. This can involve adding new rules, and will definitely involve adding new goal and keeper cards (though the way to win stays the same).
- You can encourage students to subdivide tasks. For example, each group may want a “producer” who keeps track of all the changes being made on a sheet, and “writer” who writes names on the cards and writes out the rules” and an “artist” who makes the drawings on the cards. All team members should be encouraged to brainstorm together, at least in the beginning of the period. Towards the end, they might focus more on their individual roles.
- The selection of themes is a pretty adaptable part of the lesson. You can constrain or leave open the selection of topics as much as you wish. For example, the themes can be as specific as “something we covered in biology in the last week” or more general like “Based around some book that you have recently read” to having no constraints at all. I’d recommend supplying a theme, as having students make a choice about the theme can often consume an overly large period of time, and potentially not add that much to the experience.
- If you offer no constraints, you may want to offer a few example themes, or have a poorly constructed deck made to illustrate the idea, but done poorly so that students feel inspired to make their own idea rather than copy yours. For example, maybe you make a theme of “colors”, with the keeper cards being sets of complimentary colors. Here’s another example of a not so simple one, done on the theme of Hamlet.
- *Author’s Note:* The biggest takeaway was how big a deck has to be to be playable- in an hour, a group of 5 students working on the same deck theme made about 30 cards, which was a relatively productive hour. They tried playtesting the game, but simply had too few

cards to play. Online research revealed that the developers of the game recommend about 100 card in a set (with certain ratios of card types). After the second group made cards for another hour, on the same theme as the first group, we then had enough cards for a playable game (or at least for one that wasn't too broken due to too few cards). Having both groups contribute to one game idea worked well.

- Overall, this station had a very nice and direct link to themes, and it can accommodate many different kind of themes (as the game itself was made in exactly that way). For a theme-aligned station, you can simply select the theme ahead of time, and then have the students work on making one combined deck for that theme. In our experience a group of 15 or so students can make a full 100 card deck in about an hour.
- If time allows, let groups playtest each other's game and offer feedback.
- Question prompts:
 - What makes these keepers similar or different?
 - How can you sort them into groups?
 - I see you have used this keeper in one goal- are there any other cards it is also related to, so that it can fit into two goals?
 - What are some major disasters in your theme?
 - What are key moments, emotions, and/or events in your theme?
 - How can those be turned into a new rule?



8

Classic Character Makeovers (Drawing)

Theme-able Activities

(Developed by the Museum of the Moving Image)

AGE

- Elementary/Middle/High School

GOAL(S)

- Give an existing classic video game character a makeover as your own new character.
- Understand video game characters

SET-UP

- Free drawing application: Tayusi Sketches
- Laptops to play some classic games
- Chart paper grid
- Scratch paper
- Drawing materials (crayons, markers, colored pencils)

WARM-UP

- Warm-up (5 min)
 - Discuss some of the group's favorite game characters and what they like about them. How can that inform the kind of characters learners want to create?

MAIN ACTIVITY

- Introduce Character Design for Games Session (20 min)
 - Where do sprites come from? A game designer may have an idea for a character in

mind before they ever begin programming the game. Oftentimes, the design of the character relates directly to the story and mechanics of the game. What games come to mind?

- We're going to be playing some classic games. During the time we're playing the game, keep in mind the design of the characters, story, and mechanics.
- Randomly assign some classic games to play in small groups. (We selected *Pac Man*, *Frogger* and *Super Mario Brothers*)
- Break into large groups by game. Fill in a chart paper grid describing the mechanics, the story, and the movable parts of the character for the game you played. This is a good opportunity to review the different parts of a game.
- Hang your grids and discuss as a larger group: What were the mechanics in the game you played? Did the mechanics correspond to the way the character looked in any way? What did you like/dislike about the character? Was there a story in your game? If yes, what was it? If you were making your own version of this game, what would the character look like?
- Character Make-Over (20 min)
 - With your game's mechanics (e.g. Our character just eats.) and/or story (e.g. Our character is out to rescue a princess.) in mind, make-over the character from your game. Don't be afraid to add design constraints, add a specific challenge inspired by the grid discussion. (We decided to give them the option of using digital tools or arts and crafts materials.)
- Character Share (5 min)
 - As students complete their characters, copy and prepare them onto a laptop for projection for share out. During the last five minutes, watch a slideshow of their characters and ask students to give shout-outs to characters.

Worksheet for 11/11/2020

Episode	Character	Plot	Theme

THE END OF THE WORLD



THE END OF THE WORLD

THE END OF THE WORLD

9

It's the Remix (Scratch)

Theme-able Activities

(Developed by Mouse)

AGE

- Elementary (see optional version)/Middle/High School

GOALS

- Play and remix a simple arcade style game in Scratch to transform it into a new variation.
- Practice modifying games
- Increase Scratch expertise

SET-UP

1. 5-6 Laptops and power cords
2. Internet Access
3. Open a browser window to bit.ly/mouseghostblast
4. Turn off computer sound
5. bit.ly/pancaker (optional)

WARM-UP

- Play Ghost Blast (5 min)
 - Facilitator guides students to Scratch game “[Ghost Blast](http://bit.ly/mouseghostblast)” (<http://bit.ly/mouseghostblast>) and allocates five minutes to playing the game. If there aren't enough computers, instruct students to rotate playing rather than huddling up on one computer.
- Click “See Inside” to see the code behind the game
 - Facilitator shows students the different sprites in the lower left hand corner

- Facilitator shows students the costume tab for each sprite and guides them to the costume editor and to the button to select sprites from the sprite library.

MAIN ACTIVITY

- Remix main character:
- The facilitator guides students to the sprite called “goodguy” and directs students to change the costume to either a new image from the scratch image library, a user created image using the costume editor, or an image downloaded from a google image search. Those who use a google image search will need to use the eraser tool to cut out any white space or edges from their images.
- Resize main character:
 - Test student games to see how the size of the new “goodguy” sprite measures up and adjust the size of it accordingly. The facilitator can point out the “grow” and “shrink” tools in Scratch.
- Students repeat steps 1 and 2 for the two “badguy” sprites, creating new costumes and playtesting the different new enemies.
- Students remix the backdrop, countdown sprites, title sprite, play button and more until the game is totally transformed.
- Students can log in with their own Scratch account or create a new Scratch account to save the game.
- Pancaker (for younger students): For younger students who may be having trouble with this game try remixing the pancake sprite and background for Pancaker (bit.ly/pancaker) instead.

10

Games Based on Movies (Board Games)

Design Process Focused Activities

(Developed by Museum of the Moving Image)

AGE

- Middle/High School

GOAL(S)

1. Create original games inspired by your favorite movies, and challenge yourself to transform classic movie plots into a fun, playable game of your own design!
2. Experimentation with the game design process via the constraint of adapting an existing narrative.
3. Exploration of games inspired by movies and games created as a type of movie merchandise.

SET-UP

- Index cards w/movie title and plot description on one side
- Markers
- Pre-cut butcher paper (36×36 or smaller)
- Rulers
- Pencils
- Index cards
- Scissors
- Game pieces
- Tape
- Printed images of board games inspired by movies (taken from the MoMI collection for this activity, but you can find your own too)

- 4-5 movies (i.e., *Romeo and Juliet*; *Lion King*; *Mean Girls*, depending on ages of attendees)

WARM-UP (10 min)

1. Show students images of board games based on movies
2. Ask students to identify things the games have in common (board games, trivia, etc.).
3. Ask students to think about challenges a game designer might encounter when turning a movie plot or concept into a game?
4. Ask students to create groups of 3-4.
5. Each group will choose a card with a movie title (plot description included) that will be the focus of their design challenge: design a board game inspired by the movie plot
6. Introduce students to available materials.
7. Introduce first step; Use the next 5 minutes to develop 1-2 concepts for your game. These will be shared with the larger group. (Optional) larger group voting on concepts.

MAINACTIVITY

1. Game concept brainstorm & share-out (5 min):
 - Circulate and check in with groups.
 - Ask small groups to share out their ideas with the larger group.
 - Summarize each for the larger group
 1. Optional: Facilitate voting. Ask 1-2 voters to share what informed their vote.
2. Game design (45 min):
 - Instruct small groups to get started.
 - Let groups know how much time they have until debrief.
 - Circulate and check in with groups.

11

PixelPress and iPads (PixelPress)

Design Process Focused Activities

(Developed by Coderdojo NYC)

AGE

- Elementary/Middle

GOAL(S)

- Design a playable level in a platformer game.
- Practice iterating on designs.

SET-UP

- 3-5 iPads with Pixel Press Floors Installed
- Pencils with erasers
- Straight Edge Rulers
- Sketch Guide (<http://projectpixelpress.com/floors-sketch-guide/>)
- Blank Sketch Sheets (<http://projectpixelpress.com/floors-sketch-guide/>)

WARM-UP

- Introduction to PixelPress. (5 min)
- When the students are seated they should be distributed a sketch guide / a blank sketch sheet. Briefly explain to them what PixelPress is and pass around the iPads with PixelPress installed to give them a good idea of the games they can create.

MAIN ACTIVITY

- Design Your first level (20 min)

- Tell them to draw and only draw one level of their game. This task should take about 20 minutes. Make sure they are drawing straight lines as the iPad will have a difficult time reading the sketches if they don't.
- The handouts are meant to be a comprehensive reference guide for students when drawing, so that you don't have to worry as a facilitator about them remembering everything you tell them. Instead, you can focus on filtering around the room and helping individual students as they dive right in.
- As they are drawing look at their sketches and make sure things make sense. Is the terrain drawn properly? Is the level impossible to beat? Is the level too boring and easy?
- Make sure to remind students that the character is only 1 box high and can only jump at most 6 boxes. Show them how to draw certain parts of the game, like the moving bricks.
- Scan and playtest level (10 min)
 - *Author's Note:* Once they are done drawing the first level, they will come to you to have their game scanned into the iPad. Scanning can sometimes be difficult to achieve- we found it best to have facilitators handle the scanning at 3-4 stations when kids were done drawing to avoid unnecessary frustration.
 - Show them the design editor so they can fix their app on the iPad. Now let them play the game and have other people play the game.
- Modify and improve (15 min)
 - This activity benefits from a quick design to playtest cycle, and can more than other stations allow multiple iterations on designs. Encourage students to either continue refining their first level, or create the next level based on what they learned.

12

Sonic Scavenger Hunt and Monster Mash-Up (Yellofier Electrified)

Design Process Focused Activities

(Developed by SOH NUP EDU with DJ Spazecraft)

AGE

- Elementary/Middle/High School

GOAL(S)

- To collaborate in a music jam by researching the connections between science, storytelling & sound. Students (like Scientists, Biologists, researchers, & archeologists) take “samples” from sound making objects (as artifacts) & then sequence the collected sounds in the iPad Yellofier app in small groups.
- Solve riddles of sound by collaborating. Discovering sounds to record then Mash-Up & Jam out a Frankenstein monster song together in a freestyle performance!

SET-UP

- A portable music studio, equipped with percussion toys which includes specific tech & applications. 4-6 iPads (or Android Tablets) with “sound sampling & sequencing” applications using [Yellofier Electrified](https://itunes.apple.com/us/app/yellofier-electrified/id916258097?mt=8) (<https://itunes.apple.com/us/app/yellofier-electrified/id916258097?mt=8>). The interface is set up with a recorder page, a 16 slot grid as each 1 bar division leading to a step sequencing page, as well as an “effects” section that beg to be explored since their buttons are cool colorful shapes that allow you to create visual patterns with rhythmic looping results. The pages are clearly laid out, & the “Yellofier Electrified” application is also cross platform. [Werkbench](https://itunes.apple.com/us/app/werkbench/id522262614?mt=8) (<https://itunes.apple.com/us/app/werkbench/id522262614?mt=8>) can also be used to illustrate a “DJ” style interface, as that app is setup as 2 “decks” (A & B) with slider that fade

each “deck” volume up or down (each “deck” also has up to 4 “decks” that can be “chained” together to form longer patterns.

- Small instruments/utensils: anything that can make recognisable sounds by pressing, squeezing, swiping, hitting, tapping &/or hovering (such as DIY [Pocket theremin](http://www.popsci.com/diy/article/2008-04/build-pocket-theremin-cheap) (<http://www.popsci.com/diy/article/2008-04/build-pocket-theremin-cheap>) using Photo Cell etc.)
- Children’s audio books (the ones with the strip of images down the side that make sounds when pressed), percussion toys such as: rainstick, egg shaker, animal shaker, bells, pieces of metal that can be scraped or struck together, claves, sandpaper/wood to scrap, childrens wood blocks, mbira finger piano, childrens musical toys (DJ, piano, computer, phone etc).
 - *uthor’s Note:* I also encourage the use of amplified personal sound making electronics such as Teenage Engineering [Pocket Operators](https://www.teenageengineering.com/products/po) (<https://www.teenageengineering.com/products/po>), DIY photo-synths (see link above), & [Korg Little Bits](https://littlebits.cc/kits/synth-kit) (<https://littlebits.cc/kits/synth-kit>) modular synth kits. You plug in the device of your choice into a small bluetooth speaker so you can record into an iPad directly from the speaker to get a strong amplified signal.
- A handout that lists the specific “sound objects” for teams to physically find & record into the Yellofier app.
- A handout that details the audio processes they’ve experienced (sampling, sequencing, effect processing etc) & where they can find the songs they made online to listen to & share with their social networks, embed on websites etc.
- Very cool [Bob Moog Synthesis Terminology](http://moogfoundation.org/learning-synthesis/synthesis-fundamentals/) (<http://moogfoundation.org/learning-synthesis/synthesis-fundamentals/>) Placards at the station table explaining scientific process’ such as: Harmonics, Filters, Oscillators, ASDR (Attack, Sustain, Decay, Release) etc.

WARM-UP (5 min)

- Students are officially deemed “Tone Scientists” of Planet Earth (insert your geographic area here) by SpazeCraft One, then work in teams to find/create sounds, sample & sequence then create a mix collaboratively, a monster mash-up with the other teams.
- Tone Scientist Groups will have to physically look & listen around the space to find ways to make the “type” of sounds listed in their [scavenger item check list](https://drive.google.com/file/d/0B_y9iN_9Xu4iQ3Zsd01LQmNoY0k/view?usp=sharing) (https://drive.google.com/file/d/0B_y9iN_9Xu4iQ3Zsd01LQmNoY0k/view?usp=sharing). We will record/Play a live “jam/mash up” with all groups findings in the Master Monster Mash MIX.
- To make this competitive, points can be tallied for all sounds collected within the time

limit given, team with the most points “wins” & gets to be the 1st team to “Master the mix” (they can tell other teams to lower their sound/samples in the 1st jam so that other sounds are more prominent in the mix at different times & make decisions like that)

MAIN ACTIVITY

- Overview of the application “Yellofier” functions. (10 min)
 - Recording samples page and interface layout: where the microphone is, etc. transport functions for playback, stop, tempo (BPM), and page menu.
 - Edit page: Step sequencer, effects, 16 step grid, sample banks, audition sounds
- Review list of “Sonic Detritus” to hunt for, and sampling begins. (30 min)
 - The Yellofier app has 2 banks with 8 sound triggers in each bank. Groups make up to 16 unique sounds that reflect the list of sounds to hunt for and reports back to the Landing Padd for further instructions and to check list their sound collections.
- Chain reaction. (20 min)
 - Groups plug in their iPad’s into a 5 way headphone splitter into a portable speaker such as the [Samson](#) or smart board speakers (by using a [Stereo RCA to 1/8th inch cable \(http://www.guitarcenter.com/Bespeco/SLYMPR180-6-Ft-35-mm-Right-Angle-Stereo-to-2-RCA-Male-OFC-Y-Cable.gc\)](http://www.guitarcenter.com/Bespeco/SLYMPR180-6-Ft-35-mm-Right-Angle-Stereo-to-2-RCA-Male-OFC-Y-Cable.gc))).
 - Facilitator sets off a “chain reaction” of sequences on each iPad one at a time by triggering each play button “ON the 1 beat”, the facilitator then goes to the next iPad and triggers in the next sequence, etc. until all iPads are done.



13

Modding Pong (Scratch)

Modding Focused Activities

(Developed by Museum of the Moving Image)

AGE

- Middle/High School

GOAL(S)

- Modify an existing arcade game.
- Understand the X/Y axis
- Modify Scratch scripts

SET-UP

- Print game [worksheet](https://drive.google.com/file/d/0B6WZ67Ny4yPcNExHNkRkZENPMTQ/view?usp=sharing).
(<https://drive.google.com/file/d/0B6WZ67Ny4yPcNExHNkRkZENPMTQ/view?usp=sharing>)
- Laptops
- Go to <https://scratch.mit.edu/projects/10128515/>
- Extra resources that you can print out for reference:
- Rules (<https://drive.google.com/file/d/0B6WZ67Ny4yPcQzINcEJLVkd1OTA/view?usp=sharing>)
- Obstacles (<https://drive.google.com/file/d/0B6WZ67Ny4yPccEVvcFhEOExEMjA/view?usp=sharing>)
- Keeping Score
(<https://drive.google.com/file/d/0B6WZ67Ny4yPcQ1dtVGhtelhxRG8/view?usp=sharing>)
- Game Space
([https://drive.google.com/file/d/0B6WZ67Ny4yPccE5UNGFWaDJQTms/view?](https://drive.google.com/file/d/0B6WZ67Ny4yPccE5UNGFWaDJQTms/view?usp=sharing))

WARM-UP

- Introduce Pong-inspired game (15 min)
 - Distribute game [worksheet](https://drive.google.com/file/d/0B6WZ67Ny4yPcNExHNkRkZENPMTQ/view?usp=sharing) (<https://drive.google.com/file/d/0B6WZ67Ny4yPcNExHNkRkZENPMTQ/view?usp=sharing>). Ask group to identify how their elements are at work in ping pong.
 - Goal/challenge
 - Components/space
 - Rules
 - Mechanics

MAIN ACTIVITY

- Introduce Programming & Scratch Interface (10 min)
 - Discuss design of the game (10 min)
 - When developers create digital games, every element of the game—the goal, components, rules, mechanics, and space—need to be defined by the program. The program is like a script that tells the computer what to do. In this case, all the rules of Ping Pong had to be programming into a digital version of the game.
 - If we are writing a script for one of the paddles, what do we need to tell it to do? Open up the script for one of the paddles, and explore Scratch interface:
 - Sprite (the component)
 - Script (how we “write a sentence” to tell the sprite what to do)
 - Stage (where the action takes place)
 - x/y axis (helpful to point out directions, and how these are used in the script)
 - Modification (20 min)
 - Play the game – What are some of the problems or glitches you encounter? (crossing sides, no boundaries, no score, boring graphics, no sound) How could you change this game to make it more playable? More fun? More challenging?
 - Distribute Scratch cards. Each student will modify at least one element of the game
1. Space (make a more interesting)
 2. Components (add obstacles and change difficulty by changing speed & movement of the ball)
 3. Rule (cannot cross to the other side).
 4. Goal (add scorekeeping)** only introduce to more advanced groups

- After they work through the steps on the Scratch card, they can create keep working on modifications of their choice.
- Circulate and help.

14

Modding Musical Chairs (Physical Game)

Modding Focused Activities

(Developed by Institute of Play)

AGE

- Elementary/Middle/High School

GOAL(S)

- Modify an existing game
- Develop playtesting and feedback skills

SET-UP

- Chairs
- Constraint Cards (make them yourself, see description below for examples)
- Playtesting feedback forms

WARM-UP

- Review the Rules to Musical Chairs (5 min)
 - Review how Musical Chairs is played normally so everyone can get on the same page.
- Assign teams and roles within each team (5 min)
 - Time keeper (to make sure the group stays on track in the given time constraint)
 - Facilitator (make sure every voice is heard!)
 - Feedback lead (to make sure the group has a plan for how to rollout their game and is ready to do so)
 - Playtest provoker (constantly encourage team to playtest their ideas)

MAIN ACTIVITY

- Brainstorming and prototyping (20 min)
 - Each group is given their constraint card (each aligned to a part of a game – space, mechanics, rules, goals, components, challenge) and given time to start brainstorming.
 - Groups do NOT have to use it. It is just a place to start for inspiration. Sample constraints:
 - Make it collaborative (change the rules)
 - No chairs (change the space)
 - Incorporate ball (change the components)
 - Incorporate handkerchiefs (change the components)
 - Everyone stays seated (change the mechanics)
 - Not everyone walks at the same time (change the rules)
 - Teams should start brainstorming immediately and should be playtesting within their group or with facilitators after 5 minutes .
 - Facilitators should rotate to help groups.
- Group Playtesting (25 min)
 - Model playtesting process with the big group.
 - Have the feedback lead ask for one glow, grow, question, idea
 - Distribute one playtest feedback form per team. This is how the feedback lead should record feedback from playtesters.

15

BrickBreakers (Stop Motion Video)

Modding Focused Activities

(Developed by Museum of the Moving Image)

AGE

- Middle/High School

GOAL(S)

- Learn stop-motion movie-making skills.
- Modify an existing arcade game

SET-UP

- 3-4 labtops for initial group play (can be done on one big screen as a group)
- sticky notes
- markers/colored pencils
- paper
- scissors
- filming setup
 - Camera connected to computer with stop-motion software installed
 - Filming screen

WARM-UP

- Introduction to Brickbreakers (10 min)
- In small groups, students will play an online version of the arcade classic “[Super Breakout](http://www.bit.ly/SuperBreakOut),” (<http://www.bit.ly/SuperBreakOut>) and then regroup for a quick discussion:
 - How could we describe this game to someone who has never played?
 - Does this remind you of other games you’ve played?

- Why might this type of game be popular in an arcade setting?

MAIN ACTIVITY

- Design Pieces for a new brickbreakers game (20 min)
 - In small groups or individually (depending on total number) students will design a new component for the “ball” figure in a brick-breaker game using card stock, markers, and scissors. Students should be prompted to think about how their version will behave differently than the classic version. Some questions to consider if students need more prompting: will the speed change? What happens when it touches a brick? Does the direction change?
- Group Animations (30 min)
 - Using post-its as the “bricks,” each small group/individual will have a turn to animate their unique ball figure using stop-motion animation. Each small group/individual will be challenged to animate a specific number of frames (at the discretion of the facilitator, based on total number). The rest of the group should participate by offering suggestions and feedback throughout the animation process.
 - Encourage students to take on different roles, and to switch those roles over time. Roles can include videographer (person who takes the picture for each frame), director (makes sure the picture is ready to be take, and calls out “shoot”), animators (rearranges pieces between each frame).
 - Students can bring home their component/ball design as a takeaway, and final animations can be made available to share.

Sample video from previous game jam: <http://bit.ly/GameJamAnimation>

PART IV

Climate Change Game Design Activities

The game jam activities in this section focus on climate change.

Climate Change was a theme in the 2016-17 G4C Student Challenge, with materials and expertise provided by the National Oceanic and Atmospheric Administration (NOAA). Certified NOAA educators attended the Moveable Game Jam in 2016 to inspire students' research, and provide feedback on their game concepts. Here is the prompt for student game making:

Scientists have been documenting clear signs of a warming planet: the highest amounts of greenhouse gases in our atmosphere, the highest global surface and sea surface temperatures on record, extremes rain and snow amounts, and rising sea levels. Every city is experiencing unique impacts of climate change.

Research how your city will be affected by climate change in the next 20-30 years, and make a game that teaches citizens how to prepare for our climate future.

For more info on this theme, visit the student challenge page at www.gamesforchange.org/studentchallenge/nyc/climate-change/.

16

Time Travel Climate Game (Twine)

(Developed by Mouse)

AGE

- Middle/High School

GOAL(S)

- Students create a Twine game that puts them in the position of the Mayor of NYC in the year 2060. Much of New York is under water and the player is presented with a time machine to try and reduce or stop the effects of climate change by changing the past.
- Students are introduced to twine and the template from which to start their game and encouraged to find a challenge that the player will overcome.

SET-UP

- Computers/Laptops
- <http://twinery.org/2/>

WARM-UP

1. Introduce student to Twine, show them [this template](http://bit.ly/2gkV3mw) (<http://bit.ly/2gkV3mw>) to start. (must be downloaded onto a desktop, chromebook or uploaded into Twine to view. (5 min)
2. Students begin by playing the story to learn the premise of the game. (5 min)
3. Discuss what was learned earlier in the day that could be used to help stop climate change. (5 min)

MAIN ACTIVITY

- Show students how to view the back end of the Twine game and how to make a link. (5

min)

- Students edit the link and add another “lose condition” branch to the existing structure and share their edits. (5 min)
- Review the “rules of time travel” (can’t touch anyone, can’t cause physical harm) and discuss possible directions the game could go. What can we do? (5 min)
- Students rename their games. (2 min)
- Students continue to edit the existing exposition and add in new nodes to create two paths, one that leads to success and prevents climate change and one path that is unable to stop it. (20 min)
- Students save games and can share them via philome.la (<http://philome.la/>) or another service. (8 min)
- Some examples of previous student-produced GAMES: (<https://drive.google.com/open?id=0B9kunZCntE5HVmQ4OXR3dksyUFE>)



17

Polar Dash (Scratch)

(Developed by Museum of the Moving Image)

AGE

- Middle/High School

GOAL(S)

- Explore how obstacles and power-ups function within games as a polar bear dashes to find retreating ice floes.
- Practice reading script to identify how the system of a particular game works.
- Add personality and improve game quality by modifying the game's script to include your own obstacle or power-up

SET-UP

- iPad
- 7 laptops, power cables, and adaptors
- Polar Dash game on thumb drive
- Sticky notes
- Chart paper
- Markers

WARM-UP (10 min)

1. Frame this station's activity: adding obstacles and/or power-ups to a game inspired by retreating ice floes resulting in difficulties for polar bears due to climate change
 - *What are some examples of obstacles in a game? Power-ups? What do they have in common? How are they different?*
 - Ask students to jot down on sticky notes an obstacle and a power-up for our polar

bear (These can be real or fictional.) then ask participants to share out and add to chart paper or wall.

MAIN ACTIVITY

- Introduction to challenge and source game (15 min)
 - Prepare participants to play source game, Polar Dash, in small groups with the game at fullscreen while thinking about any existing power-ups or obstacles already built into the game.
 - Does playing the game change the ideas you had about your obstacles or power-ups? If so, how?
 - Assist students in transitioning from full screen to working screen with script open
 - The game's current obstacles include dodging blocks of ice which damage the bear's health. Where should we look for the scripts that control the bear's health damage and interaction with the "icebergs"?
 - Once students have a sense of how the scripts are structured for the existing obstacle, ask them to pick one obstacle or power-up they'd like to add and list the first step they'll need to take to make it possible.
 - Invite students to share out.
 - Invite those with similar ideas to work together. Help them move around the space if seating needs to be readjusted.
- Preparation for modifications (5 min)
 - Once students are situated in their working groups (pairs ideal), ask them to write down their first three steps to making their mod (finding images, etc.)
 - Circulate and check in with groups.
- Game design (25 min)
 - Instruct small groups to get started.
 - Let groups know how much time they have until debrief.
 - Circulate and check in with groups.

Makey Making it Green (Makey Makey)

(Developed by Global Kids)

AGE

- Middle/High School

GOAL(S)

- Students must use the Makey Makey circuit board to create a game that teaches its players about the environmental cost of daily habits and consumer behaviors, and motivates its players to collaborate in a real-world game space to lower their carbon footprint.
- Students will apply an understanding of circuitry and conductivity, game design, and how actions and products have a cost on the environment.

SET-UP

- 1 Computer per group of 2-4 students with internet access, and with the following Scratch project pulled up: <https://scratch.mit.edu/projects/135500597/>
- 1 **Makey Makey Classic** (<https://shop.makeymakey.com/products/makey-makey-kit?variant=219582674>) kit per group linked to computer.
- 1 Game Design Worksheet per group: tinyurl.com/GlobalKidsMGJgamedesign
- 1 CO2 Emissions Handout per group: <http://tinyurl.com/c02emissionshandout>
 - ◦ This workshop best follows a workshop on everyday “green” behaviors like recycling. Facilitators should incorporate this additional content as well.
- Conductive materials including any of the following: potatoes, apples, tin foil, paper clips, batteries, metal wires, canned foods, and any foods listed on CO2 Emissions Handout.
- Crafting materials including any of the following: tape, construction paper, scissors, glue, popsicle sticks, sponges, legos.

WARM-UP (10 min)

- Introduce students to Makey Makey circuitry and design.
- Explain: Ask students to gather around a single computer. Ask *who knows what a “circuit” is?* Elicit that a circuit is a circle or loop of energy. It must not have any holes in order for the energy to travel all the way around.
- Show students the Makey Makey circuit board with “Earth”, “Click”, “Space”, and “up”, “down”, “left”, and “right” arrow plates. Explain that this “Circuit Board” is like an external keyboard or a game controller (the old fashioned kind that needs a wire to connect to the computer). In order for the player to use the controls, *you as the game designer* need to create an circuit. The player pushed on the buttons by *closing* the circuit.
- Explain that students’ job as game designers is to create the interaction that the player has with the Makey Makey controller. You must create an open circuit (the circle is incomplete) so that the player can close the circuit (close the circle) and push a button.

MAIN ACTIVITY

- Have one student hold one end of an alligator clip that is attached to Earth. Explain that Earth is like one end of the circle. The other end of the circle is going to be one of the arrow plates and when this button is pushed, something will happen in the Scratch project shown. Now we have two ends of the circle. In order for the circuit to be closed, they need to touch one another! Ask the students to high five and see what happens in the scratch game (make sure you have already clicked the green flag to start the project). (5 min)
 - Processing Questions- tech:
 - What is a circuit?
 - What is the beginning of the circuit? (key, such as the arrow)
 - Then end of the circuit? (Earth)
 - What was in between? (Conductive materials like humans!)
 - Processing Questions- design:
 - How did you have to interact or collaborate with one another?
 - Where was the game space? (Both IN the computer, and OUTSIDE in the world.)
 - Elicit that the computer or Scratch game can be used to track or measure what we do in an in-person game. You all are going to design a game where the players discover how to be a part of the solution by interacting with real world materials. (2 min)
 - Show students what each plate on the circuit board will do and explain that this game is designed to teach its player about behaviors that will either help or hurt the environment. Their challenge as game designers is to connect the buttons resulting in tree with items that represent helpful behaviors, and to connect the buttons

resulting in smog and trash with items that represent hurtful behaviors. Refer to the diagrams on page 2 of the [Game Design Worksheet](#).

(<http://tinyurl.com/GlobalKidsMGJgamedesign>) (5 min)

- Show students a setup where Earth is attached to a tuna can, a tree button is connected to a paper cut out of a recycling bin (attached with tin foil), and a trash button is connected to a paper cut out of a trash can (attached with tin foil). Demonstrate the if the player puts the tuna can (a recyclable material) into the trash, it is not a good behavior for the climate and results in a trash can on the Scratch project, but if the player places it in the recycling paper, this is a behavior that is good for the environment and results in a tree in the Scratch project. (2 min)
- Point out all the craft and conductive materials and explain which materials are “conductive” meaning that the energy of the circuit can travel through them. Tell students to use the reference materials and the worksheet to figure out how they want the game player to interact with the materials to learn about what is good or bad for the environment. Show them how to use the planning sheet provided to think about which materials can represent which outcome in the Scratch game. Provide students with the [CO2 Emissions Handout](#) (<http://makeymakey.com/how-to/classic/>), or other reference materials and encourage them to consider everyday “green” behaviors and materials. (30 min)

19

Snakes Are Spreading (HTML CSS Javascript)

(Developed by Coderdojo NYC)

AGE

- Middle/High School

GOAL(S)

- Architect a game that will allow the student to learn how html/css/javascript can be imported via scripts and then manipulated to work together to form a polished game/product.
- This is a variation of the popular snake game utilizing html/css/javascript. As the snake goes around the game canvas, it will eat up the remaining food, growing larger and larger.

SET-UP

1. Computers/Laptops
2. Project assets: <https://github.com/CoderDojoNYC/SnakesAreSpreading>
(<https://github.com/CoderDojoNYC/SnakesAreSpreading>)
3. News article: <https://insideclimatenews.org/news/01032016/venomous-snakes-climate-change-northern-us-canada>

WARM-UP (10 min)

- Grab a sheet of paper and write instructions for a couple different elements that will make up the core of the game.
 - Score – what will each piece of food be worth? 1 point? 10 points?
 - Controls – how will the user control their snake? Does left mean left? Up mean down? Challenge the student to design a unique game experience for their user.
 - Design – what will the game colors look like? (optional: explain what a color palette

is)

- Having these things written down on a physical piece of paper is a great exercise making the student and or team that's designing the game agree on some foundational blocks. This plan can also be referenced and leaned upon should the student get stuck.

MAIN ACTIVITY

- Give your game a name via an HTML element (2 min)
 - ex: (`<h1>My Awesome Game Name</h1>`)
- Add a game surface ("canvas") for your snake to spread (2 min)
 - ex:(`<canvas id="the-game" width="400" height="320" />`)
- Give your snake some styling. Locate the spot in the index.html file where the "insert the style sheet" is and add in the following (2 min)
 - `<link rel="stylesheet" href="style.css" type="text/css">`
- Below the div containing the canvas, draft the instructions on how to play your game (10 min)
- Insert the script which controls your snake. Locate the spot in the index.html file where the "insert the javascript" is and add in the following (2 min)
 - `<script type="text/javascript" src="game.js"></script>`
- Add a instructions for the user on how to start the game. (5 min)
 - (Hint – Line 23)
- Keys (5 min)
- Find the variable 'keys' on line 165, this is what helps control your snake. Utilizing the website <http://keycode.info/> insert the key that will start your game in the start game array. (ex: `start_game: [13, 32]`)
- Repeat the same concept in step 7, but for the arrays left, right, up, down. (7 min)



PART V

Local Stories and Immigrant Voices Game Design Activities

Code Switch Conundrum (Scratch)

(Developed by Global Kids)

AGE

- Middle/High School

GOAL(S)

- Drawing from stories told by the Associated Press, students will identify some of the challenges faced by Syrians entering the US as asylum seekers, and will hack a game in Scratch in order to improve the game's impact and promote understanding.
- Students explore the lived realities of immigration policy and public perception, as experienced by a refugee youth Syria who has recently moved to New York City.

SET-UP

- Set up laptops with internet access, logged in to a student account on scratch, with the *Journey of a Syrian Refugee* (<https://scratch.mit.edu/projects/142124761/>) game page pulled up
- [Ahmed's Story Handout](https://docs.google.com/document/d/1utd0BcjTkHoGxYVabBh_lxL3MzNbO9qbJa1AfZ) (https://docs.google.com/document/d/1utd0BcjTkHoGxYVabBh_lxL3MzNbO9qbJa1AfZ) for each group
- [Hack It! Handout](https://docs.google.com/document/d/1m6aSsuPSkw_nk_OUgyuF6WUOf6yIB7z9RsXI) (https://docs.google.com/document/d/1m6aSsuPSkw_nk_OUgyuF6WUOf6yIB7z9RsXI) for each group
- [Syrian Refugee Experience Info Sheets](https://docs.google.com/document/d/1TSBCFS_AQk3aEUDqApHF10rll5LxBJzhioipwgl) (https://docs.google.com/document/d/1TSBCFS_AQk3aEUDqApHF10rll5LxBJzhioipwgl) for each group
- Student logins for Scratch

WARM-UP (10 min)

1. Ask students what they have heard of the Syrian people and the events taking place in their homeland, or in their migration process. Elicit their ideas and then explain that there are many people trying to seek new homes because of a war in Syria over leadership and social control over the country. It has become dangerous to live there, so people are leaving their homes and risking their lives to travel to new countries. Explain that once they settle, they have new challenges awaiting them and have to work hard to cope.
2. Pass out the handouts of Ahmed's narrative and have students read each section allowed.

MAIN ACTIVITY

- Introduction (5 min)
 - Have students gather around one computer. Explain that they will hack a game about Ahmed- *Journey of a Syrian Immigrant* – designed like “Flappy Birds”.
 - Ask if anybody can define “playtest” – to try out a game and see what happens- and have a student volunteer try the game.
 - After the playtest, have students identify the 5 elements of this game: (if this has been covered earlier in the event's warmup)
 - Goal: Avoid obstacles that represent stressors in an immigration story. Stressors are shown on six different game levels (immigration, housing, transportation, education, discrimination, and mental/physical health).
 - Mechanics: Click space to move up and down to navigate obstacles
 - Components: scenery, obstacles, avatar, “coping ability points”
 - Space: NYC streets, apartment buildings, outside & inside a school
 - Rules: if your avatar hits the obstacle, then the players loses “Coping Ability” points (i.e., health). When Coping Ability reaches zero, the game cuts to a “game over” screen with the player saying “I need to manage my stress better.” Conversely, when all levels are passed, the game cuts to a “win” screen, with the player sprite thanking the player for helping him acclimate to his new life in New York.
 - Debrief (5 min)
 - Ask students if they saw anything in the game from Ahmed's story?
 - Ask students what types of obstacles there were, and do they think these relate to real life stressors that might impact immigrants? Do any of these remind you of stressors in your life (like a test, homework, being hungry, etc)? Explain that our ability to *cope* or handle stressful events or obstacles can be different for different people; and when we have a lot of stressors all at once, it's even harder!

- Ask them to look at the “Visuals” side of the Ahmed hand out, and ask they could imagine adding any of those images or symbols into the game to make the game more interesting.
- Hacking Intro (5 min)
 - After the playtest, explain that their task is to (a) use the narrative provided to them and (b) hack the game to make sure it is meaningful, challenging, and fun, so that people will actually play it and learn about these important stories. Note to students that the images in the Narrative Handout may reflect obstacles in the game!
 - Demonstrate that students can change the game in a few ways. Show them the “stage”, “sprites”, “costumes” and “scripts” areas. Tell them they can hack the IMAGES they see for the obstacles by filling in a blank “costume” or they can hack the SPEED or FREQUENCY of the obstacles. Show them where the drawing tools are and where the scripts can be found.
 - Pass out the *Hack It! Handout* and tell student to choose a hack option to try out, depending on their level of familiarity with Scratch. The given options include:
 - Add a new Obstacle using the drawing tool.
 - Change the velocity or frequency of obstacles.
 - Change the size of obstacles.
 - Create a power up that, when touched, changes any of the above.
 - Remind them that it is important to click the green flag to playtest their hack.
 - Student Hack Session (25 min)
 - Students click the “Remix” button and use the *Hack It! Handout* to hack the game.

21

ThemeWeavers (Card Game)

(Developed by Institute of Play)

AGE

- Middle/High School

GOAL(S)

1. An exploration of theme and core mechanics, through the lens of immigrant stories.
2. Participants explore the relationship between mechanics, content and theme by modding the game *StoryWeavers*.
3. Participants will mod the game in two ways, first by modding the mechanics of the game, then by modding the content in an effort to align the game with the theme of immigrant voices.

SET-UP

- Print and Cut:
- *StoryWeaver* Cards [Link](http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf) (<http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf>) (pg 2-11 double sided)
- Blank *StoryWeaver* Cards [Link](http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf) (<http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf>) (pg. 23 & 26 double sided)
- Immigration Resources / Supports *Forthcoming*
- Prototyping materials: paperclips, pens, etc
- Writing Utensils

WARM-UP (10 min)

1. Review the rules of *StoryWeavers*, here: [Link](http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf). (<http://www.instituteofplay.org/wp-content/uploads/2016/12/Storyweavers-2016.pdf>) Setup *StoryWeavers* at a table, so it's

ready to go for Step 1!

2. Some Key Terms:

- **Core Mechanics:** This is a game design term that can be thought of as the “central verb of a game”. For example the core mechanics of Tic Tac Toe might include: Placing X’s (or O’s) and taking turns. While the core mechanic of a footrace is running.
- **Mod: Modification;** in the game design world, this word stands in for games which are derived from a pre-existing game. Usually created by a player or user of the game it is derived from. For example: the game Freeze Tag is a mod of Tag, and the game Sardines is a mod of Hide and Seek. More [Here](https://en.wikipedia.org/wiki/Mod_(video_gaming)) ([https://en.wikipedia.org/wiki/Mod_\(video_gaming\)](https://en.wikipedia.org/wiki/Mod_(video_gaming))).

3. Design theme prompt: NYC is home to thousands of immigrants, all of whom, like people in the past, have stories to share. Maybe your neighbors or family members arrived in the United States. Think about what the experience as an immigrant must have been like now or in any period in history. Was it hard to find your way around the city streets? What was it like attending school or making friends? This theme invites you to create a game about the immigrant experiences in your city.

MAIN ACTIVITY

- **Fishbowling StoryWeavers (3 min)**
 - Explain that at this station, teams will be modding a game called Invite 3 or 4 volunteers to help you demonstrate the game. Play 2 rounds with your volunteers at a table, while the rest of the group watches. Then ask the students questions about the rules, goals and core mechanics of StoryWeavers such as “When did we finish each round?, Who was, or was there a winner? Did we have a choice between the cards we played?” etc.
- **Modding StoryWeavers (12 min)**
 - Break the group up into teams of 2-3, and tell them that they have 10 minutes to modify the game of *StoryWeavers* by adding rules, changing the core mechanics, or changing the goal of the game.
 - If any teams are off to a slow start, you may kickstart their progress by asking what they saw in the demonstration of the game that they’d like to change, whether they’d want to add a win condition, or whether they’d like to change the way that players get or play cards, or whether they’d like to add rules about what kinds of cards can be played when.
 - Encourage teams to prototype or playtest their game as soon as possible! If a

group is spending all their time talking, ask to join their group for a playtest.

- When it's getting close to the 10 minute mark, encourage the teams to start wrapping up by asking them to name their mod.
- Playtest (5 min)
 - Once 10 minutes are up instruct teams to playtest the games they've created.
 - *If you've noticed that they've been playtesting their game throughout their prototyping, then pair teams up to playtest each other's versions of StoryWeavers: (but keep a close watch on the time this runs the risk of taking longer than 5 minutes!) Ask a volunteer from each team to stay with their mod and facilitate it. Then pair playtesters with facilitators.*
 - Modding the Content to Align with a Theme (15 min)
 - Once the playtests are over, ask each team one thing that they observed during their playtest. Then, once each team has shared, ask the group what they think the "Theme" of StoryWeavers is. Then ask what they think the "Content" of storyweavers is. Encourage the group to identify the cards as the content of the game. Then explain that what you've just done was to modify the *mechanics* of StoryWeavers and that now we're going to modify the *content* to align to a *theme*.
 - Supply teams with blank StoryWeavers cards, writing utensils, and a theme challenge card. Ask volunteers to read the design theme aloud. Then, explain that game designers are often challenged to design games that align with a theme, or tell a particular story. Tell the group that they have 10 minutes to modify their mod by changing only the *content*, meaning the cards, of *StoryWeavers* to align with the that theme. Explain that they can use the blank *StoryWeaver* cards to do this.
 - Again, when it's getting close to the 10 minute mark, encourage teams to wrap it up by re-naming their mods.
 - The structure of this activity to first introduce participants to the original game then layering in the thematic content worked very well. They enjoyed creating long narratives out of the original cards and were excited to create their own afterwards.
 - Care should be taken to ensure that participants have fun but don't go too far off the rails and to maintain a sensitive approach to the serious themes.
 - Playtest (10 min)
 - When the 10 minutes are up, instruct each team to playtest their games.
 - Again, if they've been playtesting throughout, pair them up so they can playtest with each other. Ask a volunteer from each team to stay with their

mod and facilitate it. Then pair playtesters with facilitators.

- When each team has gotten through at least 1 round, draw the playtest to a close. Ask each team for one thing they observed during their playtest. Then ask the whole group the following questions:
 - Our goal was to create games that align to this theme: Local Stories and Immigrant Voices. Our approach was to first modify the game mechanics, then mod the content. As game designers, how successful was this approach?
 - Would it have been more successful if we had modded this game in the opposite order, first by changing the content, then by changing the mechanics? Why or why not?
 - Moving forward, how would you iterate your game to align more strongly to the theme of Local Stories and Immigrant Voices?
- Wrap-up (5 min)
 - Thank everyone for their time, and ask for help cleaning up the prototyping stations.

Let's Grow a Game (Gamestar Mechanic)

(Developed by Global Kids)

AGE

- Middle/High School

GOAL(S)

- Create early stage concepts for game theme and character
- Learn to design game levels on GameStar Mechanic
- Incorporate social justice issues into your game design

SET-UP

1. Design guide printout (works best on 11×17 sheet of paper)
https://drive.google.com/file/d/0B0_HDxAjial0QVdjWVluZFFIbWM/edit?usp=sharing
2. Sticker labels https://drive.google.com/file/d/0B0_HDxAjial0bmRzMkRkV1JVc28/edit?usp=sharing
3. Colored pencils
4. Old magazines, scissors, glue
5. Computers preloaded with GameStar Mechanic premium accounts

WARM-UP

1. Introduction to social justice issues (1-2 min)

MAIN ACTIVITY

- Design Pieces for a new brickbreakers game (15 min)
 - The design of the printouts is relatively intuitive and needs little introduction for students to jump right in.

- Station participants receive a design guide printout.
- They also receive a page of [sticker labels](https://drive.google.com/file/d/0B0_HDxAjial0bmRzMkRkV1JVc28/edit?usp=sharing) (https://drive.google.com/file/d/0B0_HDxAjial0bmRzMkRkV1JVc28/edit?usp=sharing) with text of different colors that provide several options for characters (postman, skateboarder, basketball player, mermaid, etc), issues (clean water, access to food, equal treatment, etc), places (Brooklyn, my home, the ocean, etc) and mechanics (jumping, distributing, researching, collecting). Participants place the stickers in the corresponding spots of the sentence starter to come up with a core game idea, as they would fill out a madlib. If they'd like, they can come up with their own ideas instead of using the stickers.
- If there is time in this section of the activity, students can flip over the sheet and fill out some more specifics about their game.
- Game theme collage (15-20 min)
 - Participants will receive several magazines, glue sticks, scissors, and markers to create a collage image of the premise of the game. Prompts for participants who are stuck:
 - What would your character look like?
 - What images can you use to demonstrate what your character does in the game?
 - What images can you use to show where the game takes place and what issue your character fights for?
 - GameStar Mechanic level design (15-20 min)
 - Facilitators ask students: Do you want to bring your game to life? They inform participants that they can use Gamestar Mechanic to grow their game.
 - Participants will receive laptops. Laptops should be logged in to Premium accounts of the website Gamestar Mechanic. Participants should bring their Grow a Game document with them to the computer.
 - Facilitators direct students to the game and level settings, where students can use their grow a game document to fill in the game/level intro and win messages before they start designing. These should correspond to the concept for the game they had brainstormed in the prior section.
 - Facilitators should also show students the basics of Gamestar:
 - How to place blocks, avatars, and enemies.
 - How to make changes to enemy movement and traits.
 - How to change the background of the game.
 - Once participants know how to do these things, they may be tapped by the facilitators to explain these ideas to other participants.
 - Facilitators may choose to provide students with pre-created environments on Gamestar, or provide blank workshop spaces, depending on time, age etc.

- This sign (https://drive.google.com/file/d/0B0_HDxAjial0X0lyNmtTeTNRSUk/view?usp=sharing) (or one like it) will also be posted to help students match the mechanics they listed on their design sheets to components that may execute these mechanics in gamestar
- It's easy for kids to get lost in the world of GameStar. Be sure that you connect kid's designing in GameStar to their original game concept they wrote down earlier. Prompting questions for facilitators:
 - How will you design the space so it matches the core idea you had?
 - Which avatar would be best to represent your characters?
 - What do the enemies represent in your game?

23

An Immigration Breakout (Escape Room Game)

(Developed by Matthew Farber & Kevin Miklasz)

AGE

- Middle/High School/Adult

GOAL(S)

- Students design their own breakout set, with a distinct immigrant voices theme embedded into their puzzle choices.

SET-UP

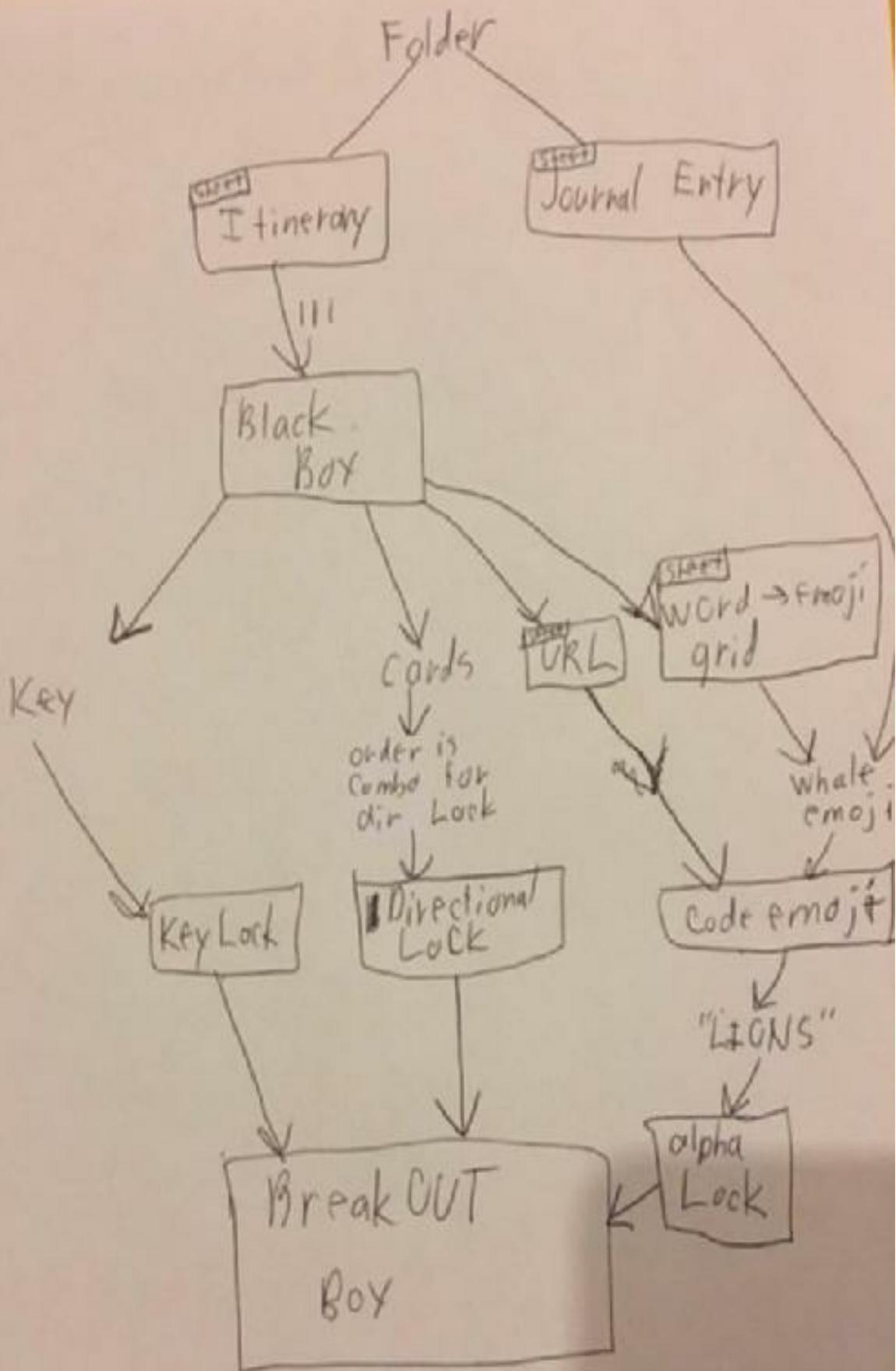
1. Two BreakoutEDU kits (<http://www.breakoutedu.com>)
 - One set up as described in warmup, the other ready for students to redesign the elements in their own game.
2. A few computers, for research
3. Paper
4. Markers
5. Pens
6. Chart paper

WARM-UP

- Kids play a sample, simplified breakout game. (10 min)
- This requires a breakout set. It uses the directional lock and sets the direction equal to card suits, using the included stickers. It also requires the key lock, the alphalock and the 3 digit number-locked black box.
 - Printouts needed are [here](https://docs.google.com/document/d/1jUt_9cQcYTicPp50Z_cT1RWT0S-)
(https://docs.google.com/document/d/1jUt_9cQcYTicPp50Z_cT1RWT0S-

[wSITstVFh8S6hemM/edit](#)). The black box should hold both printouts on the first page (the URL, and the word->emoji grid), the key to the key lock, and a set of playing cards of assorted suits, with cards Ace-5. The number lock on the black case should be set to “111”.

- The two printouts on the second page should be included in a “folder” that players can open and see immediately. The alpha lock, key lock, and directional lock should all be attached to the Breakout box. The alpha lock should be set to the word “LIONS”.
- The directional lock should be set to whatever suits correspond to the numerical ordering of the cards included in the black box (i.e. if the cards are Ace of Spades, Two of Spades, 3 of Hearts, 4 of Diamonds, and 5 of spades, the directional lock combo should be Spades-Spades-Hearts-Diamonds-Spades).
- This diagram shows how the puzzles connect together, and can be used as reference sheet to give hints as needed.



- Story: “You are a spy team trying to track down a secret agent. You run into the agent’s room when the agent leaves to check out, and find a bunch of the agent’s personal items still in the room, along with the agent’s top secret briefcase, which you are tasked with getting inside. Previous intelligence has found the agent has been careless with his passwords and locks, often leaving obvious clues to them in his travel records. You pretty sure the agent will be back in the room in 10 minutes, so you have that long to find a way to get into his briefcase, and get out of the room.”
- After reading the story to participants, set the clock to 10 min, and let them get to work getting inside the box. Remind them that they are working together, and sharing info and collaboration is key. Also, there are multiple puzzles to solve, so make sure to split your effort, and work together on sharing info.

MAIN ACTIVITY

- Recap the game and its elements and mechanics (5 min)
 - Discuss how the basic mechanic is solving puzzles. The components to the game are mainly pieces of information, which create clues or riddles that lead you to break some kind of lock and solve the puzzle.
 - Think of each puzzle as having this structure: input-lock-output. You have information that you need to solve the puzzle, that’s the puzzle’s input. There’s the lock, or the thing preventing you from getting more information. And then once the lock is broken, you get to the output, which is usually more clues. Typically, the output to one lock is also the input to a different lock.
 - It can be useful to show the diagram above to the initial breakout game. Indicate that you want students to be able to construct a new layout for their breakout game. When Brainstorming puzzles, it can also be helpful to use a sheet with this format, and to fill in the columns for each section: INPUT | LOCK | OUTPUT
- Brainstorm ideas and concepts that are theme aligned, write them on chart paper (5 min)
 - *Author’s Note:* As the facilitator, this will involve a lot of in the moment direction of brainstorming and action. This is the point to impart a real sense of student agency, let them really take control of the direction of the puzzles and theme, but guide them lightly to stay on topic.
 - After the brainstorm, the facilitator can pick 2-3 concepts that they decide that they want to focus on, and that they think might have the most potential for a good breakout set.
- Students choose 2-3 ideas to focus on. Students design puzzles that fit with that theme (35 min)

- Main role of facilitators in this section is to guide kids in individual puzzles, and to also help kids think about how the individual puzzles might fit together in the bigger puzzle. The facilitator might want to direct student work by starting to draw out how the student puzzles fit together in a diagram, and directing students to develop puzzles that fill in holes in that diagram. In this way, the facilitator almost works as the lead game master.
- *Author's Note:* It was very helpful to have the facilitator act as lead game designer, and find ways to connect puzzles together, while leaving students the task of designing individual puzzles. Towards the end of the activity, two participants were asked to start writing the story for the narrative while the other participants filled in the remaining puzzles, and that was directed by the facilitator. During the group playtesting, one of these participants, then read the story to the playtesters.
- *Author's Note:* Students mostly spent the full 2 hours working on one collaborative escape room game. This worked well, and it would be recommended to have new students in the second design time add puzzles and ideas to whatever the first group did, rather than start a wholly new game.

24

Map Building (HTML CSS)

(Developed by Coderdojo NYC)

AGE

- Middle/High School

GOAL(S)

- Design a map of the current room you're in utilizing a given base style guide of elements and/or designing your own HTML/CSS elements. The student at a minimum should have both a starting and ending point (think treasure map!)
- Have the students become comfortable using an open source library in their code. The amazing font-awesome library is a great piece of software with excellent documentation.
- Activity prompt: Immigrants by definition are new to the area they are now living in. At the end of the session, we'll have your fellow students use the map you built (acting as immigrants to the room) to navigate the room to a specific place.

SET-UP

- Computers/Laptops
- Mozilla Thimble
- Load the [Font Awesome Icon Website](http://fontawesome.io/icons/) (<http://fontawesome.io/icons/>) for Reference in another tab
- Use the index.html page provided in <https://github.com/CoderDojoNYC/RoomMap>

WARM-UP (10 min)

- Review the [PB-N-J](http://sites.ssis-suzhou.net/hourofcode/files/2015/12/pb-and-j-programming.pdf) (<http://sites.ssis-suzhou.net/hourofcode/files/2015/12/pb-and-j-programming.pdf>) example with the students demonstrating how quickly an instructional point can be missed and the simple sandwich design can go awry.

- Bonus points if you actually have the physical elements to make a PB-N-J...it really helps driving home the point.
- Using a physical sheet of paper have the student draw a map of the room they will be navigating. Challenge the student to be as detailed and exact as possible mapping out the room. Think about obstacles, both static and variable. How will they account for objects that have varied state in their map? Advanced students could design a scale for this exercise to ensure each movement their fellow student is taking to get to the end target is precisely calculated.

MAIN ACTIVITY

- Walk the Room (5 min)
 - Have the students, with map and writing utensil in hand, walk their own map, step for step (taking notes as they go, things they would change, areas that might need more detail...OR items that could potentially be superfluous).
- First Line of Code (10 min)
 - Have the student open Mozilla Thimble and navigate to the index.html file. Utilizing either the left/right/up/down arrows provided OR a selected icon in the font-awesome library, have the student insert their first directional icon using an icon-tag. `<i class="fa fa-arrow-right fa-2x"></i>`
 - If the Mozilla Thimble live refresh feature is enabled the icon should now be visible on the webpage output.
 - If this was the desired direction have the student continue until the next direction switch is reached.
 - Going in a specific direction can @ times be a lot of copy/pasting (something that performing efficiently is important in computer programming). If this is foreign to the student, explain the magic of cut, copy, paste.
 - Adjust the size of icon by utilizing the font-awesome scaling classes. View the Larger Icons: <http://fontawesome.io/examples/>
 - For simplification, this exercise was built for inline css. Should the student become frustrated with the duplication of inline css. Feel free to add a css block in the head like so.

```
<head>
  <style>
    body {
      background-color: linen;
    }

    h1 {
      color: maroon;
      margin-left: 40px;
    }
  </style>
</head>
```

- Main Hacking (20 min) Give the student some space to design the map as their vision feels fit. Questions to ask during this time...
 - Is pure CSS the solution? Where Font Awesome isn't providing what the student is looking for. Challenge them to use a pure css solution to create a (square – representing a table, circle – representing a plant).
 - What can you do to avoid duplication in your code? Introduce the DRY principle to the student if they are finding the exercise too easy or the duplication is bothering them https://en.wikipedia.org/wiki/Don't_repeat_yourself.
 - Has the student provided a scale? One icon = One Step? How are they going to present that? A table? Bulleted list below the map?
- Finish (15 min)
 - Pair all the students/groups with another student/groups.
 - Have them exchange laptops. (If Desktop computers, see if printing is available. If not, maybe a screenshot on a phone so the student can walk the map)
 - Have the other student read the map and ask any questions up front before beginning on their journey through the room.
 - Have the student utilize the map (as an immigrant of the classroom)...walking only based on the instructions given. At the end have the student provide both a written and verbal feedback report on how the map and its instructions could be improved.

About the Editors

Sara Cornish

Sara is the Senior Director of Programs and Strategy at Games for Change (G4C), the leading organization advocating games for social impact and learning, where she develops new partnership-driven projects and leads on G4C's youth and learning programs. In 2015, Sara developed and launched the first G4C Student Challenge with the NYC Department of Education, which has since expanded to three other cities. She curated the Games for Learning Summit in 2016, and helped establish the first Games for Learning Working Group. Prior to G4C worked at United Nations Global Pulse and FCB Health. She has run games at the annual Come Out & Play festival and plays ultimate frisbee. Sara has a MFA in Design for Social Innovation from the School of Visual Arts and a BA from Vassar College in Urban Studies.

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Alex Fleming

Alex Fleming's first game he made was a variation on space invaders he built on his TI-86 in school. Alex is a game design educator and currently is a Learning Design Coordinator at Mouse in New York City. In 2014 he updated Mouse's Serious Game Design course which now is the official curriculum of the 2017 Games for Change Student Challenge. Alex has served as a judge for the National STEM Video Game Challenge and organized youth game jams around New York City and Chicago as one of the founding members of the Movable Game Jam Initiative. He has a B.A. in Sociology and Acting from Brandeis University. To learn more about Mouse visit www.mouse.org.

Kevin Miklasz

Kevin Miklasz, Ph.D., entered education as a trained scientist– he has a PhD in Biology from Stanford University. Both during and after his graduate studies, he has spent his time gaining a smattering of diverse experiences in education: designing science curriculum, teaching after-school science programs, designing science games, running a “cooking as science” blog, designing online learning platforms, running professional development for teachers and professional engineers, and analyzing educational assessment data. Kevin is currently the Director of Data and Assessment at BrainPOP where he is designing and analyzing new, playful and meaningful assessments on BrainPOP’s website. Kevin is also one of the founding members of the Moveable Game Jam Initiative, and has participated in all of the 16 Moveable Game Jams run in NYC to date. To learn more about Kevin, please visit kmiklasz.blogspot.com.



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About the ETC Press

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