ATTACHMENT F

REPORT ON ENVIRONMENTAL DEFENDERS FOCUS GROUPS

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GOODWIN SIMON STRATEGIC RESEARCH

Recommendations for Designing an Environmental Defenders Website

Findings from Four Focus Groups on Student Preferences for Applications Related to the Environmental Defenders Website

Prepared for Finn Partners
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1 Overview

1.1 Goals and Motivation for This Study

Finn Partners asked Goodwin Simon Strategic Research to conduct focus groups with elementary school students in Los Angeles County to assist in the development of a student website intended to support LA County's Environmental Defenders Program.

1.2 Specific Research Questions

In this report, we first present our methodology and outline our key findings and recommendations. We then report in detail the results from parent surveys administered before the focus groups, student surveys administered during the focus groups, and findings from the focus group discussions.

Specifically, we describe the characteristics of student internet use, including time spent on the internet and modes for accessing the internet. We then summarize the websites students visit and the features they value in those websites. In the next section, we present the results from the focus group website trials. We compare student ratings of the sample websites and then provide profiles of each site, in which we discuss student feedback. Lastly, we report on student reactions to a Super Environmental Defender membership card prototype.

2 Methodology

2.1 Student Sample and Recruitment

We held four focus groups with 4th and 5th grade boys and girls. The students recruited came from different areas of Los Angeles County and represented diverse demographic backgrounds. There was variation in household income, ethnicity, and type of school attended (private or public). Table 2.1 shows the number of participants in each of the four focus groups by gender and grade.

Table 2.1 Focus Group Participants

Date	Girls	Boys	4th Grade	5th Grade
1) March 1st (pilot)	2	4	2	4
2) March 8th	6	-	3	3
3) March 8th	-	5	3	2
4) March 8th	2	4	3	3
Total	**10 girls**	**13 boys**	**11**	**12**

Students were recruited from lists maintained by House of Marketing in Pasadena, the facility which hosted the groups. House of Marketing staff contacted parents, and after establishing the purpose of the call, we asked for their permission to speak with their children. If the children were

interested in participating in the groups, parents were then asked to give approval. Children were screened to ensure that they spend at least two hours a week on the internet. We established quotas for grade (4 and 5), gender, family income, and race/ethnicity to ensure the diversity of the participants. Parents of children who participated in the groups were given an incentive of $75.

2.2 Surveys

Two surveys were administered to parents: one at the time of recruitment, and another on the day of the focus groups. Twenty-eight parents completed the recruitment survey, including five whose children did not ultimately participate in the focus group. The parents of all twenty-three focus group participants completed the day-of survey.

2.3 Focus Group Procedures

To assist Finn Partners in developing a student website to complement the Environmental Defenders Assembly, the focus groups served three purposes:

1. To understand the ways in which 4th and 5th grade students in Los Angeles County use the internet,
2. To explore what kinds of websites they like to visit, and
3. To get their feedback about specific types of web-based applications, and about a Super Environmental Defenders membership card.

Each focus group lasted 60 minutes and was structured into four sections:

1. An introduction to the session,
2. A group discussion,
3. Pairs of participants exploring and rating four websites and web-based applications,[1] and
4. A wrap-up to close the session.

The discussions were recorded. The tone for the sessions was casual and fun. Students were allowed to contribute and share their experiences and ideas. A primary adult facilitator ran the group, while two additional facilitators took notes and observed pairs of students at the computers, rating their interaction, engagement, and ease of using each website.

The primary facilitator was Dr. Matthew Lewis, who is a Senior Research Scientist at the RAND Corporation. He was assisted by Ms. Beth Katz and Ms. Amanda Edelman, who are PhD candidates at the Pardee RAND Graduate School. Ms. Edelman was the primary author of this report.

The following games and websites were visited by the students during the focus groups and will be described in greater detail later in this report:[2]

- Dangerous Descent, Disney
- Electronic Dance Music Cube, Button Bass

[1] After the pilot focus group, we decreased the number of trial websites from five to four.
[2] Dangerous Descent, Multiplication Blocks and Recycle Roundup were only played by the pilot focus group. The Club Penguin Music Mixer and National Geographic Music Mixer sites were not presented to the pilot focus group.

- Music Mixer, National Geographic
- Multiplication Blocks, BrainPop
- Recycle Roundup, National Geographic
- Sound Studio, Club Penguin
- Toonix

After students visited each website, they were asked the following questions and provided responses on a four-point scale, with 1 being the most favorable rating and 4 being the least favorable rating:

1. Did the website look like a good site?
2. How easy was it to figure out how to use the website?
3. How much fun was this site?
4. Would you tell a friend about this website?

After exploring all the websites, students were asked to assign each site with an overall score from 1 to 10, where 1 would represent a really bad website, and 10 would represent the best website possible. Finally, students were asked to rank the website relative to each other, independent of their overall score assignment.

2.4 LIMITATIONS

We should note that there are limitations to the focus group data.

First, while students were chosen purposely to reflect a range of demographic characteristics of Los Angeles County children, we did not have a random sample of students. We cannot conclude that the answers given by our participants would be representative of the entire population of students in the county. For example, our participants were screened to ensure they were all comfortable with internet access and applications. But as we heard in subsequent focus groups with teachers and principals, many students in lower-income areas of the county do not have extensive access to or experience with the internet. Still, the focus group surveys and responses are quite useful as they do give us a sense of the range of student characteristics and preferences that we might observe in the larger population of elementary school students with access to the internet.

In addition, student responses in any group may be biased or influenced by their peers. Further, when students list their favorite websites, we cannot interpret the omission of a website in any group to mean that those students have not used it or do not like it. We rely only on the websites students remember to mention during our short discussion. We expect that the responses given by students represent the websites they visit most frequently.

3 Key Findings and Recommendations

The student focus groups gave us much insight into the ways in which 4th and 5th grade students access the internet, how they use the internet, and their preferences for internet-based avatar creation and music mixer games and applications. We found that students in this age group are very comfortable with navigating the internet and do so on a regular basis. Furthermore, they are excited about visiting new websites and playing games. Our key findings are summarized below.

3.1 Characteristics of Internet Use

- **The students who participated in these focus groups are regular internet users and are comfortable with exploring new websites.** All students use the internet at school and at home, although not all students have broadband internet at home.[3] Though there is a wide range in time spent on the internet, these students all spend at least two hours on the web each week, and the average amount of time spent online each week was 8 hours. Their internet privileges may be limited by parents or granted as a reward for completing other tasks.

- **Students use a variety of devices to access the internet.** Though homework is generally completed using computers, students use both computers and mobile devices – most commonly tablets – for non-homework activities.

- **Students utilize the internet for both homework and non-homework activities.** When students were asked about the websites they regularly visit, they described both entertainment and educational websites. During one of the focus groups students were asked whether they had an email account and four of the six students indicated that they did, although it was unclear how often the students used these accounts.

- **Students tend to spend their non-homework internet time on a mix of educational and entertainment websites.** All students report spending time watching videos on the internet, often using YouTube as their viewing portal. When describing what they like to do on the internet, girls tend to describe creative activities, like photo editing, drawing, and listening to music, while boys tend to list action and sports games that they enjoy playing.

- **Students find out about websites by talking to friends, family, and teachers, search engines, the App store, and by following links from television and other shows.** They are likely to share "cool" websites with friends.

[3] All but two students reported having broadband internet access at home. One student's parent reported that they did not have broadband internet access at home, while another student's parent did not answer the broadband internet question.

3.2 Avatar Creation and Music Mixer Website Preferences

- **Students love having the ability to customize websites.** Since customization is central to music mixing websites and avatar creation websites, students tend to find these types of sites to be engaging.

- **More options are better when it comes to customization.** During these focus groups students had the opportunity to explore four avatar creation and/or music mixing websites, each of which provided dozens of options for customizing the characters and music. Despite the variety of options each site provided, and the fact that during their exploration time students rarely had the opportunity to test every customization option, students consistently asked for more options.

- **The website interface plays a significant role in how students' perceive avatar creation and music mixer websites.** When websites were easy to navigate, students often overlooked other features they perceived as shortcomings. However, when websites were challenging to navigate, students were more critical of the site overall.

- **Across all metrics, Button Bass, Toonix, and Club Penguin's Sound Studio websites were consistently ranked the highest.** These websites share a common interface design in that the customization options are all controlled by blocks on the screen that users click to turn on (or off). Toonix and Sound Studio, which were the top ranked sites for ease of use, had images in each box to inform the user about the customization they were turning on or off. Button Bass and Sound Studio, which earned the highest rankings for appearance and fun, both had dark backgrounds and colorful boxes to click for customization. The dubstep music on the Button Bass excited many students, and likely contributed to its ranking as one of the two most fun websites. Club Penguin's Sound Studio website had thematic customization options (pop, rock, dance, dubstep, and spooky) and one-shot noises that students could insert into their musical creation. Students seemed especially engaged by the spooky themed music and sillier one-shot sounds, like a whoopee cushion, which likely contributed to its ranking as one of the two most fun websites.

- **Students have mixed feelings about saving and sharing creations.** The topic of saving one's avatar or the music a user creates to share with friends was a very polarizing issue; students either wanted to save and share, or they did not want to save and share. Those students who did not want to save and share tended to worry about their creation being negatively judged by others, which likely motivated their opinion on the issue. If students are going to be allowed to share their avatars or music, the identity of the creator must be kept confidential.

- **Simple customization is not an adequate basis for an avatar creation or music mixer website.** On the avatar-focused websites, in addition to customizing their avatars, students wanted to use their avatar to play games and interact with others in the website

community. On the music mixer websites students wanted to have the band dance and crowd-surf in addition to mixing music.

- **Although the websites viewed did not provide users with incentives for their creations, most students liked the idea of being able to earn points through customizing their music mix or avatar.** Broadly, students liked when websites allowed them to earn points or rewards, especially if those points could then be used to level up or gain access to additional games or accessories.

3.3 Recommendations

An Environmental Defenders website will need to compete with the numerous other websites students like to access. The site will need to be attractive, engaging, easy to use, and educational, and provide an appropriate level of challenge. Finn Partners should consider the following when designing an Environmental Defenders website:

- **A website should be compatible with multiple devices, especially laptops and tablets.** This will ensure that students can access the Environmental Defenders website at school and at home, and that they will not be limited by lack of proficiency with any specific hardware, such as a keyboard or a mouse.

- **A music mixing application requiring any action beyond pointing to an instrument image and clicking should have clear instructions that are concise and accessible beyond the first page of the website.** Students do like learning on the internet, but they need clear instruction to stay engaged. For example, students had difficulty with the National Geographic Music Mixer website and were not aware of all the features they could play with, at least in part due to limited, inaccessible instructions.

- **Incentives for use, like a prize a week for visiting the site or points for winning games, should be incorporated into the Environmental Defenders website to encourage students to visit the site.** Students reported enjoying sites that allowed them to gather points and unlock features and were motivated to change their behaviors at school because of a raffle ticket incentive. Points should also have additional benefits on the Environmental Defenders website, like being able to unlock additional character accessories or music loops.

- **Students thrive on immediate feedback and, as such, the Environmental Defenders website should seek to provide feedback as quickly and as often as possible.** During the focus groups students felt that music mixer sites should have music playing and be projecting a certain level of high energy the minute the user enters the site. Further, in previous focus groups, it was observed that when games provided students with feedback about their performance, like a honking noise if the student clicked an incorrect answer, it helped students learn how to play the game.

- **Although students consistently requested more customization options throughout the focus groups, a careful balance needs to be struck between options and ease of use.** When students have difficulty navigating websites, they tend to disengage. Designing a music mixer interface that is intuitive will go a long way in gaining the students' appreciation for the Environmental Defenders music mixer site.

4 INTERNET USE

4.1 CHARACTERISTICS OF INTERNET USE

4.1.1 KEY TAKEAWAYS

- The majority of the students in our groups have access to the internet at home and spend several hours on the internet each week. However, there is a large range in weekly internet use.
- A website should be compatible with computers and with mobile devices, as students use a mix of devices to access the internet.
- A website should not require an email address, as only about half the students used email.
- Most students and parents reported some restriction on internet use, either in terms of the time the student is allowed to spend per week or in terms of restricting use to homework activities. Some students also reported only being permitted to use the internet after their homework was complete.

4.1.2 DATA SOURCES AND TRENDS

We gathered data on student internet use from three sources:

1. A survey completed at the time of recruitment,[4]
2. A parent survey completed on the day of the focus group,[5] and
3. Student responses during the focus group.

Though responses were not identical across all three sources, even for the same student, clear trends emerged in the data:

- Ninety-one percent of parents reported having broadband internet access at home.[6]
- Time spent on the internet varies greatly across all students, with a median amount of 7.25 hours per week.
- There are few meaningful gender differences in internet usage.
- Students tend to use the internet by themselves, but also like to connect with friends through websites.

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[4] The pre-survey was administered to all 28 candidate students, while only 23 students ultimately participated in the focus groups.
[5] Twenty-three parent surveys were completed.
[6] One parent reported that they did not have broadband internet, while another parent did not answer the question about internet access.

- All students had access to mobile devices for internet use, with most students having access to more than one device.
- Students complete homework assignments mostly using computers, but use both computers and mobile devices to access the internet for non-homework activities.

We discuss these trends further in the following sections.

4.1.3 Time Spent on the Internet

Students generally reported using the internet by themselves. Table 4.1 displays how much time students spend on the internet each week. Total weekly internet use ranged from 2 hours to 17 hours. In the surveys, the average use for boys was slightly greater than the average use for girls. Similarly, the median hours spent on the internet were nearly identical for girls and boys, which lead us to assume that there are no meaningful differences in internet usage. The median weekly internet use across all students is eight hours. During the focus groups, several boys reported only using the internet on the weekends after completing their homework. Other students, however, reported using the internet every day.

Table 4.1 Weekly Internet Use

	All	Girls	Boys
Mean hours/week	8	7.8	8.1
Median hours/week	7.25	6	8
Minimum hours/week	2	2	2
Maximum hours/week	17	17	15.5
Percent of students with time limit for non-homework internet use at home	57%	55%	58%

Source: Average results from both surveys (N=28 for pre-survey and N=23 for parent survey).

At least one student in every group (excluding the pilot) explicitly reported spending time on the internet for homework. This is consistent with the self-reporting by all of the parents that their students use the internet to complete homework assignments.

On the parent survey, 57 percent of parents reported that their children have limits for their weekly internet usage for non-homework activities at home. However, the limits reported by parents spanned a wide range and were often less than the actual number of hours reported on the pre-survey. Although that discrepancy may be explained by additional internet use for homework or at school, it is still unclear how strictly these limits are enforced. Although students did not explicitly detail limitations on internet usage, some did allude to having restrictions on internet use like only being allowed access when homework is completed.

4.1.4 How Students Access the Internet

According to the pre-surveys, all students who participated in the focus groups have access to the internet at home, 100 percent use the internet at school, 91 percent use the internet at houses of friends or family, and 65 percent access the internet at libraries. Parents reported that over half of the students have their own computers and just over half have an email address that they use on a regular basis. Girls were more likely to use an email address than were boys (73 percent for girls and 42 percent for boys). Thus, an Environmental Defenders website that requires an email address would potentially exclude many children, especially boys.

Students access the internet using a variety of devices. See Table 4.2 for parent responses about their children's access to different devices. There is some variation across gender, with boys being more likely to have their own computer, while girls are more likely to have access to an iPod Touch.

Table 4.2 Devices Used to Access the Internet

	Total	Girls	Boys
Access to a smart phone to go online	96%	100%	92%
Access to a tablet	96%	100%	92%
Access to an iPod Touch	70%	82%	58%
Child has his/her own computer	65%	55%	75%

Source: Parent surveys (N=23).

Devices are used for different purposes. See Table 4.3 for a breakdown of devices used for homework and non-homework activities. According to parents, homework is generally completed using computers. Only 17 percent reported that their students complete homework primarily with a mobile device. Internet use for non-homework activities is split between computers and mobile devices.

Table 4.3 Devices Most Frequently Used for Homework and Non-Homework Activities

	Homework activities	Non-homework activities
Computer	78%	35%
Mobile device	17%	57%
Both	4%	9%

Source: Parent surveys (N=23).

4.2 Websites Students Visit

4.2.1 Key Takeaways

- All students like to play games on the internet.
- Students find websites through internet searches, links from television shows and other websites, and word-of-mouth.
- Students value the ability to customize features of a website. They also like websites that involve adventure, challenges, action, and creativity.
- Students find some educational websites to be fun and they make learning enjoyable.
- Many, but not all, students regularly use the internet in school.

4.2.2 Finding Websites

Students were asked how they find out about cool websites to visit. They provided several responses:

- Television shows (e.g. Nickelodeon, Cartoon Network) will provide links to sponsors' websites.
- Other websites (e.g. YouTube) may provide links or include links in advertisements.
- Friends and family may recommend websites.
- Internet search engines (e.g. Google) – students may search for phrases like "cool games," and the search engine will return links.
- App Store – students will download apps based on pictures shown in the App Store.
- Teachers may show them sites they can try at home.

4.2.3 Favorite Websites

Students mentioned many websites and games during the focus groups. It should be noted that omission of a site in a particular focus group does not indicate that those students dislike the site. The following list includes all of the websites and apps mentioned. The most popular are highlighted in bold font.

- 3DVICDEOS.com
- 5 Nights at Freddy's
- ABC Family
- **ABCYA**
- Amazon
- American Girls
- AR BookFinder
- Ask.com
- Brain Game
- BrainPop
- Candy Crush
- Cartoon Network
- Class Dojo
- Club Penguin
- Code.org
- **Cool Math Games**
- CW
- Dance Moms
- Destiny LFG
- Dictionary
- DiscoveryEducation
- Disney
- Dragon City
- Edmodo
- ESPN
- **Facebook**
- Free Rice
- FRIV
- GameTime Football
- Girls Go Games
- Glow Monkey
- **Gmail**
- **Google Search Engine**
- Google Docs
- Happy Gamer
- Hulu
- iCloud
- Instagram
- I-Ready
- iTunes
- Kahn Academy
- Math for Kids
- Mathletics
- Math Playground

- Mighty Girl
- MindMeister
- **Minecraft**
- **Netflix**
- NHL
- Nickelodeon
- PBS Kids
- Pearson Course Connect
- Pearson's Success.net
- Photovisi
- Play Sushi
- Poptropica
- PotterMore
- Razzkids
- ShowBox
- Shutterfly
- Skate Universe
- Skype
- SnapChat
- Soft Monster
- **Sokikom**
- Stack the States
- Starfall
- **SumDog**
- Temple Run
- Tuxedo
- Tynker
- TypingWeb
- Pinterest
- Watch32
- Wizard101
- Yahoo
- **YouTube**

4.2.4 Internet Activities

We asked students how they tend to spend their time on the internet. In responding, nearly every student across all focus groups mentioned that they spent time watching videos online, specifically citing YouTube. Students also enjoyed playing games, with boys tending to play sports or action games and girls tending to play educational games. Girls also tended to mention spending their time on the internet doing creative activities, like dressing up characters, editing photos, drawing pictures, viewing cute animal pictures, and listening to music. That said, at least one girl specifically mentioned enjoying playing Minecraft, which not only includes creativity and building, but also exploration, resource gathering, and combat.

Website Preferences

Students were also asked how they felt about different types of websites. When asked about quiz websites in one focus group, five of the six participants indicated that they felt so-so about these types of sites, while one person said they liked them. Websites that allow the user to express their creativity by making art received five votes in their favor, but the remaining student said that he did not like art sites. Finally, students were asked about websites that had features that they could customize, like different characters. All students answered in the affirmative that they liked websites that allowed them to customize things to their liking.

Points

Since many students across focus groups already indicated that they liked games, the facilitators asked students how they felt about games and websites where the user could accumulate points. The majority of students indicated that they liked getting points. One student mentioned a website that he likes to visit where you can earn a new reward each week when you visit the site. Two students mentioned that they liked when the user could earn points in a game and use them to buy things in the game. Another student mentioned a behavior management app, called Class Dojo, where parents and teachers could reward students with points for good behavior. Students can create their own avatar in the Class Dojo app and it shows students their behavioral strengths, and allows them to earn badges for things like "teamwork" and "helping others." Overall, students liked having some mechanism to track their progress in a game, especially if the points accumulated could then be applied to something that would benefit the user.

4.2.5 Internet Use in School and Educational Websites

Four students mentioned using the internet in school for research and production of class assignments. Broadly speaking, students are generally limited to school sites or educational websites during school hours. Some teachers use the internet in class, or teachers may take students to the computer lab. Teachers sometimes assign schoolwork or homework on the internet. In the parent recruitment survey, parents mentioned a variety of sites that teachers encouraged or required students to visit. In addition to using the internet to complete assignments, students described using the internet for photo editing and playing educational games.

Some of the educational websites students visit include:

- ABCYA
- AR BookFinder
- Brain Game
- BrainPop
- Class Dojo
- Code.org
- Cool Math Games
- Dictionary
- DiscoveryEducation
- Edmodo
- Free Rice
- I-Ready
- Kahn Academy
- Math for Kids
- Mathletics
- Math Playground
- Pearson Course Connect
- Pearson's Success.net
- Sokikom
- Stack the States
- Starfall
- SumDog
- Tynker
- TypingWeb

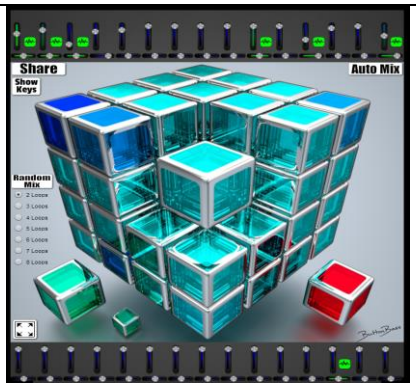
5 Results from Focus Group Website Trials

In the following section, we compare the sample websites on overall ratings and across four categories. We then describe student opinions of and reactions to each website in more detail and summarize student feedback on the Environmental Defenders membership card.

5.1 Sample Websites

We provided seven websites for students to explore. Three sites – Dangerous Descent, Multiplication Blocks and Recycle Roundup – were only played in the pilot focus group because they were either poorly rated or hard to use, and also because based on the pilot we decided to reduce the number of websites we tested in each group. The Music Mixer and Sound Studio sites were added after the pilot focus group to replace two of the three websites we cut. Pairs of students took turns playing the games and had about seven minutes with each website. Generally both students had the opportunity to control the website being viewed. The seven websites are described below in Table 5.1.

Table 5.1 Focus Group Sample Websites

Button Bass Students are presented with a three-dimensional cube made up of smaller cubes. Each small cube represents a musical loop that students can turn on or off and control the volume for. In addition to having an electronic dance cube, the website also offers cubes for other types of music like hip hop and reggaeton.	 http://www.buttonbass.com
Dangerous Descent, Disney Students use the keyboard to navigate a character through a virtual world to rescue magical creatures while avoiding bad guys. Points are earned for collecting health power-ups and for defeating a boss character at the end of each level to release one of the magical creatures.	 http://games.disney.com/disneychannel-dangerous-descent

Multiplication Blocks, BrainPop Students use the mouse to select numbers that, when multiplied, equal the grey number falling from the top of the screen before it hits the bottom. If students are unable to select the right combination numbers, the falling grey numbers pile up on the bottom of the screen. Once the grey boxes reach the top of the screen, the student's game is over. Students earn points for correctly identifying the factors of the product. As they earn more points, students progress through different, more complex, levels of the game.	 https://www.brainpop.com/games/multiplicationblocks/
Music Mixer, National Geographic Students can create and record music by selecting instruments, music tracks, styles, and special effects. They can also customize the physical characteristics of the band members and the instruments they play.	 http://kids.nationalgeographic.com/kids/games/interactiveadventures/music-mixer/
Recycle Roundup, National Geographic Students manipulate a gorilla to collect trash falling from the sky. Students must then place the items into one of three bins: trash/landfill, recycling, and compost/green waste. The game is timed and students get a point for each item that is placed in the correct bin.	 http://kids.nationalgeographic.com/kids/games/actiongames/recycle-roundup/
Sound Studio, Club Penguin Students use the mouse to select different musical instruments to play. There are five musical themes: pop, rock, dance, dubstep, and spooky. Within each theme are 25 musical loops from a variety of different instruments. There are also "one shots," buttons that can be clicked to produce a one-off sound.	 http:/play.clubpenguin.com

Toonix Students can customize an avatar and then play games and interact in a virtual world using the avatar. Customization options include color and shape for the avatar's head, eyes, mouth, and body.	 http://www.toonix.com

5.2 Website Comparisons

After playing with each website, students were asked the following questions:

1. Did the website look like a good site?[7]
2. How easy was it to figure out how to use the website?
3. How much fun was this site?
4. Would you tell a friend about this website?

Each site received a rating from 1 to 4 for each criterion described above, with 1 being the most favorable rating and 4 being the worst. After exploring all the websites, students were asked to assign each site with a rating from 1 to 10, where 1 would represent a really bad website, and 10 would represent the best website possible. For this assessment, students were able to assign the same number rating to multiple sites. After rating each site, students were also asked to rank the sites they view from 1 to 4, where 1 represented their favorite site and 4 represented their least favorite site.[8]

5.2.1 Key Takeaways from Website Comparisons

- Overall, students had fun exploring websites and playing games, and they wanted more time on the computers during the focus groups. In fact, most websites were rated "very fun" or "pretty fun" by a majority of students.
- Students are likely to share websites they enjoy with friends.
- There was a minimal difference between the highest rated site (Button Bass) and the runner-up (Toonix). When asked to rank their favorite websites, these sites tied for students' favorite.
- In general, boys and girls had similar opinions about, and reactions to the websites, with one notable exception:
    - When asked if they would share the website they were viewing with their friends, girls were most likely to tell their friends about Sound Studio. Boys, however, said that they were least likely to tell their friends about that site, instead preferring to share Button Bass.
- Students worked together and helped each other to figure out how to play the games. Their opinions can also be influenced by their peers.

[7] This question was added after the pilot focus group and therefore only received responses from 24 students.
[8] During the pilot students viewed five websites, so they were asked to rank the websites from 1 to 5.

5.2.2 Overall Ratings

Table 5.2 displays the average ratings for each of the sample websites, disaggregated by group and gender. The highest rating given for each gender, and across all participants, is highlighted in green for the avatar creation and music mixing websites, while the lowest ratings are highlighted in red.

Table 5.2 Average of Overall Ratings

	Number of Students	Avatar Creation & Music Mixing				Games			Group Average Rating
		Toonix	Button Bass	Music Mixer	Sound Studio	Dangerous Descent	Multiplication Blocks	Recycle Roundup	
Girls	**11**	**6.8**	**6.8**	**6.4**	**6.7**	**8.0**	**9.0**	**8.0**	**7.4**
3/1/15	2	9.5	8.5			8.0	9.0	8.0	8.6
3/8/15	9	6.2	6.4	6.4	6.7				6.4
Boys	**12**	**8.0**	**8.3**	**5.8**	**6.6**	**4.9**	**4.6**	**3.4**	**5.9**
3/1/15	4	7.0	9.3			4.9	4.6	3.4	5.8
3/8/15	8	8.5	7.9	5.8	6.6				6.2
Total	**23**	**7.4**	**7.6**	**6.1**	**6.6**	**5.9**	**6.1**	**4.9**	**6.4**

Note: The two girls and four boys on March 1st were part of one combined focus group.

Overall, across all 23 students, Button Bass was the highest rated game, with an average rating of 7.6, and Recycle Roundup was the lowest rated game, with an average rating of 4.9.

Table 5.3 Websites Ranked by Overall Ratings

All Students		Girls		Boys	
1st	Button Bass	**1st**	Button Bass (Tie)	**1st**	Button Bass
2nd	Toonix	**2nd**	Toonix (Tie)	**2nd**	Toonix
3rd	Sound Studio	**3rd**	Sound Studio	**3rd**	Sound Studio
4th	Music Mixer	**4th**	Music Mixer	**4th**	Music Mixer

Note: This table excludes the three sites that were only evaluated by six students.

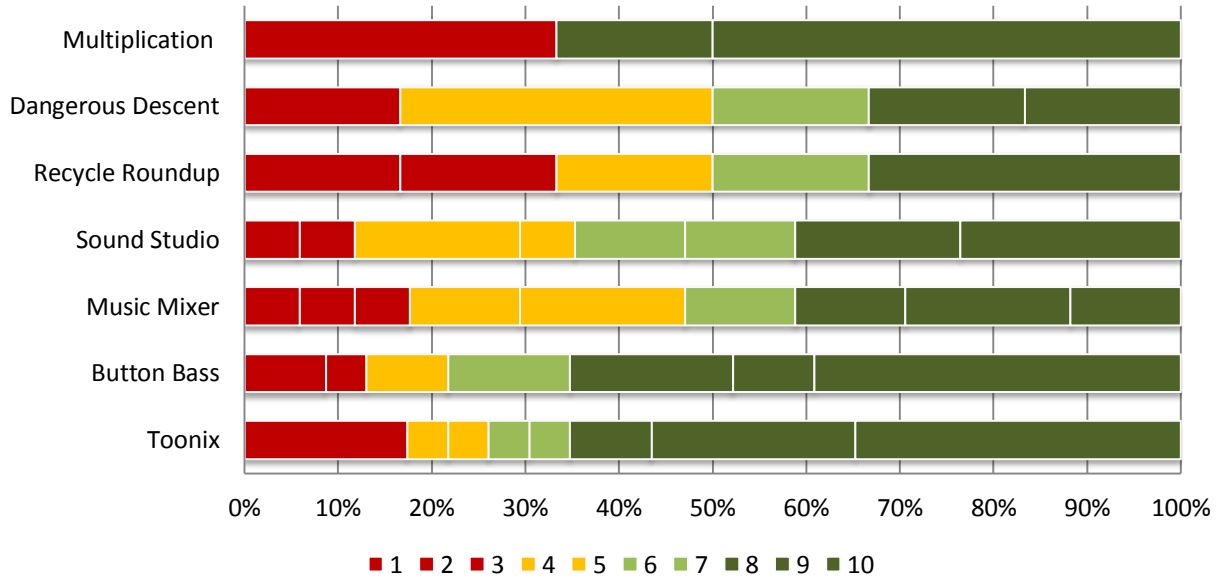
Table 5.3 shows how the four websites rank overall and by gender. The ranked order of overall ratings was very similar across genders. The main difference being that, on average, girls ranked Button Bass and Toonix equally, while male students preferred Button Bass over the Toonix website.

Figure 5.1 below displays the distribution of individual student ratings for each website. The area shaded in dark green represents the percentage of students who gave the highest ratings to each site – 10, 9, or 8 – and the area shaded in light green represents the percentage of students who

gave ratings of 7 or 6. The area shaded in yellow and red show the percent of students that gave ratings of 5 or below to each site. Red denotes the lowest ratings – 1, 2, or 3. It should be noted that sites were given a range of ratings – both high and low. Most sites received the highest rating, 10, and the lowest rating, 1, from at least one student. The exceptions are that Toonix did not receive any scores of 1, while Recycle Roundup and Multiplication Blocks did not receive any scores of 10. It should be noted that the latter two sites were only played by six students.

As shown in Figure 5.1, Button Bass has the largest proportion of "green" ratings. It also has a median rating of 8. Seventy-eight percent of all students gave the site a rating of 6 or higher, and 39 percent of students gave it the highest rating, 10. Multiplication Blocks and Recycle Roundup, which were only played by six students, had the largest "red" area. Thirty-three percent of those students gave Recycle Roundup and Multiplication Blocks a rating of 1 or 2. Among the sites visited by all focus groups, Music Mixer had the largest proportion of red and yellow ratings. Forty-seven percent of students gave Music Mixer a rating of 5 or lower, while 41 percent rated the site at 8 or higher.

Figure 5.1 Distribution of Student Ratings, By Website



Note: Sites were rated by 23 students, except where noted.

There was some variation in ratings across focus groups. Some groups tended to award higher or lower ratings, on average, than the other groups. While each of the sites with music mixing and avatar creation received similar rankings from boys and girls, the game websites, Dangerous Descent, Multiplication Blocks, and Recycling Roundup all received higher scores, on average, from girls than from boys. It should be noted, however, that each of these sites was only viewed by six students and the two female students during this focus group were paired with one another during the website viewing and ranking. This suggests that there may be some peer effects; the level of collective excitement about the websites varied across groups and may have influenced the students' ratings. Despite the variation in average ratings, there was general agreement across groups about how the sites compared to one another and which sites were the worst.

5.2.3 Student Ratings by Category

Website Appearance

Students were asked to rate the appearance of each site on a 4-point scale:

1. Looked very good
2. Looked pretty good
3. Did not look very good
4. Looked bad

Table 5.4 shows how each site ranked in the appearance category. Button Bass received the highest appearance score for the avatar creation and music mixing websites, while Music Mixer received the lowest. Note that Dangerous Descent, Multiplication Blocks and Recycle Roundup were only played in the pilot focus group. The Music Mixer and Sound Studio sites were not added until after the pilot focus group. As a result, the number of students rating each site varies.

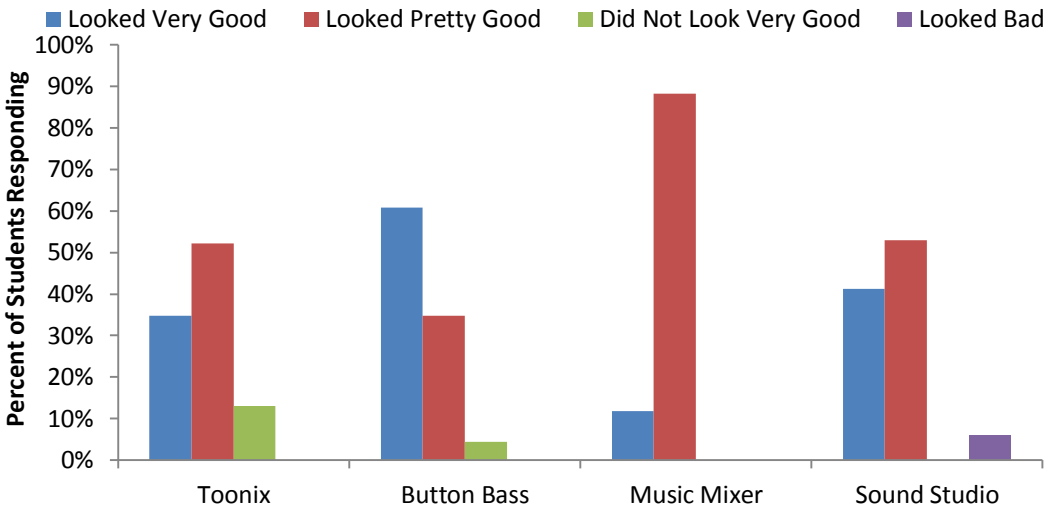
Table 5.4 Average Appearance Scores

Ranking	Website	Mean Score	Number of Ratings
1st	Multiplication Blocks	1.3	6
2nd	Button Bass	1.4	23
3rd	Sound Studio	1.7	17
4th (Tie)	Recycle Roundup	1.8	6
4th (Tie)	Toonix	1.8	23
6th	Dangerous Descent	1.8	6
7th	Music Mixer	1.9	17

Scale: 1 is best looking; 4 is worst looking.

Figure 5.2 displays the distribution of appearance ratings for each of the sites viewed by more than six students. In general, students thought the websites looked good. Very few students said a website looked bad. Most websites received ratings of "looked very good" or "pretty good."

Figure 5.2 Distribution of Ratings: Did the website look like a good site?



Note: The total number of students providing ratings for Toonix and Button Bass is 23, while 17 students provided ratings for Music Mixer and Sound Studio.

There were a few gender differences apparent in the appearance scores. Table 5.5 shows how the websites were ranked overall and separately for girls and boys. Girls gave the Toonix higher appearance scores than the boys did, while boys appreciated the appearance of Music Mixer more than girls.

Table 5.5 Websites Ranked by Appearance, by Gender

All Students		Girls		Boys	
1st	Button Bass	**1st**	Button Bass	**1st**	Button Bass
2nd	Sound Studio	**2nd**	Toonix	**2nd**	Sound Studio
3rd	Toonix	**3rd**	Sound Studio	**3rd**	Music Mixer
4th	Music Mixer	**4th**	Music Mixer	**4th**	Toonix

Note: Websites played by only six students are excluded from this table.

Ease of Use

Students were asked to rate how easy to use each site was on a 4-point scale:

1. Very easy
2. Pretty easy
3. Not very easy

4. Hard

Table 5.6 shows how each site ranked in the ease of use category. Sound Studio was the easiest site and Multiplication Blocks was the hardest. As noted above, three sites – Dangerous Descent, Multiplication Blocks and Recycle Roundup – were only played in the pilot focus group. The Music Mixer and Sound Studio sites were not added until after the pilot focus group. As a result, the number of students rating each site varies.

Table 5.6 Average Ease of Use Scores

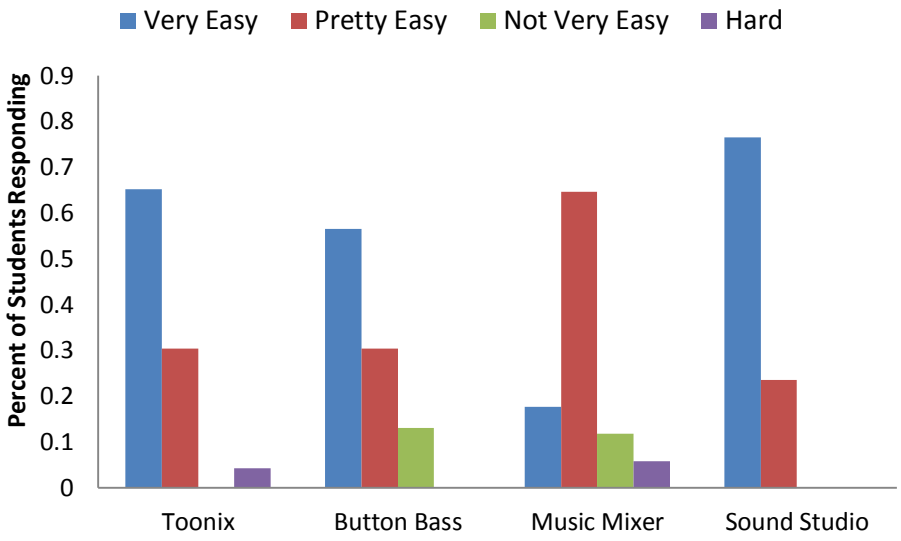
Ranking	Website	Mean Score	Number of Ratings
1st	Sound Studio	1.2	17
2nd	Toonix	1.4	23
3rd	Dangerous Descent	1.5	6
4th	Button Bass	1.6	23
5th	Recycle Roundup	2.0	6
6th	Music Mixer	2.1	17
7th	Multiplication Blocks	2.2	6

Scale: 1 is easiest; 4 is hardest

Figure 5.3 displays the distribution of ease of use ratings for each site. Very few students said a website was hard, even though we observed students struggling with certain features of the applications. Sound Studio, which received the most "very easy" ratings, consisted of approximately 40 buttons with musical instrument images on them which students could click to turn on and off. Music Mixer, which was considered one of the most challenging, is arranged like a DJ station, where sounds could be turned on and off by selecting one of five loop option for each of the five instrument choices, six sliding buttons are used to control the volume of different loops and effects, and each band member and their respective instrument could be completely customized.

In their feedback about how the sites could be improved, students routinely asked for more options, but the responses to this question illustrate that the more options students were given, the more difficult they found it to use the application. Going forward, website designers should be mindful of balancing customization options with application navigability. Perhaps the site that did the best job of balancing the two was the Toonix website, which used a scrollable list to display dozens of character customization options. Each list was identified by an image of the character component that it would customize. For example, if students wanted to change their character's eyes, they clicked an eye image, which then loaded a scrolling list of all the eye options they could choose from.

Figure 5.3 Distribution of Ratings: How easy was it to figure out how to use the website?



Note: The total number of students providing ratings for Toonix and Button Bass is 23, while 17 students provided ratings for Music Mixer and Sound Studio.

Although the averages of the raw ease scores varied slightly, the ranking of easiest to most challenging application to use was identical across genders. Table 5.7 shows how the websites were ranked overall and separately for girls and boys.

Table 5.7 Websites Ranked by Ease of Use, by Gender

All Students		Girls		Boys	
1st	Sound Studio	**1st**	Sound Studio	**1st**	Sound Studio
2nd	Toonix	**2nd**	Toonix	**2nd**	Toonix
3rd	Button Bass	**3rd**	Button Bass	**3rd**	Button Bass
4th	Music Mixer	**4th**	Music Mixer	**4th**	Music Mixer

Note: Websites played by only six students are excluded from this table.

Degree of Fun

Students were asked to rate how fun each site was on a 4-point scale:

1. Very fun
2. Pretty fun
3. Pretty boring
4. Very boring

Table 5.8 shows how each site ranked in the degree of fun category. Button Bass was the most fun site and Recycle Roundup was the least fun site. Again, three sites – Dangerous Descent, Multiplication Blocks and Recycle Roundup – were only played in the pilot focus group. The Music Mixer and Sound Studio sites were not added until after the pilot focus group. As a result, the number of students rating each site varies.

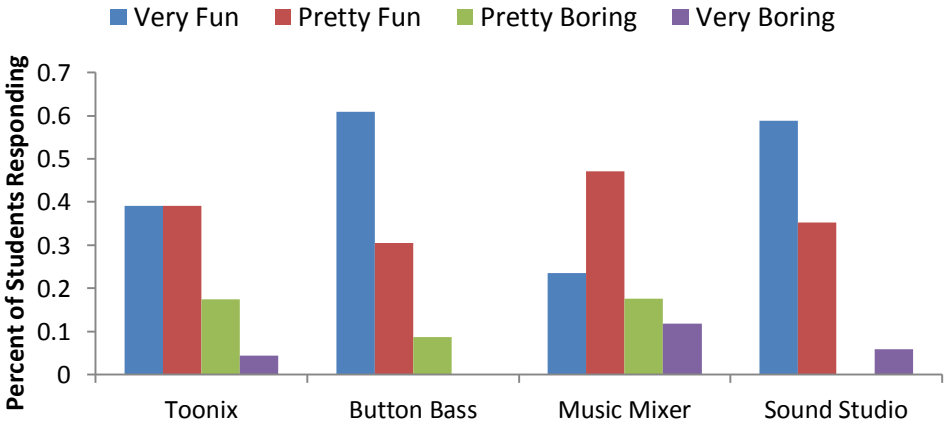
Table 5.8 Average Degree of Fun Scores

Ranking	Website	Mean Score	Number of Ratings
1st	Button Bass	1.5	23
2nd	Sound Studio	1.5	17
3rd	Multiplication Blocks	1.8	6
4th	Toonix	1.9	23
5th	Dangerous Descent	2.2	6
6th	Music Mixer	2.3	17
7th	Recycle Roundup	2.5	6

Scale: 1 is most fun; 4 is least fun.

Figure 5.4 displays the distribution of degree of fun ratings for each site. Very few students said a website was "very boring." Most students seemed to have at least some fun with each game. Dangerous Descent, Multiplication Blocks, and Recycle Roundup were deemed to be more fun by boys than girls. These sites, however, were only viewed by six students and peer effects may account for the heterogeneity of scores. As Table 5.9 shows, girls and boys rated the games in terms of fun in the same order.

Figure 5.4 Distribution of Ratings: How much fun was this site?



Note: The total number of students providing ratings for Toonix and Button Bass is 23, while 17 students provided ratings for Music Mixer and Sound Studio.

Table 5.9 Websites Ranked by Degree of Fun, by Gender

All Students		Girls		Boys	
1st	Button Bass	**1st**	Button Bass*	**1st**	Button Bass
2nd	Sound Studio	**2nd**	Sound Studio*	**2nd**	Sound Studio
3rd	Toonix	**3rd**	Toonix	**3rd**	Toonix
4th	Music Mixer	**4th**	Music Mixer	**4th**	Music Mixer

* indicates a tie.

Note: Websites played by only six students are excluded from this table.

Likelihood of Sharing with Friends

Students were asked to rate how likely they were to share the website with friends using a 4-point scale:

1. Definitely would
2. Probably would
3. Probably not
4. Definitely not

Table 5.10 shows how each site ranked according to students' likelihood of sharing the website with friends. Students were most likely to say they would tell their friends about Button Base and least likely to tell their friends about Recycle Roundup. As noted above, the number of students rating each site varies because not every website was shown to every focus group.

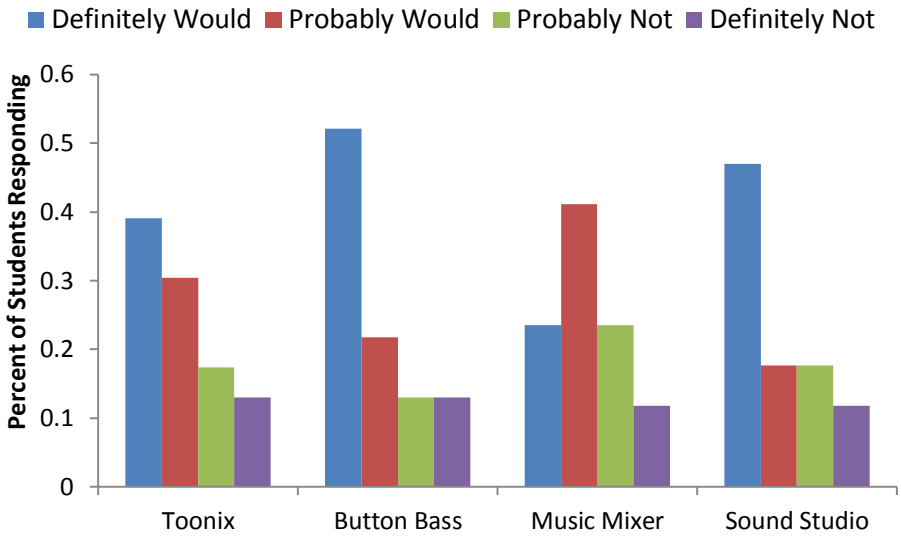
Table 5.10 Average Likelihood of Sharing Scores

Ranking	Website	Mean Score	Number of Ratings
1st	Button Bass	1.9	23
2nd (Tie)	Toonix	2.0	23
2nd (Tie)	Sound Studio	2.0	17
4th (Tie)	Music Mixer	2.2	17
4th (Tie)	Multiplication Blocks	2.2	6
6th	Dangerous Descent	2.3	6
7th	Recycle Roundup	2.6	6

Scale: 1 is most likely; 4 is least likely.

Figure 5.5 displays the distribution of student responses to the question: "Would you tell a friend about this website?" Most students responded that they "probably" or "definitely" would share the sites with friends. Music Mixer had the greatest percentage of students reporting that they would "probably" or "definitely" not share the site with friends.

Figure 5.5 Distribution of Ratings: Would you tell a friend about this website?



Note: The total number of students providing ratings for Toonix and Button Bass is 23, while 17 students provided ratings for Music Mixer and Sound Studio.

The greatest gender difference in this category is that boys were more likely to share the Recycle Roundup and Multiplication Blocks sites with friends than were girls. Although the likelihood of sharing was similar among boys and girls in terms of average scores, when those likelihoods were ranked, additional differences appeared. Girls were most likely to tell their friends about Sound Studio, while boys were most likely to tell their friends about Button Bass. Table 5.11 shows how the websites were ranked overall and separately for girls and boys.

Table 5.11 Websites Ranked by Likelihood of Sharing, by Gender

All Students		Girls		Boys	
1st	Button Bass	**1st**	Sound Studio	**1st**	Button Bass
2nd	Sound Studio	**2nd**	Toonix	**2nd**	Toonix
3rd	Toonix	**3rd**	Button Bass	**3rd**	Sound Studio*
4th	Music Mixer	**4th**	Music Mixer	**4th**	Music Mixer*

* indicates a tie.

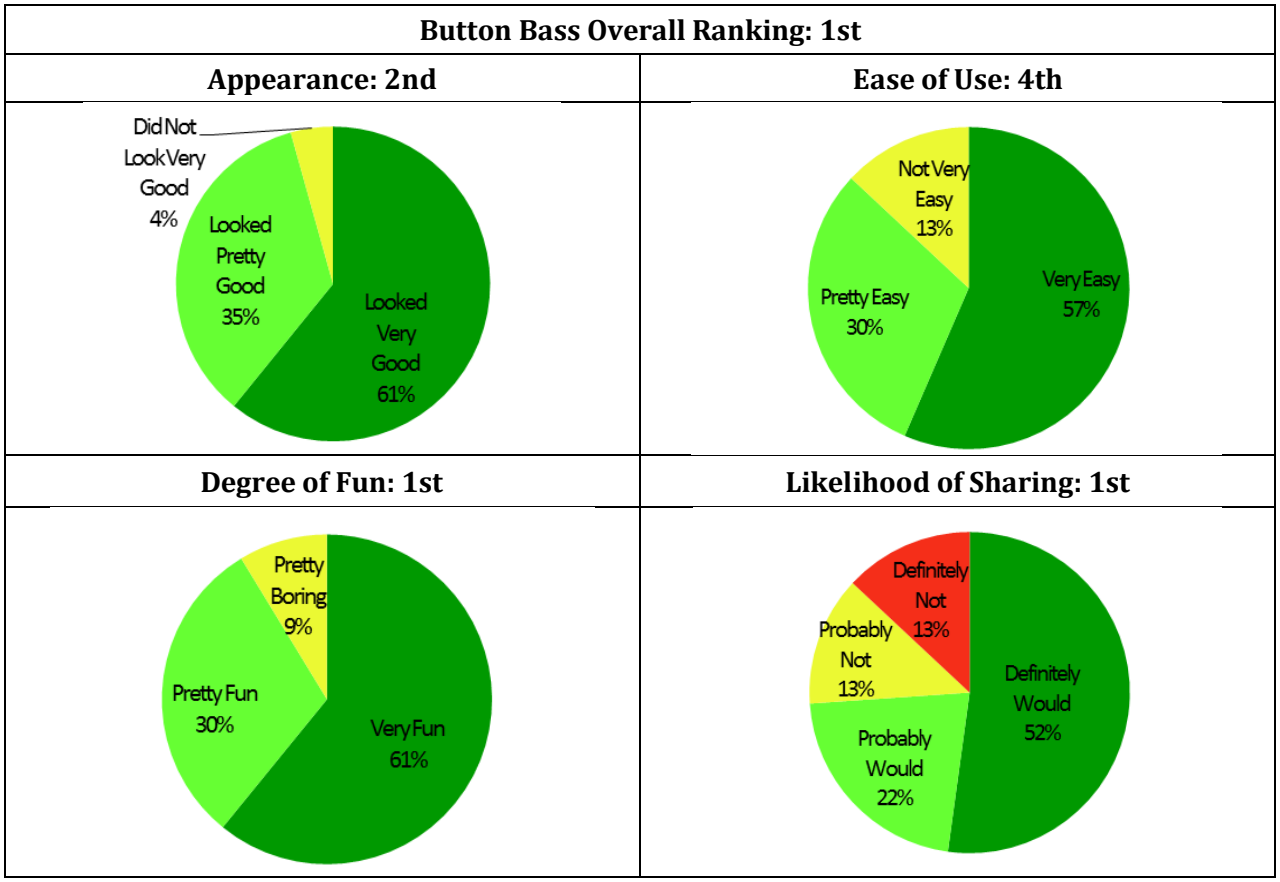
Note: Websites played by only six students are excluded from this table.

5.3 Individual Website Profiles

5.3.1 Button Bass

Button Bass received the highest rating overall and was the highest rated for degree of fun and likelihood of sharing. While both boys and girls rated Button Bass in the top half of websites reviewed, the degree of the ratings varied greatly across genders with boys giving Button Bass an average of 8.3 and girls assigning an average of 6.8. Ninety-one percent of students called the game very fun or pretty fun and 74 percent of students said that they would definitely or probably share the game with friends. See Figure 5.6 for a summary of student ratings in each of the four categories.

Figure 5.6 Button Bass Ratings



The majority of students quickly figured out how to play the game. Only 13 percent of students found the game to either be "not very easy" or "very hard." Still, there were a few challenging aspects of the game. The website consists of a large cube composed of a series of smaller cubes. The user can click on any of the smaller cubes to turn a musical loop on and off. While students liked the ease of turning the different music loops on and off, the website does not provide any information about what musical loops the user adjusting, which some students found frustrating. Despite this shortcoming, one student said that it was the "perfect" website and that he hoped to play on it when he got home.

Multiple students reported that this site could be improved by making the user aware of what noises would be produced as they turned each cube on and off. A few students also wished that they could have recorded their music to listen to at a later date. Students seem to most appreciate the kind of music the cube played (electronic dance music) because it "sounds like something you would play at a party." This was further supported by students dancing in their seats while reviewing the website.

The facilitators noted that students remained moderately to very engaged while using the site. On average, interaction between students while using the site was relatively low, between good and average. This may have been a result of the limited instruction the website provided, as students' feedback to their partner was restricted to telling them to click on a box. In most pairs, both students wanted to try the game and wanted to continue playing when their time was up. Among boys, Button Bass ranked first overall, while the girls overall rating put Button Bass in fourth place, tied with Toonix. Both boys and girls found the website to be more difficult to use than some of the other sites reviewed.

Button Bass Key Takeaways:

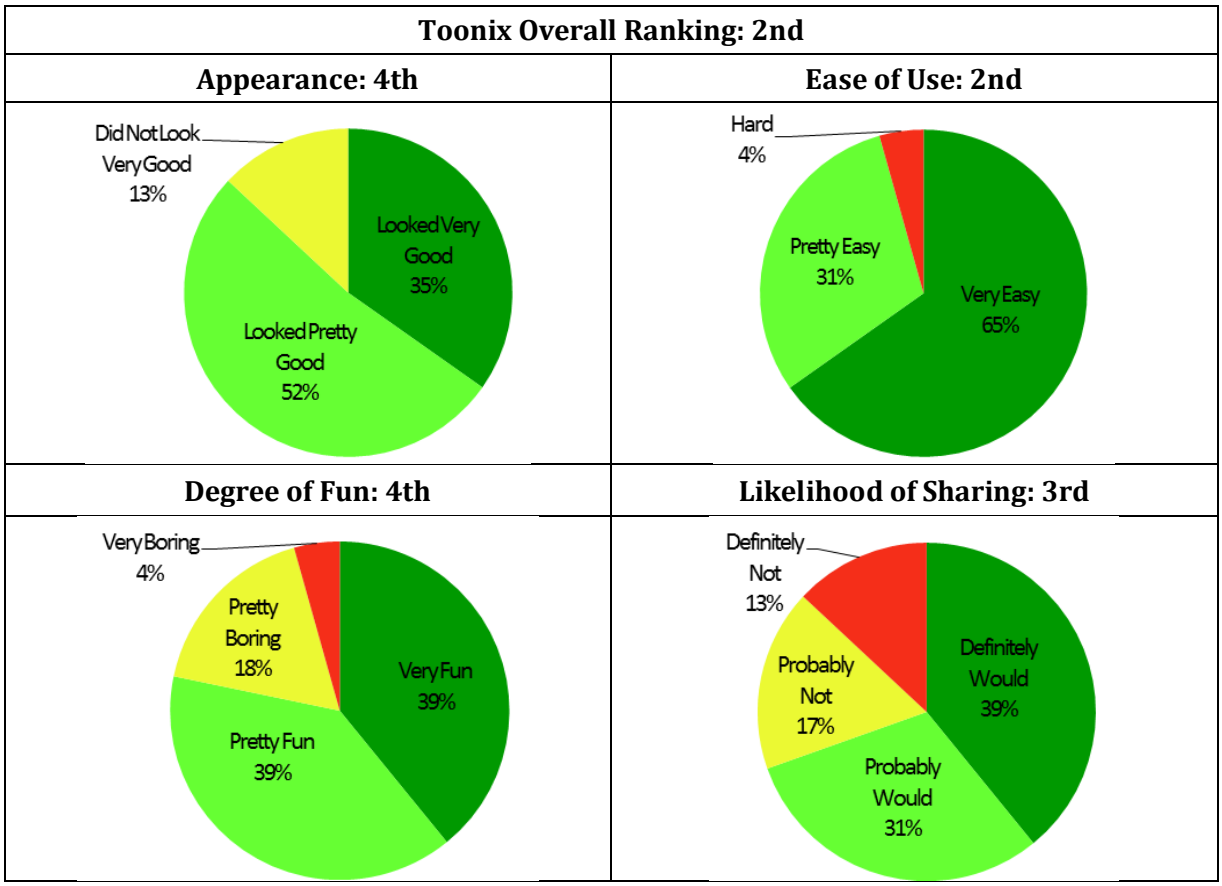
- Music mixers should have instructions or visual cues to help inform students about the music loops that they are mixing.
- Although there wasn't complete consensus on the issue, many students would like the opportunity to record the music that they create in a music mixer.
- Students really enjoy electronic dance music.

5.3.2 TOONIX

Toonix ranked second overall and in the ease of use category. It ranked lower (4th) on appearance and degree of fun and third for likelihood of sharing. (See Figure 5.9 for a summary of student ratings in each of the four categories.) There was a fairly substantial gender difference for the overall rating between boys and girls who ranked the site 8.0 and 6.8, respectively. (Similar differentials between boy and girl scores of overall rating occurred for five of the seven sites visited.) We also observed that many students wanted to get a turn to try it.

The game was intuitive for most students. They were able to figure out how to customize their avatar rather quickly and without any directions, as the site does not provide any. Multiple students enjoyed being able to make comical changes to their avatar, like having its head be a turkey or on fire and giving the avatar goofy features. The lower rating on degree of fun may be due to the website being limited to avatar customization. When asked how they would improve the site students suggested being able to save and share their avatar, being able to play with the avatar, being able to interact with other avatars and having additional options for customization.

Figure 5.7 Toonix Ratings



Toonix Key Takeaways:

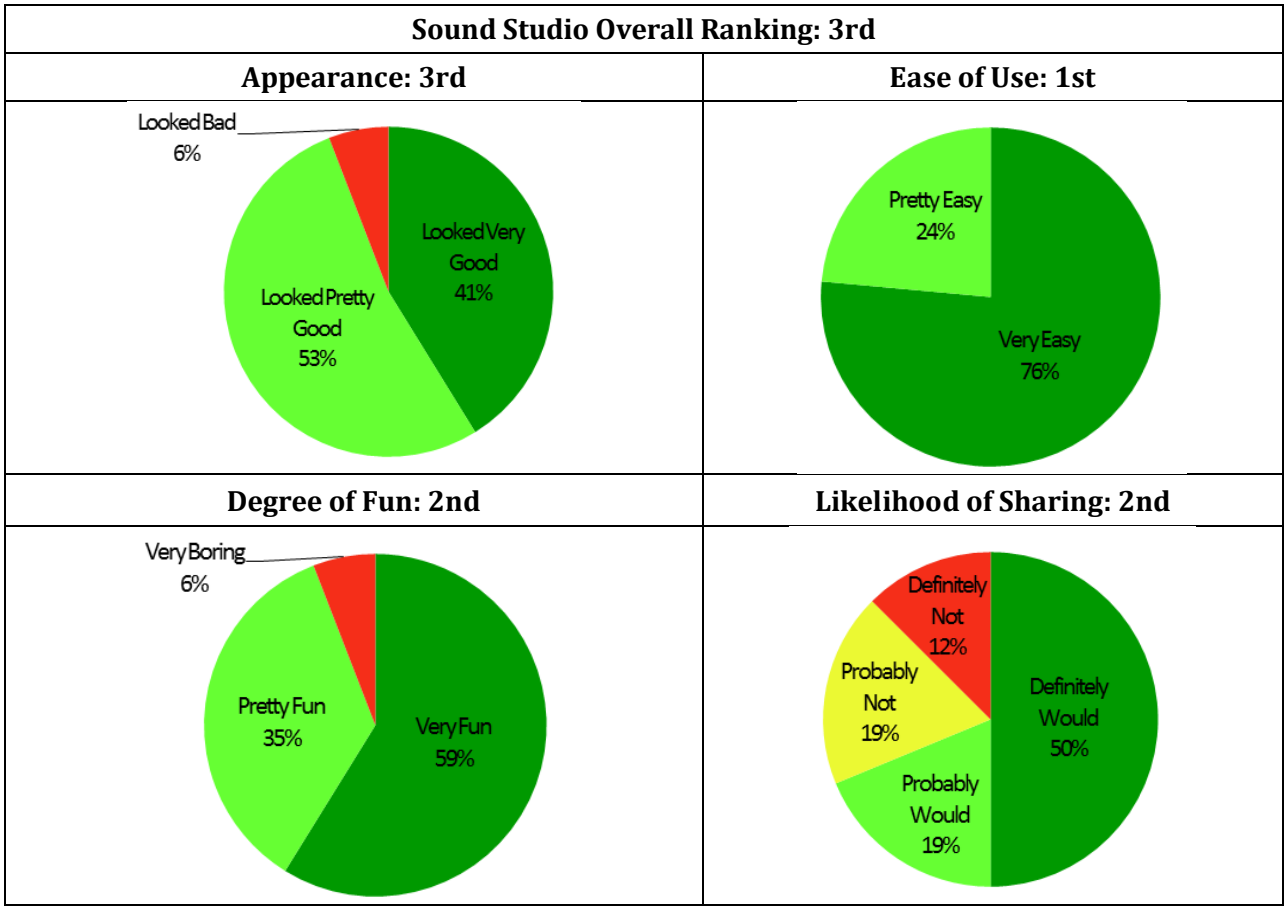
- Students value opportunities to customize their character.
- Customization, however, is not sufficient to keep them entertained. Rather, students need to be able to do something with the avatar being customized.
- Students like having a variety of options to select from when customizing an avatar.
- "Funny" items can increase student interest in an application.

5.3.3 Sound Studio

The Sound Studio was evaluated by all students, except for the pilot group. Student reactions were varied across the different focus groups for both girls and boys. Overall, the Sound Studio received the third-highest rating. It ranked first in terms of ease of use, second for degree of fun and likelihood of telling friends, and third for appearance (See Figure 5.8.). Seventy-six percent of students rated the site as being "very easy" to use, while the remaining 24 percent of students rated the site as "pretty easy" to use. The vast majority of students (94 percent) rated the site as either "pretty fun" or "very fun," and 65 percent of students would probably or definitely share the website with friends.

Students found this website to be very intuitive and immediately started playing with the various music mixing options. Facilitators ranked student engagement and interaction between students for this site in the upper half of all the sites visited. Across focus groups students' favorite feature of the website was the "Spooky" themed music mixer. When asked how the website could be improved students felt that the one-shot sounds should play for a longer period of time and that there should be a function for saving and sharing the music created. Despite the five musical themes, each of which had 25 music loop buttons and 15 one-shot sounds, students also felt the site could be improved with more instruments and categories of music.

Figure 5.8 Sound Studio Ratings



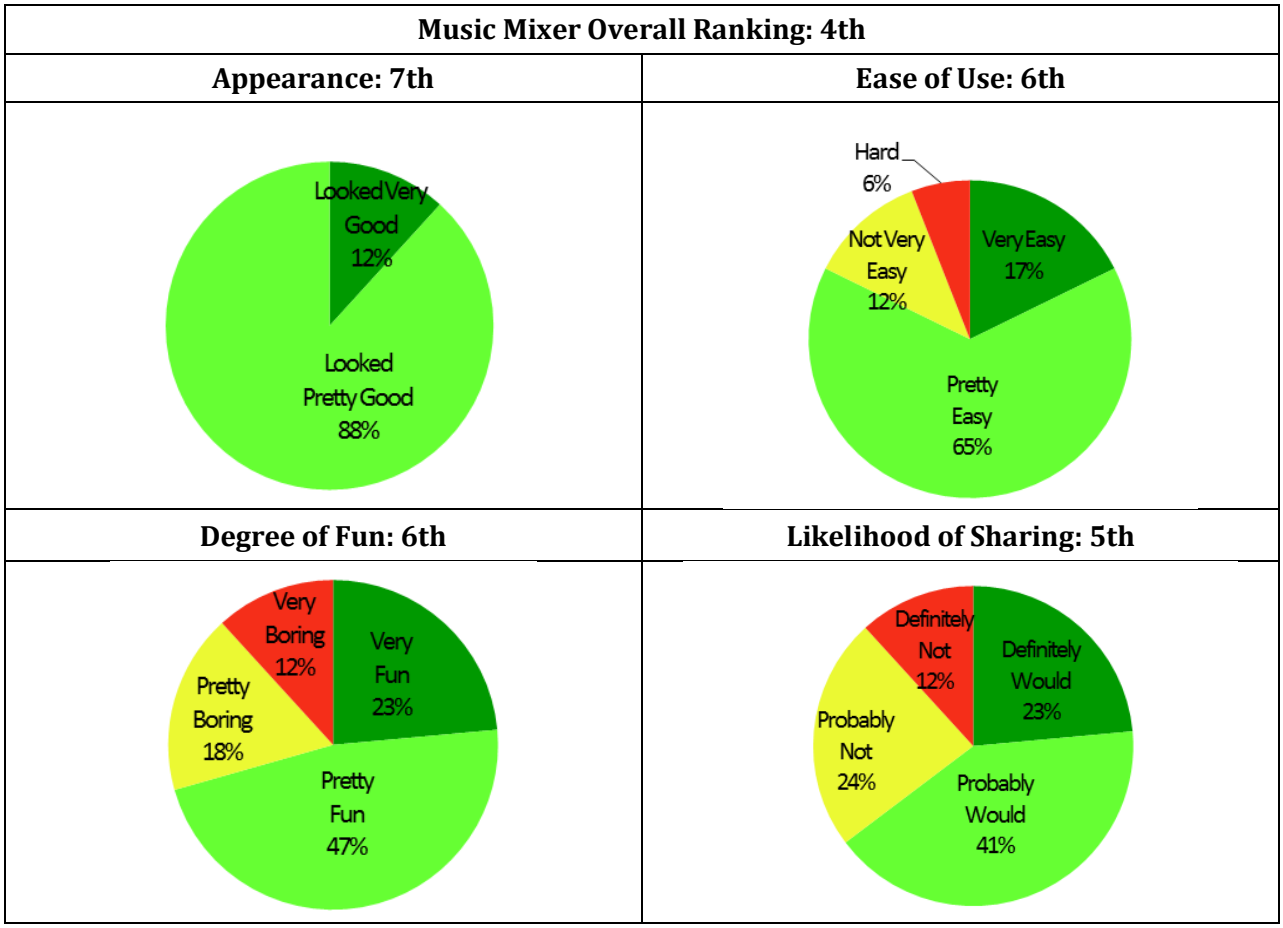
Sound Studio Key Takeaways

- The Sound Studio is an example of an attractive and accessible music mixing site for students.
- Having a variety of options helps students engaged in the music mixer.
- If one-shot noises are going to be used in a music mixer, students prefer that it repeat a few times or last for at least 30 seconds, rather than have a noise play once and be over.
- "Spooky" items can increase student interest in an application.

5.3.4 Music Mixer

The Music Mixer was evaluated by all students, except for the pilot group. Music Mixer tied with Multiplication Blocks for fourth in the overall ratings. For each of the four categorical rankings Music Mixer's ratings placed it in the bottom three spots. When compared to the three other websites that were reviewed by more than six students, Music Mixer came in last place in all four categories, including appearance, ease of use, degree of fun, and likelihood of sharing. Twelve of the seventeen students who reviewed this site found the game to be "very fun" or "pretty fun" while the remaining 28 percent of students found the site to be "pretty boring" or "very boring." Sixty-four percent of students said that they would definitely or probably share the game with friends.

Figure 5.9 Music Mixer Ratings



Though Music Mixer received high ratings in appearance, it was one of the most difficult games for the students to engage with. Some students did read the directions, but many students did not. This may have been the result of the website's design, wherein the instructions could only be accessed by clicking a small question mark in the upper right corner of the screen. Further, the instructions primarily focused on the features of the site, rather than explaining how to control the features. As a result, most students had to explore the website by clicking around the screen.

Despite the challenges, students liked many aspects of the game and were mostly engaged throughout. The website includes customization functions for both instruments and characters and a music mixing component. Due to the complexity of the site and time limitations, students often honed in on one activity, character customization, or music mixing, and focused on that aspect of the website until their turn was over. Students really enjoyed the extensive customization options for the characters, but found the music mixer difficult to navigate. One student explained that, although he liked having the sliding buttons to control the volume of the different sounds, there was a chance that he would move the slide too far, so he would rather the site just have buttons to turn sounds on and off. Students thought the website could be improved by being able to save your band member avatars and music to share with friends. One student also felt the site could be improved by having the characters doing more than just standing around, like dancing. Another student supported this suggestion by explaining that the site was boring before the music starts because the characters are just standing there. This student also recommended that the characters should be moving and have high energy the minute the page loads.

In terms of interaction, Music Mixer tied Recycle Roundup for having the lowest interaction between students. This may have occurred due to the complexity of the site. If students were uncertain of how to use the site, it seems unlikely that they would have much to discuss with their partner about how the partner in control of the mouse could do things with the site.

Music Mixer Key Takeaways:

- Students need clear, detailed instructions that are readily apparent on the website for students to be able to use them. Screenshots explaining how to do something may be a more effective way to deliver instructions rather than lengthy text.
- Although students routinely requested additional options for customization for most of the sites visited, it needs to be balanced with students' ability to access and navigate the website.
- If the game is complex and challenging to figure out, students tend to disengage from the website.

5.3.5 Multiplication Blocks

Multiplication Blocks was only played by the pilot group. Though the students liked its appearance, it ranked low in terms of ease of use, degree of fun and likelihood of sharing.

Table 5.12 Multiplication Blocks Ratings

Overall Ranking	4th (Tie)
Appearance	1st
Ease of Use	7th
Degree of Fun	3rd
Likelihood of Sharing	4th

With minimal available instructions to guide their actions, students briefly struggled to understand how to play the game. They clicked on the numbers, but it took a few tries before students realized they needed to select numbers that were factors of the falling product number. The game also lacks an unclick feature, so students temporarily got stuck when they accidentally clicked on an incorrect number. Once they got going, students generally remained engaged for their turn, but partner interaction varied across pairs of students.

Multiplication Blocks Key Takeaways:

- When students are uncertain of how to play a game, especially if instructions aren't available, students are likely to become frustrated and may give up unless the activity is engaging enough to motivate them to persist.

5.3.6 Dangerous Descent

This website was only included in the pilot focus group and, as such, was only viewed by six students. Based on this limited review the average rating for the website (5.9 out of 10) was the 6th best of all seven websites. On ease of use, the site earned a 3rd place ranking, but for appearance, degree of fun, and likelihood of sharing the website with friends the site was near the bottom of the ranked list (See Figure 5.10 for a summary of student ratings in each of the four categories.)

Table 5.13 Dangerous Descent Ratings

Overall Ranking	6th
Appearance	6th
Ease of Use	3rd
Degree of Fun	5th
Likelihood of Sharing	6th

The game was a standard action game that was reasonably intuitive, though many students read the instruction page that appeared at the start of the game to describe which keys move the character. While it was rated as one of the easier sites, students did have some difficulty navigating around corners in the game and figuring out what, if anything, there was to do besides move through each level and shoot fire. After a few minutes of playing, some students found the game to be boring and ceased playing, offering their partner a turn.

Dangerous Descent Key Takeaways:

- When instructions appear as a pop-up at the start of the game students tend to read them.
- Student motivation and engagement is negatively impacted if they have difficulty maneuvering objects and characters or the game doesn't have enough features to compel the student to continue playing.

5.3.7 Recycle Roundup

Recycle Roundup was only played by the pilot group. It was the lowest rated site overall and received the lowest average ratings for degree of fun and likelihood of telling friends. Interestingly, it was ranked 5th for ease of use.

Table 5.14 Recycle Roundup Ratings

Overall Ranking	7th
Appearance	6th
Ease of Use	5th
Degree of Fun	7th
Likelihood of Sharing	7th

Although students found the game to be funny because of the gorilla character and carrots falling from the sky, many had difficulty playing the game. While the students eventually got the hang of grabbing falling trash and placing it in a bin, most were uncertain about which items should go in which bin and were unaware if they were sorting the garbage correctly. When asked about the game, one male student said he liked that the game was fast, but didn't think it was a really good topic. Another male student felt the game needed more action. In general, engagement and interaction were low.

Recycle Roundup Key Takeaways:

- Students may struggle to control the character if the game tries to incorporate multidimensionality by having the character go to the back of the screen and come to the front of the screen.
- When instructions do not immediately appear at the start of the game, students often fail to read them, which can result in frustration if the game is difficult to play.
- Entertaining characters and objects can help keep students engaged in a game that they might not otherwise find to be particularly interesting.

5.4 Feedback on Environmental Defenders Music Mixer

Although they were not asked to formally rate the sample Environmental Defenders Music Mixer website, they did have the opportunity to test the site and provide feedback. Students generally liked that the website had multiple types of music, different beats and instruments, but some students wanted to see even more options. Specific options that students recommended would be adding techno music, drums, guitars, flute, and violin. One student commented that they liked the idea of being a DJ. There were two students, each from a different group, who said that they did not like the talking on the website. A third student, however, thought the voices were funny. One student offered that the site could be improved by adding songs from the radio or having the website predict what instruments you might like to use in the future, like the way that Spotify recommends songs you might like.

Broadly, the rest of the recommendations that the students made related to increasing the functionality of the characters. The following are the most common recommendations about improving the characters:

- Make them dance, flip and fly
- Have them crowd-surf
- Enable them to bring other people on stage
- Create a feature that allows you to zoom in on one member of the band and make them louder
- Allow students to create their own avatar that could play with the band and dance

In terms of use, some students wished the labels on the control panel were made clearer so the user knew exactly what they were turning on and off. Similarly, one student requested that a click feature could turn the characters' music on and off, rather than the sliding bar because the student felt the sliding bar was difficult to control. Another challenge one student described with respect to the design of the control interface was that he didn't realize that he needed to press "play" to make the music start. Some students would have liked to be able to record their songs to share their creation, while others did not want to share their music. That said, one student felt he didn't need a recording feature because it would be simple enough to recreate the music he just mixed.

5.5 Feedback on Environmental Defenders Membership Card

Students were asked to look at a prototype of the Environmental Defenders membership card and told that the card would not only serve as a way to show others that they were an Environmental Defender, but would also allow them to log in to the Environmental Defenders website. Most students liked the idea of having a membership card that would help them access the Environmental Defenders website. Although excited about the card and the ability to use it to access the Environmental Defenders website and get points, a few students explained that they didn't like websites where they have to log in. A few students were so enthusiastic about the card that they memorized the prototype's membership number before being asked to return the card.

The students expressed mixed feelings about bringing the card to school and showing it to other students. Both boys and girls said that they would wear the card on their backpacks or carry it on a keychain. Some students, however, were apprehensive about bringing the card with them to school because the card might get lost or stolen. Although many students had wallets or purses, they did not bring them to school, so they would not serve as a safe mode of transportation. One student suggested putting a magnet on the back of the card to leave it in a safe place at home. The safety of the card was a common theme across groups with one student recommending that the card be plastic so it wouldn't break. Similarly, multiple students wondered what mechanisms would be in place if they lost their card or the membership number didn't work on the website.

When asked about sharing the card with their friends, two students said that they would not because the card wasn't cool. Another student said that he would show people the card if he believed the Environmental Defenders would be of interest to the person, otherwise he would not. While amenable to showing his friends the membership card, one student was concerned that the

friend would try to memorize his membership number, so he planned to hide the number while showing other people the card.

Students were also asked to share their thoughts about sharing their music and avatars. As described earlier, there were mixed feelings about sharing the music created. Some of the girls were concerned that being able to vote on the "best" music might hurt people's feelings. This was a concern even if only the rankings for the top 10 music mixes were posted because the people who weren't on the list might get sad. In one focus group students were asked how they felt about having a contest related to sharing music. Generally the students liked the idea of being able to give feedback to one another, but they didn't think it was essential for having a good website. Most students liked the idea of having school-wide contests with ice cream or no homework passes as the prize. The students also shared that many of their schools currently have contests related to recycling, garbage reduction, and good behavior in which students can earn raffle tickets for monthly prizes.

Students were also asked how they might improve the card. The following are some of their responses:

- Add more colors to the card
- Add a picture of Earth on it with people holding hands to the card
- Should be able to earn credits with the music you make
- The card should have more features than just being a website login number, like helping you earn points or level-up once on the website

The last two focus groups were asked about how the card might influence people's behavior and whether they would want to participate in an Environmental Defenders club or volunteer at an Environmental Defenders clean-up event. When asked if the membership card would encourage people to reduce, reuse, and recycle students did not seem to believe it would work. One student said people might sign the pledge but then not mean it, while another student said people might make fun of people for signing the pledge because it isn't cool. Three students responded in the affirmative for both joining an Environmental Defenders club at their school, and going to a community clean-up event. The other two students in that focus group indicated that they were uncertain if they would join or participate.