



Designing an Interactive Smiley Face Cart as a Family-Friendly Mobile Exhibit

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Date:
May 13, 2021

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Authorship

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Objective 2: Identify the Target Audience	Jamie Krigsman	Brittney Pham, Claire Dollins, Jamie Krigsman
Objective 3: Determine Smiley Cart Design Components	Brittney Pham	Brittney Pham, Claire Dollins, Jamie Krigsman
Objective 4: Designing the Smiley Cart by Incorporating Identified Components	Antonio Calcagni	Brittney Pham, Claire Dollins, Jamie Krigsman Antonio Calcagni
Proposed Smiley Cart Design	All	All

Structure of the Cart	Jamie Krigsman	Brittney Pham, Claire Dollins, Jamie Krigsman
Interactive Components	All	All
Fundamental Recommendations	All	All
Interactive Activity Elements	All	All
Additional Recommendations and Conclusion	Brittney Pham	Brittney Pham, Claire Dollins, Jamie Krigsman, Antonio Calcagni
References	All	All
Appendix	All	All
Appendix A	All	All
Appendix B	Claire Dollins	All
Appendix C	All	All
Appendix D	Brittney Pham	All
Appendix E	Brittney Pham	All
Appendix F	Claire Dollins, Brittney Pham	All
Appendix G	Jamie Krigsman	Brittney Pham
Appendix H	Jamie Krigsman	Brittney Pham
Appendix I	Antonio Calcagni	All
Appendix J	Brittney Pham	All
Appendix K	Jamie Krigsman, Brittney Pham	All
Appendix L	Jamie Krigsman	All
Appendix M	Jamie Krigsman	All
Appendix N	Jamie Krigsman	All
Appendix O	Claire Dollins	All
Appendix P	Jamie Krigsman	All
Appendix Q	Claire Dollins	All

Appendix

A. Sample Interview Questions

1. What are the most popular types of exhibits at the museum? Why?
2. What do you hope that visitors take away from their time at the museum?
3. From your experience at the museum, what is the best approach to designing exhibits?
 - a. What are the best ways to introduce interactivity?
4. What makes exhibits successful? Why?
5. Do you have any data on the typical age range or groups of people that attend (with families, friends, work colleagues, dates, or alone)?
6. The goal of our project is to create a family friendly experience that all age groups can enjoy. Do you have any strategies or ideas that you have done that have worked well to engage groups of all ages?
7. After hearing about our project, if you could envision the final outcome and what the cart will look like when finished

B. Interview Comparative Matrix

Who	Main Findings							
	Using QR Codes	Individually Paced Activities	Stimulating Interest	Engaging Everyone	Popular Takeaways	Simplicity	An Inviting and Approachable Exhibit	
Art Reach's President & Creative Program Director, Darcy Schwartz	✓	✓	✓	✓	✓	✓	✓	
Worcester Public Schools Visual Arts Liaison, Timmary Leary	✓		✓	✓	✓		✓	
Worcester Public Schools History and Social Sciences library media specialist, Colleen Kelly	✓			✓	✓		✓	
The USS Constitution Museum's Director of Exhibits, Robert Kihne	✓	✓	✓	✓		✓	✓	
Worcester Art Museum's Curator of the Higgins Collection, Jeffery Forgeng	✓	✓	✓	✓	✓	✓	✓	
The Portland Museum of Art's Interpretation/Community Collaboration Specialist, Amy Freesun and Meghan Quigley Graham	✓	✓	✓	✓	✓	✓	✓	X2
Museum of Russian Icons's Director of Education and Visitor Services, Amy Consalvi and Laura Garrity-Arquitt (Museum of Russian Icons Registrar),		✓	✓	✓	✓	✓		X2
The EcoTarium's IT Administrator/Technical Special Projects Manager, Eric Zago	✓	✓	✓	✓	✓		✓	
The Acton Discovery Museum's Senior Director of the Museum Experience, Brindha Muniappan			✓	✓	✓	✓	✓	
The Children's Museum & Theater of Maine's Youth Coordinator, Brittany Liscord		✓	✓	✓	✓	✓	✓	

Table 1: Interview findings comparative matrix.

*Please note, interviewees were not asked specifically about each topic below and some topics were not mentioned in some interviews due to time restrictions or other factors.

C. Survey Questions

Preamble: We are a group of students from Worcester Polytechnic Institute in Massachusetts and we are working with the Worcester Historical Museum (WHM) to design a mobile Smiley Face Cart. We are conducting this survey to learn more about how to effectively design interactive, family-friendly exhibits. We believe this research will help us design an engaging, interactive exhibit and help WHM spread knowledge of Harvey Ball in a fun and engaging way.

Your participation is completely voluntary and anonymous, no identifying information will be collected or published. If so desired, you may withdraw any time throughout this study. There is no risk to you by participating in this study. This survey should take no longer than 5 minutes. For additional questions or to learn more about our project, you may reach out to our faculty advisors, Corey Dehner (cdehner@wpi.edu) and Gillian Smith (gmsmith@wpi.edu). If you would like to reach out to our team members directly, you may reach us at gr-whm@wpi.edu. Thank you for participating!

1. Are you over 18?
 - Yes
 - No
2. Where are you from?
 - _____
 - Prefer not to answer
3. What age group do you fall into?
 - 18-25
 - 26-35
 - 36-45
 - 46-60
 - 60+
4. We are trying to assess your connection to the city of Worcester. Please check all that apply:

	Yes	No	Sometimes
I travel to Worcester for Work			
I live in/travel to Worcester for School			
I travel to Worcester for fun			

Table 2: Survey question 4, participants connection to Worcester.

5. What are some fun things you do in Worcester?

	Frequently (more than 3 times a year)	Sometimes (2-3 times a year)	Rarely (1 time a year)	Never
Visit restaurants				
Visit museums				
Go to the movies				
Visit parks and outdoor areas				
See a sporting event				
Live performances				

Table 3: Survey question 5, popular Worcester activities.

6. Do you have children?

- Yes
- No
- Prefer not to answer

7. Do you have experience working with children?

- Yes
- No
- Prefer not to answer

8. Have you ever been to the Worcester Historical Museum?

- Yes
- No
- I'm not sure

9. If you visit museums, such as the Worcester Historical Museum, with whom do you tend to visit (Please check all that apply)

- Family
- Friends
- School
- Alone
- Significant Other (s)
- Work Colleagues
- Other: _____

10. Did you know that the Smiley Face icon that we all know and love was created in Worcester?

- Yes
- No

11. Do you know who created the Smiley Face?

- Yes
- No

12. If you (or the children you are with) were to have a family friendly museum experience and be able to make and take something home, which type of take-away would you be most excited about? Please check off the boxes that you feel best represent your thoughts:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Pin					
Sticker					
Bookmark					
Mug					
Plush Toy					
Pencil/Pen					
Coloring Page					
Hats					
Stress Ball					
Sunglasses					

Table 4: Survey question 12, popular take-aways.

Please share any additional ideas for fun take home items:

13. Do you know what a QR code is and how to use a QR code?

- Yes
- No

14. Please share how you most enjoy learning at museums by ranking the following 1-8 (1 being the best)

- A PowerPoint Presentation
- A video (e.g. a fun YouTube video with visuals)
- A video game
- A board game
- A trivia game
- Reading (a paragraph or two accompanied by a picture)
- Hands on demonstration
- An in person story teller
- Other: _____

15. Choose your top 3 things from the following list that would be most likely to draw you to an exhibit, a food truck, or a shopping kiosk when out in public:

- Color cart
- Music
- Lights
- Food
- Educational scavenger hunt
- family -friendly jeopardy
- Activities
- Free stuff
- Social media announcement advertising as a family night out
- Signage
- Could win a prize
- Other: _____

D. Sample Focus Group Questions

Hello everyone, my name is (everyone introduces themselves), we are a group of students from Worcester Polytechnic Institute, a local college around here, and we are working with the Worcester Historical Museum to create a mobile exhibit in the form of a cart, much like a hot dog stand, that we will bring to Elm Park to celebrate the first person to create the Smiley Face 100th birthday. First there are some ground rules we would like everyone to respect (share the rules above). We will try to make it fun and if you have any questions just raise your hand, or zoom hand, and me or one of my friends on the team will be happy to answer them. To raise your zoom hand, click on the smiley face in the bottom right corner and select the hand that is circled (demonstrate). Or if you want you can also type in the chat. Are you all ready to get started? **(go around in circle for all questions)**

1. How old is everyone?
2. What is your favorite dessert?
3. Can I have a show of hands on who here likes Smiley Faces?
 - a. Can you draw a Smiley Face and share it with us?

Do you guys know who was the first one to draw a Smiley Face? Well, it is Harvey Ball (show picture of him), he was the first person ever to draw a Smiley Face and he was born right here in Worcester! So we can say that the Smiley Face was invented right here in Worcester! There is a museum which has all of Harvey Ball's Smiley Faces in it.

4. Show of hands of who here knows what a museum is?
 - a. Who wants to try to explain it to us?

Yes, a museum is a place where objects from all over can be displayed. It can be anything!

5. Who has been to a museum? Do you remember which museum it was?
 - a. What was your favorite thing from the museum?
6. Has anyone been to the Worcester Historical Museum? It is a museum in Worcester about Worcester, where Harvey Ball's Smiley Faces are displayed.
 - a. Was it fun?
7. What are some arts and crafts projects that you like doing? (ex. Drawing, painting coloring, macaroni art)
 - a. Can you tell me why you like it?
 - b. What do you like to draw/paint?
8. If you could have your favorite character on something you could take home, what would it be? Or What is your favorite thing to get from goodie bags at birthday parties? (ex: I like having pins so I can put them on my backpack)
9. Do you or your family have a smartphone or tablet/iPad?
 - a. What is your favorite game to play on it?
10. Do you know what a QR code is? Do you know how to use a QR code?
11. Now we will play this Smiley Face song.
 - a. Can I have a show of hands who liked the song?

Thank you guys so much! This was super fun to hang out with you guys!!

E. Parental Assent Form for Children’s Participation in Focus Group

Students Investigators: Antonio Calcagni, Brittney Pham, Claire Dollins, Jamie Krigsman

Contact Information: gr-WHM@wpi.edu

Title of Research Study: Smiley Cart

Sponsor: William Wallace, Worcester Historical Museum

Dear Parent or Guardian,

We are a group of four juniors at Worcester Polytechnic Institute and are working with Bill Wallace, Executive Director of the Worcester Historical Museum in the creation of a mobile exhibit.

We are inviting your child to participate in a focus group over Zoom, moderated by our team, Antonio Calcagni, Brittney Pham, Claire Dollins, and Jamie Krigsman. Below please find information about the study so that you may make a fully informed decision regarding your child’s participation.

Purpose of the study: The purpose of this study is to spread Worcester history and the story of Harvey Ball’s creation of the Smiley Face in a fun and engaging way. The mobile exhibit will be a Smiley Cart. It will be designed to be family-friendly and will be used in Elm Park for Harvey Ball’s 100th birthday and for other future events, such as in schools and other public areas.

Procedures to be followed: We are asking for your child to participate in a virtual focus group with 5 other children of the same age range. If they are ages 5-9, they will be in a focus group with other children ages 5-9. If your child is ages 11-15, they will be in a focus group with other children ages 11-15. A focus group is an open discussion with a group of people about a specific topic. The children will be asked a few light-hearted questions about how to create an engaging museum exhibit that everyone would be able to enjoy. They will be able to give feedback on what they think the design of the Cart should look like and what sort of take-away they would most enjoy. The focus group will take no longer than one hour. The detailed protocol is in the “Focus Group Protocol” document.

There are no risks to your children’s involvement. Some participants may feel uneasy about giving their opinions to a group of people. If they are uncomfortable speaking, they may listen to the discussion or back out at any time. We will strive to prevent the sharing of personal information over the Zoom discussion. Moreover, it may be upsetting when other participants interrupt your child when they are speaking, we will minimize interruptions by using the mute feature on Zoom. For additional information, please see the “Focus Group Protocol” document.

Benefits to research participants and others: The benefits to this study include increasing the understanding of exhibit designers when making things geared towards families with children. Specifically, your child’s participation will help us design a mobile exhibit to educate people about the iconic Smiley face and the designer of that Smiley Face, Harvey Ball.

Record keeping and confidentiality: To keep record of the data received, we will be taking notes during the focus groups, any information that does not relate to our project will not be written down. Unless you grant specific permission, your child's name will not be in our final report. We will only include information about the age of participants, that they are Worcester residents and collective feedback on the design. Records of the participants in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify by name. Any publication or presentation of the data will not identify the participant.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact: the students of the project at gr-WHM@wpi.edu. Our advisors, Corey Dehner and Gillian Smith can be reached at cdehner@wpi.edu and gmsmith@wpi.edu. If needed, the IRB Chair, Professor Kent Rissmiller, can be reached at 508- 831-5019 or kjr@wpi.edu and the Human Protection Administrator, Gabriel Johnson, can be reached at 508-831-4989 or gjohnson@wpi.edu.

Participation in this research is voluntary. The participant's refusal to participate will not result in any penalty to them or any loss of benefits to which they may otherwise be entitled. They may decide to stop participating in the research or the parent/guardian may pull them out at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the focus group at any time.

By signing below, you acknowledge that you have been informed about and consent for your child to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

Participant's Name (Please print)

Date: _____

Parent/Guardian Signature

Parent/Guardian Name (Please print)

Student Investigator Signature

Student Investigator Name (Please print)

F. Early Designs

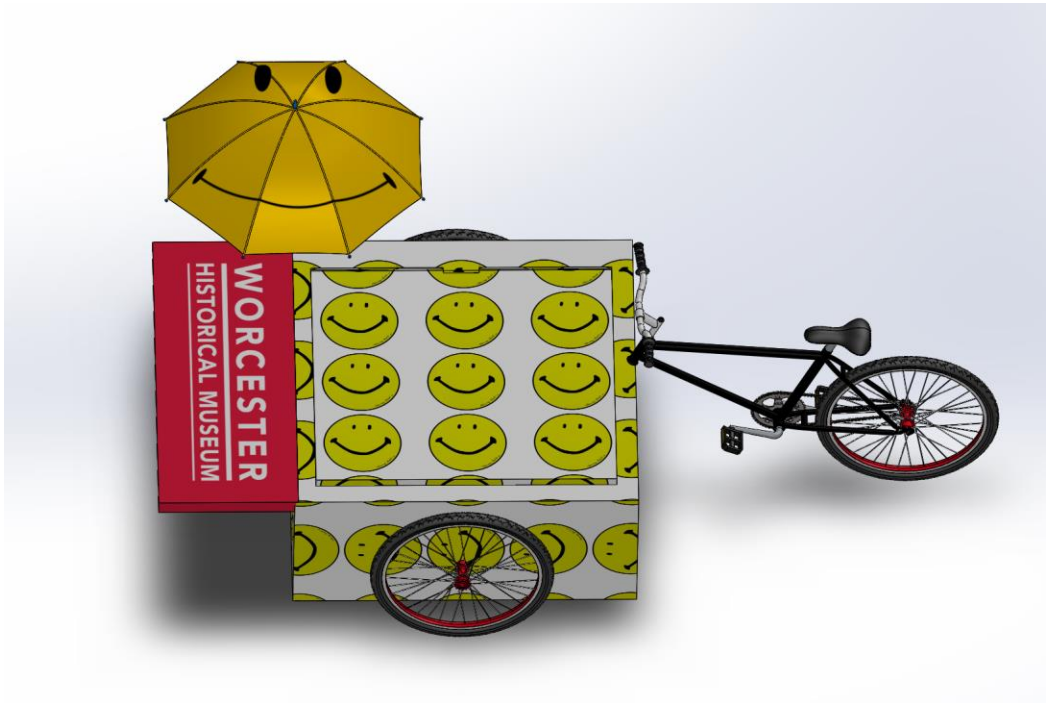


Figure 1.1: Preliminary Smiley Cart Design CAD Model



Figure 1.2: Preliminary Smiley Cart Design CAD Model Storage

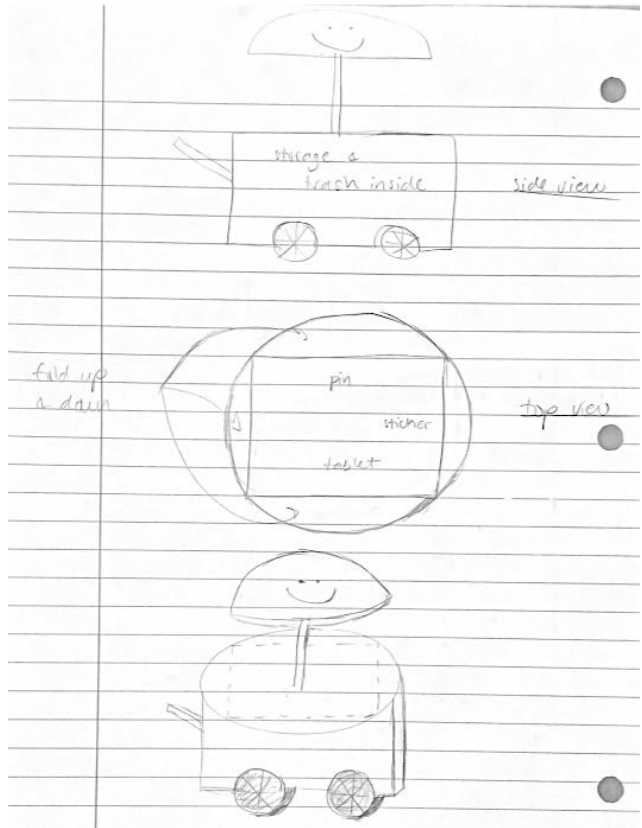


Figure 2.1: Concept design sketch of the Smiley Cart.

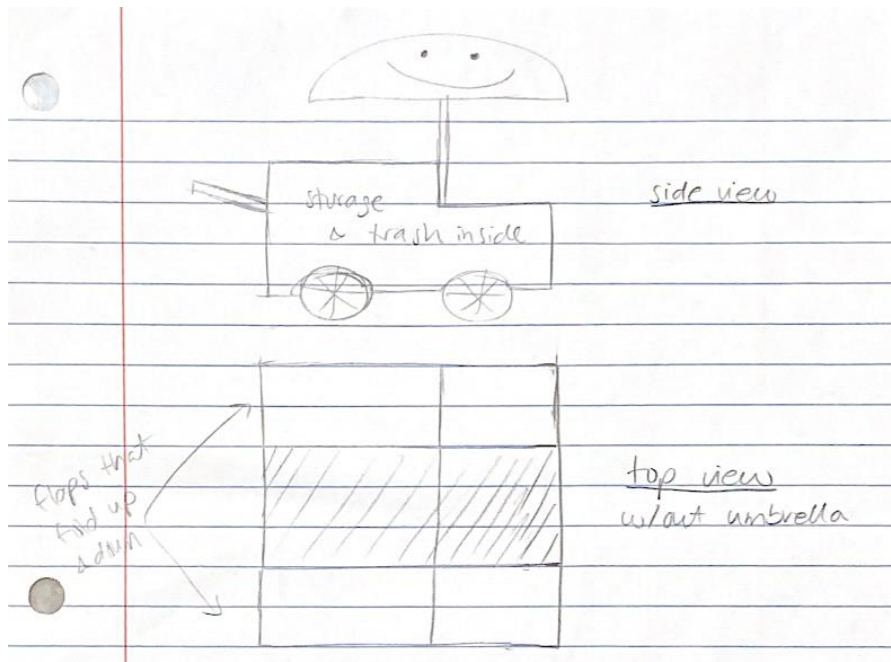


Figure 2.2: Concept design sketch of the Smiley Cart.

G. Cost Analysis of Pre-made Carts

Feature	Original E-bike (bike in a box)	Raptr-2 (bike in a box)	Bizz on wheels
COSTS			
Base	\$5,000	\$5,500	€ 3,600
Bike	Included	Included	€ 2,730
Graphics	\$500	\$500	€ 160
Paint	Not Possible	Not Possible	€ 250
Shipping	\$776	\$776	Unknown
Additional Costs			VAT
Discounts	(\$500)	(\$500)	€ 0
Total cost in original currency	\$5,776	\$6,276	€ 6,740
Total cost in US currency	\$5,776	\$6,276	\$8,130.82
Features			
Drawer	Not Possible	YES	NO
Trash Can	YES	YES	YES
umbrella	YES	YES	NO
canopy	Not Possible	YES	YES
Color of Sun Covering	YES	YES	YES
Can it be separated a into push cart?	Not Possible	YES	YES
Can solar panels be added?	YES	YES	YES
Electric Bike	YES	YES	YES
Dimensions			
H	45"	24"	41.18"
D	90"	49"	69.76"
W	36"	50.5"	37.56"
Storage			
Layout of Storage	1 inside compartment	1 main compartment that goes from front to back and 1 Drawer	6 compartments
entry into storage	top opening and door on front	2 doors front and back	2 doors on each side
ETA			
Is it in Stock	NO	YES	YES
Production time	About 1 week	About 1 week	About 3 weeks
Shipping time	about 1.5 week	about 1.5 week	3-7 air, 14-65 Sea
Customer Service			
Flexibility	Very	Very	Alright
Response time by phone	Picks up phone every time we call	Picks up phone every time we call	Not possible with out of country number
Response time by email	Within 12 hours	Within 12 hours	Within two days
Response time by text	Within a few hours	Within a few hours	N/A

Figure 3: Cost analysis of the three pre-fabricated carts.

H. Cost Analysis of Activities

Link	Item Type	Number of items in the packet	Number of colors in the packet	Art Supplies			Shipping	Brand	Website
				Num of yellows in the packet	Cost	Cost per item			
https://shop.crayola.com/classpacks-and-bulk/washable-broad-line-markers-classpack-200-count-10-colors-588220A001.html	Thick markers	200	10	36	79.47	0.40	Free over \$45	Crayola	Crayola
https://shop.crayola.com/classpacks-and-bulk/markers-and-crayons-classpack-256-count-8-colors-5233490001.html	Crayons and markers	256	8	16	52.29	0.20	Free over \$45	Crayola	Crayola
https://shop.crayola.com/classpacks-and-bulk/triangular-crayons-classpack-256-count-16-colors-528039A000.html	Triangle Crayon	256	16	15	49.99	0.20	Free over \$45	Crayola	Crayola
https://shop.crayola.com/classpacks-and-bulk/crayola-fine-line-markers-classpack-200-count-10-colors-5882105004.html	Thin markers	200	10	10	61.99	0.31	Free over \$45	Crayola	Crayola
https://www.orientaltrading.com/16-color-crayon-classpack-800-pc--a2-56_9.fltr?categoryId=550059	Crayons	800	16	50	44.09	0.06	Based on order subtotal	Hands on Fun	Oriental Trading
https://www.orientaltrading.com/8-color-washable-marker-classpack-256-pc--a2-13758510.fltr?categoryId=550067&rd=markers	Markers	256	8	25	48.68	0.19	Based on order subtotal	Generic	Oriental Trading

Figure 4.1: Cost analysis of art supplies.

Link	Item	Quantity	Cost	Cost per item	Items Needed
					What item would it be used for
https://www.amazon.com/dp/B08GFL8T9N/ref=cm_sw_em_r_mt_dp_5BANNAPF57BR377T6FDD?encoding=UTF8&pdc=1	Button Press				Only one is needed for the whole cart Buttons
https://www.amazon.com/dp/B08GPHW97N/ref=cm_sw_em_r_mt_dp_5BANNAPF57BR377T6FDD?encoding=UTF8&th=1	Button Parts	100	31.99	0.3199	Buttons
https://www.amazon.com/braving-storage-packing-crystal-6-pack/dp/B0822QWLX2/ref=sr_1_7?crid=2ONR5FVCPQAQV&dchild=1&keywords=packing-tape+amazon+basics&qid=1619549870&srefix=packag	Packing tape	6 pack of 54.6 yards long, it should make 492 pins per roll	15.98	2.66 per roll, 0.006 per pin	Buttons
https://www.amazon.com/White-Round-Circle-Labels-Printers/dp/B07FVQ2J65/ref=sr_1_15?crid=IVCS99KW2U712&dchild=1&keywords=white+circle+stickers	2" Circles Stickers	500	9.95	0.0199	Stickers
https://www.amazon.com/Spiral-Cardstock-163-sm-Bright-Sheets/dp/B00CIV65DK/ref=sxin_10?asc_contentid=amzn1_osa_n1f80n6n_4673_475	Card Stock	2000 pages, 4000 bookmarks	195.86	.098 per page, .049 per bookmark	Bookmarks
https://www.amazon.com/10-Vinyl-Bookmark-sleeves-10-pcs/dp/B004CZK1VE	Bookmarks Sleeves	100	19.95	0.1995	Bookmarks
https://www.amazon.com/AmazonBasics-Bright-Multipurpose-Copy-Paper/dp/B07X8WHH5J/ref=sr_1_5?dchild=1&keywords=paper&qid=1619549812&sr=8-5	Paper	4000 sheets	27.99	.007 per page	Buttons, Coloring sheets
https://www.amazon.com/Scissors-Taotree-Multipurpose-Comfort-Grip-Stainless/dp/B07TT15FYL/ref=sr_1_6?crid=1LHNBAZ7LGP&dchild=1&keywords=scissors&qid=1620235150&s=arts-crafts&srefix=sci%2Carts-crafts%2C180&sr=1-6	Scissors	5	9.99	1.998	ALL

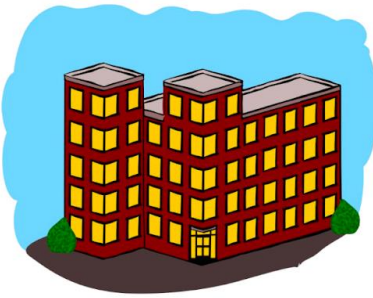
Figure 4.2: Cost analysis of interactive activities.



Rules

- Find all of the images the arrow points to on the handout!!!
- Find the Smiley Face and win a Smiley Face Sticker!!!!





What it
actually looks
like



Harvey Ball had an office
in the State Mutual
Building, commonly known
as the commerce building,
on Main Street here in
Worcester!

Can you find it?

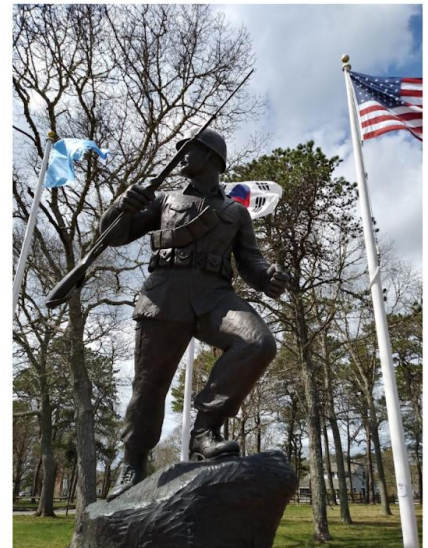


Find this
image!

Harvey Ball helped
design a Korean
War Memorial that
honors our soldiers
who fought for the
U.S. It can be
found at 52 Foster
Street here in
Worcester.



Find this
image!





What it
actually looks
like

This is South High School
in Worcester, this is the
high school that Harvey
Ball attended.

Find this
image!



Find this
image!



This is the logo for the World Smile Foundation, an organization created to commemorate the legacy Harvey Ball and raise awareness for World Smile Day to “encourage smiles and acts of kindness around the world”. The foundation also raises money to support children’s causes.



This is the Harvey Ball Smiley Face. An authentic Harvey Ball Smiley Face can always be identified by three distinguishing features: narrow oval eyes, with the right one larger than the left, bright sunny yellow, and a slightly off center mouth, which has been attributed to being similar to a "Mona Lisa Mouth."

Find this image!



If you find this Smiley face you can receive a Smiley face sticker as a reward!!

Harvey Ball was based in Asia and the Pacific during World War II, before he created the Smiley Face.



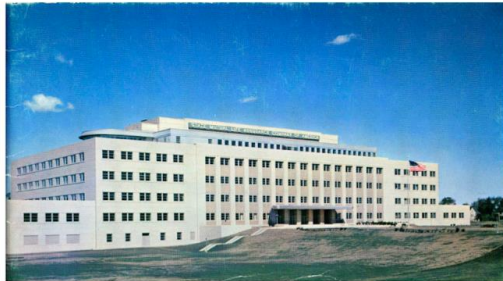
Find this image!





Find this image!

What it actually looks like



Ball was commissioned by Joy Young for State Mutual Assurance, who hired him to only draw a mouth, he added the eyes because without the eyes you could turn the smile upside down and make it a frown.

It took Harvey less than ten minutes to come up with the design. This is the State Mutual Assurance Building.



Find the Smiley Face mascot!

The Worcester Historical Museum holds The Harvey Ball every year, where they award The Harvey Ball Smile Award is named in memory of Harvey Ball. The Worcester Historical Museum presents the award annually to an individual, organization, or a group of individuals "whose commitments have made a difference in the city of Worcester ... and have helped people throughout the community smile."

Find this image!



Ball was awarded the Bronze Star for heroism during the Battle of Okinawa.



Harvey Ball only made \$45 off of the Smiley Face logo. Ball never applied for a trademark or copyright of the Smiley. His son Charles said that his father never regretted that decision.



Find this image!



Find this image!

Other people from all over the globe tried to claim creation of it but it was well documented that Harvey Ball was the creator and they failed.

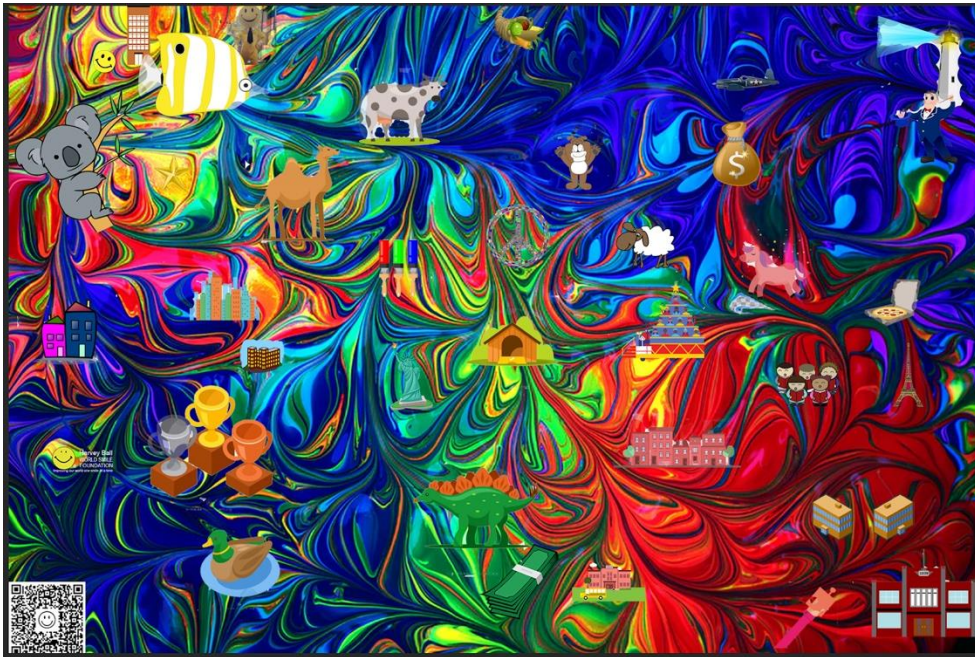


Figure 7: List of images and fun facts for I-Spy

J. Timeline of Harvey Ball

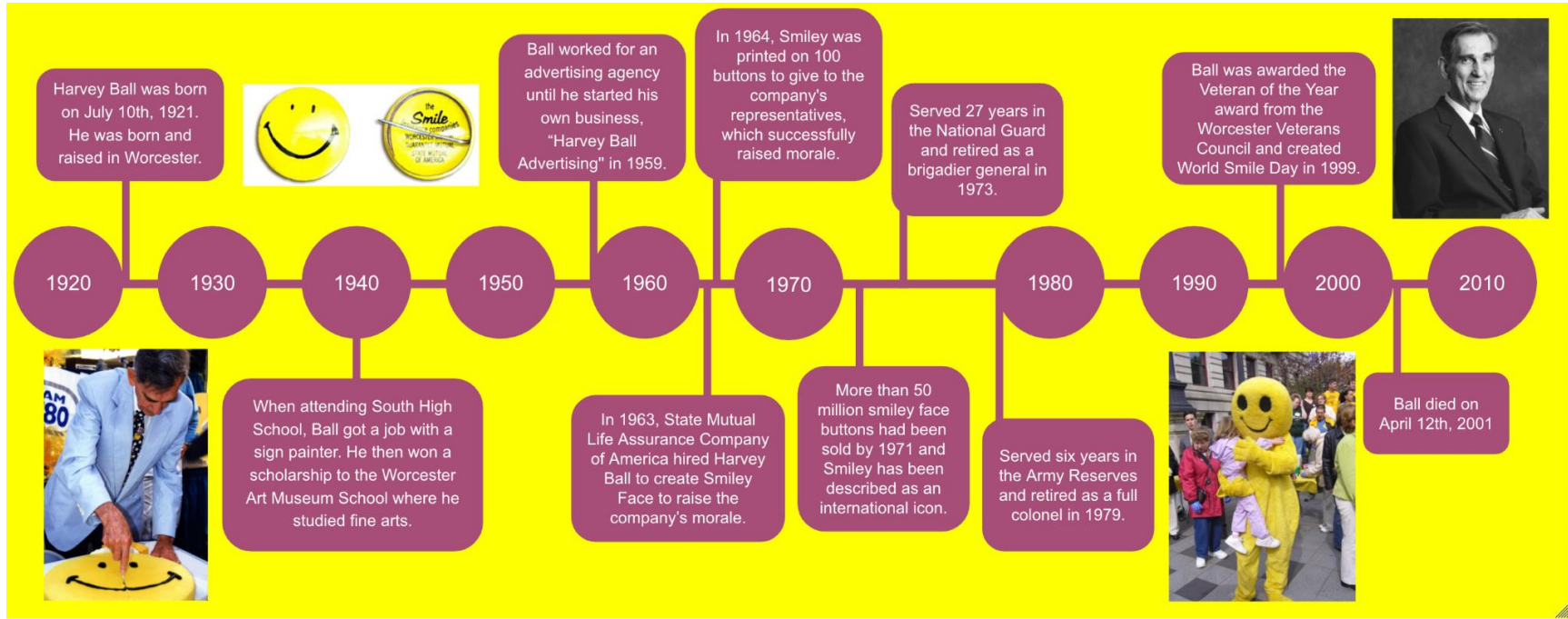


Figure 8: Harvey Ball timeline

K. Smiley Cart Manual

Smiley Cart Manual

This manual offers guidance for use of the Worcester Historical Museum's Smiley Cart and the associated interactive activities.

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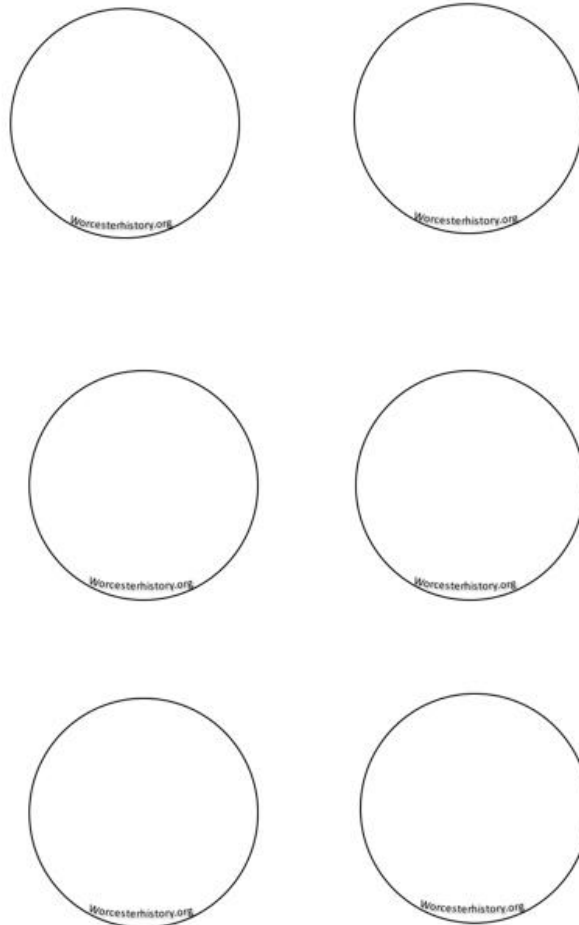
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How to use the Pin Press

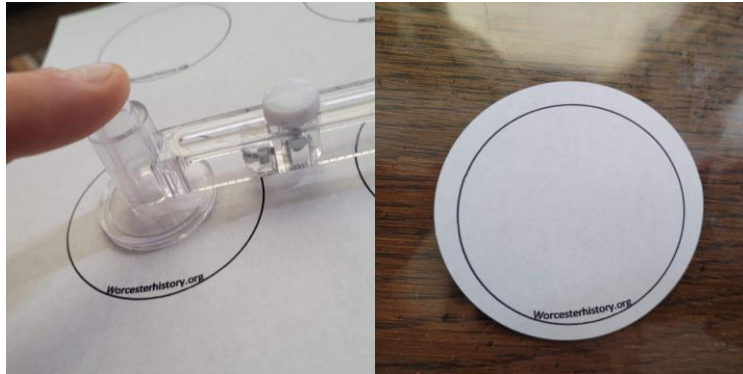
Materials:

- Pin maker
- Computer paper
- Packaging tape
- Markers/crayons
- Circle cutting tool and scissors
- Metal pin pieces (front of pin)
- Plastic pin pieces (backing of pin with safety pin)

Step 1: Print out the pin outline with WHM website on the bottom. Step 1 and 2 should be done prior to arriving at the Cart location.



Step 2: Cut out circles with a circle cutting tool. The border of the printout is 2.25" in diameter. The cutout should go a little further than the border making the circle about 2.7" in diameter.



Step 3: Give the cut out circle to the visitor to decorate.



Step 4: Set up the pin press to make the pin according to the picture below.



Step 5: Take the metal piece of the pin and place it in the pin maker part labeled “A” with the smooth side up and the lip down (see pictures below)



Step 6: Place the decorated paper on top of the metal piece in the “A” section.



Step 7: Place the plastic covering on top of the decorated paper.



Step 8: Slide the press over so that side “A” is under the press.



Step 9: Press down slightly to make sure that the metal spokes (circled) do not go through the top of the press. If it goes through the Top peace did not rotate correctly



Step 10: Put the plastic pin backing into side “B.” Make sure that the side that has the safety pin that goes into the shirt is facing the ground and that it is also at the top of side “B.” See the pictures below for guidance.



Step 11: Slide the press over so that side “B” is under the press.



Step 12: Press down hard on the handle, making sure that the metal spokes (circled) make it through the top of the press.



Step 13: Slide the press over to the “A” side to be able to remove the pin.



Step 14: Take the pin out of the press.

Step 15: The plastic layer tends to not get attached well. If that is the case, carefully remove it from the pin.



Step 16: If the plastic layer is removed, place packing tape on top of the pin to protect it. Cut away the excess tape and fold the remainder over the edges.



Step 17: Give the pin to the visitor to wear and enjoy.



Procedure of Activities

At least two facilitators/docents are needed at the Cart, one will be handling the pin maker and the other will make sure the bookmark and I-Spy activities are going well. Once the facilitators arrive at the Cart location, setting up is needed. To set up, detach the bike from the Smiley Cart, if indoors, and attach the castor wheels. Next take out the supplies stored in the Cart, such as the pin maker, markers, crayons, pre-cut pin paper, pre-cut bookmarks, bookmark sleeves, packaging tape, and the metal and plastic pin pieces. Displaying them on the Cart in nice containers will make the Cart more appealing, as well as displaying examples of decorated pins, bookmarks, and stickers will provide inspiration for the audience. In addition to the QR codes on the Cart, printouts of the QR codes for the I-Spy game and the Smiley Face song can be hung on the metal poles of the umbrella or taped on tables or surrounding walls. If there are no tables available at the location, bringing along tables is needed to set up coloring stations.

As most of the activities of the Cart are done individually, such as the I-Spy game, listening to the Smiley Face song, bookmarks, stickers, and reading the Harvey Ball timeline, little facilitating is needed. The laminated I-Spy game handouts, in which the participant can circle where they found the item with a whiteboard marker, can be given to the participant by the facilitator and the items to find/fun facts can be found with the QR code. After the participant is done with the handout, the facilitator should clean and disinfect it. Keeping an eye on the audience is important to gauge if they are having fun or need assistance with the QR codes or bookmarks.

For pin making, it is best for the facilitator to be the one handling the machine due to possible injuries and COVID-19 safety measures. For the bookmark, the supplies can be set up on the Cart and the facilitator may give out the supplies to whomever wants to make one. To make the bookmarks, all that is needed is once the participant is done drawing on it, it can then be put into a bookmark sleeve. The participants will be able to use the Cart or surrounding tables as a surface to decorate their pins and bookmarks.

COVID-19 Safety Measures

Due to the COVID-19 Pandemic, safety precautions are necessary for the safety of the audience and the facilitators. Here we set some rules and guidelines to follow.

- Facilitators/docents and participants are required to wear masks at all times and remain at least 6ft apart, unless in the same household. Facilitators must also wear shield masks.
- Facilitators will wear gloves at all times.
- Participants will use hand sanitizer before doing any activities on the cart and must use hand sanitizer after engaging in an activity.
- Cart capacity is reduced so that people can stay 6 ft apart.
- There will be two buckets at each coloring station, one for clean unused coloring supplies and one for used coloring supplies. A facilitator will routinely clean the used supplies.
- The facilitator is the only one who can use the pin maker.
- The facilitator hands out all of the equipment and none will be left sitting out, to avoid equipment being touched by different people.
- Any tables used by participants will be cleaned in between each use.
- There will be a sign talking about the risks of COVID-19 and ways to mitigate the spread of COVID-19.

L. Printouts of Pin Template

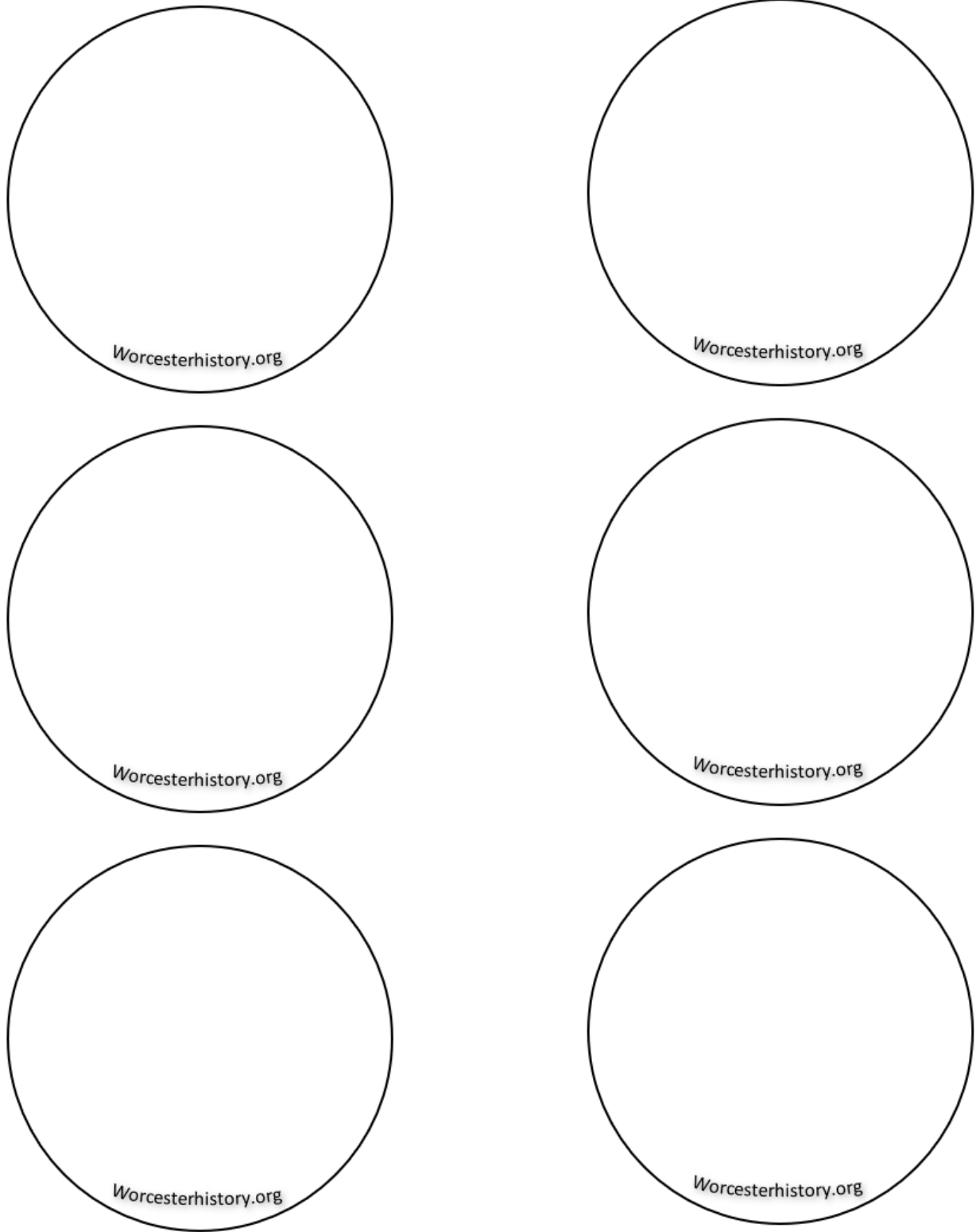


Figure 9: Print out template for Smiley pins.

M. Printout of Bookmark Template

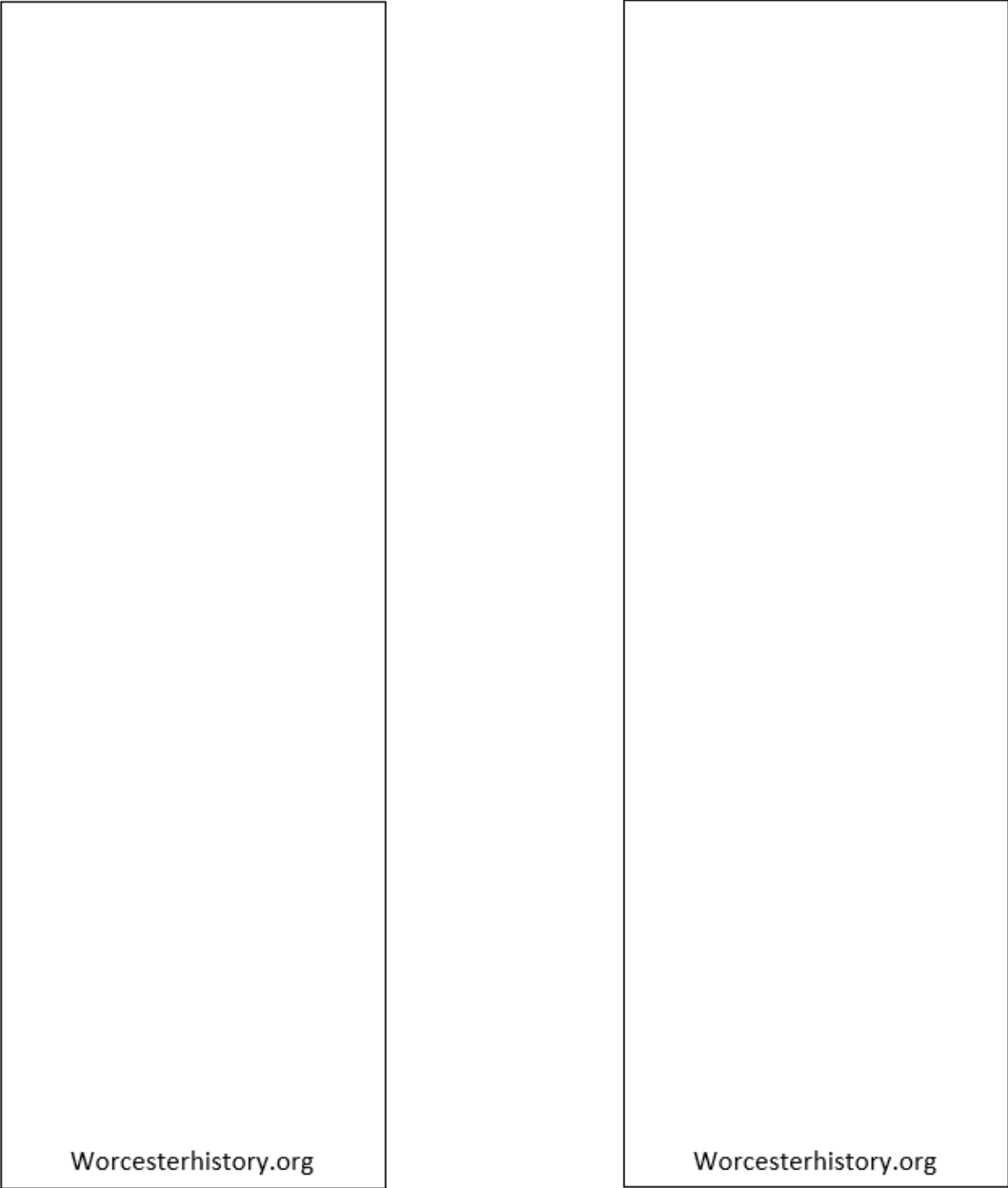


Figure 10: Print out template for Smiley bookmarks.

N. Printout of Sticker Template

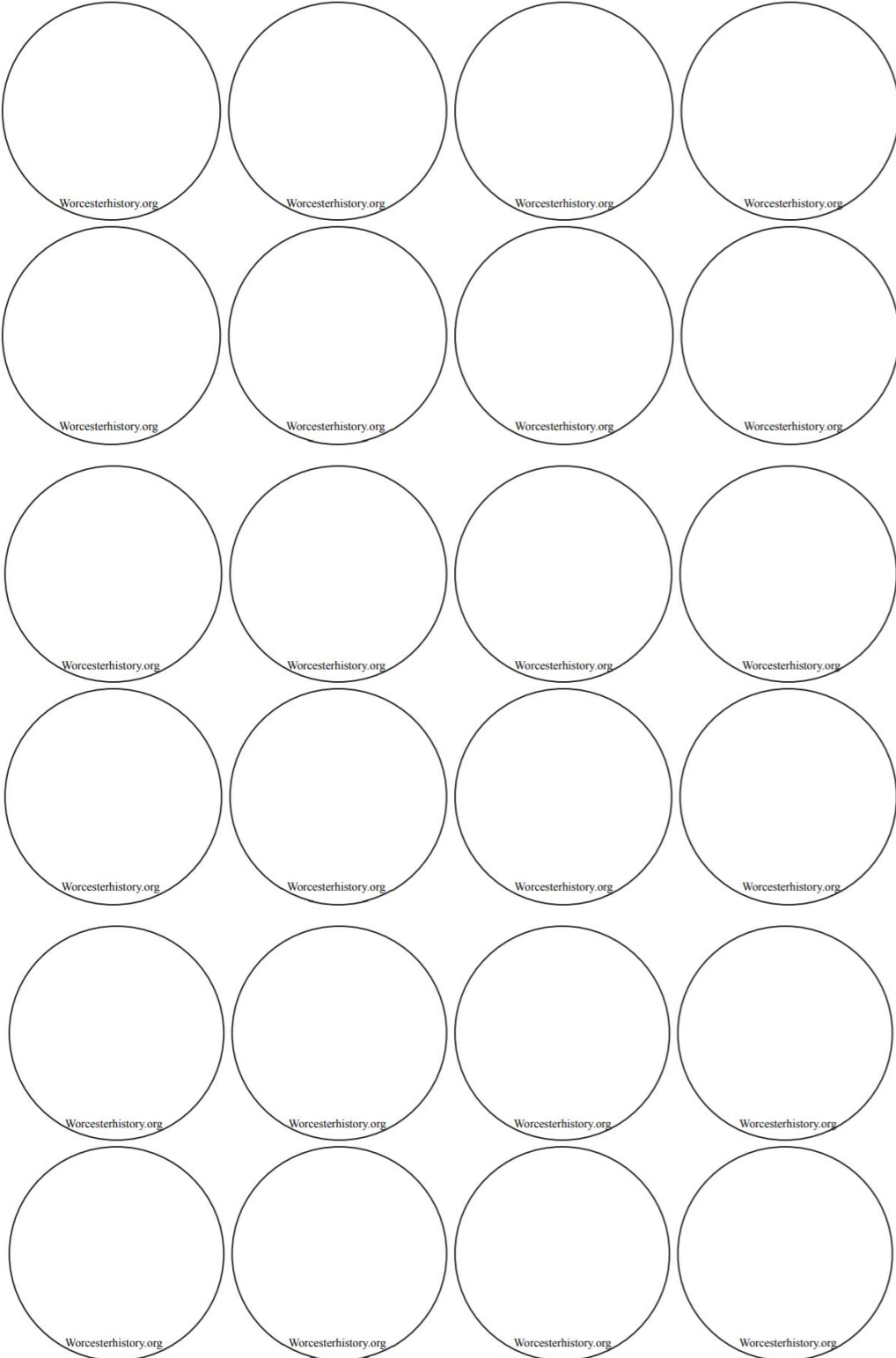


Figure 11: Print out template for Smiley stickers.

O. QR Codes for the Smiley Face Song

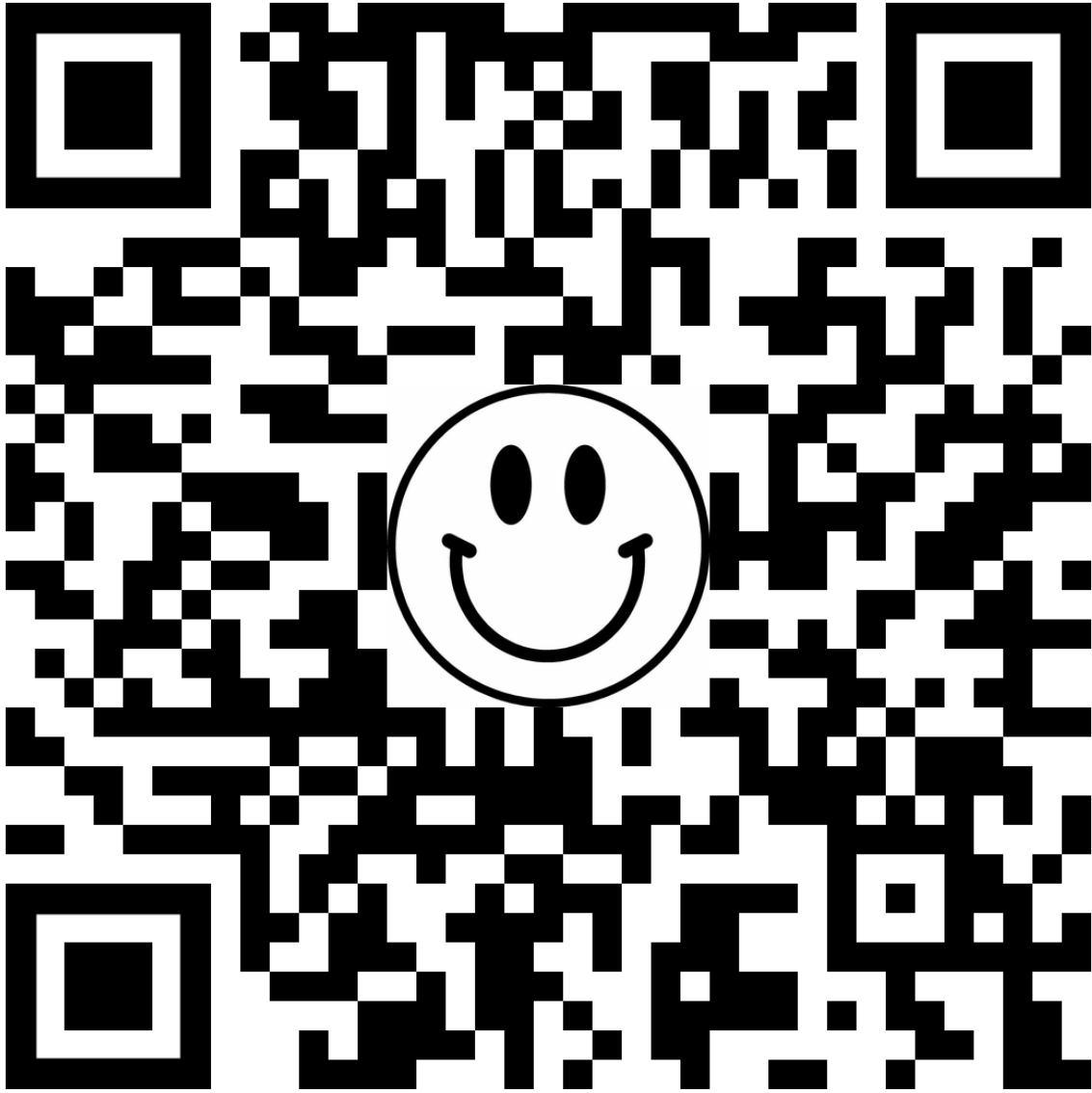


Figure 12: QR code for Smiley Face song.

P. Copyright Approval

Langer Corp LLC
Manufacturers of Vending Vehicles
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Info@bikeandabox.com



To whom it may concern:

This letter is to authorize use of copyrighted material present on the Langer Corp LLC owned website, www.bikeandabox.com.

The material to be used is digital photos of the Raptr 2 model of vending tricycle.

The authorized users of said digital photos are:

Brittney Pham
James Krigsman
Antonio Calcagni
Claire Dollins

The above persons are affiliated with Worcester Polytechnic Institute and are permitted to use the digital photos for academic purposes.

Please contact Langer Corp LLC with further questions regarding use.

Thank you,

Miguel Martinez
Technical Manager
Langer Corp LLC dba Bike And A Box

www.bikeandabox.com

Figure 13: Copyright approval for use of BikeAndABOX's pictures of Raptr2.

Q. Survey Respondent Makeup

Analyzing our survey data, we discovered that the distribution in participants' ages is skewed heavily with 129 out of the 162 participants being between the ages of 18-25.

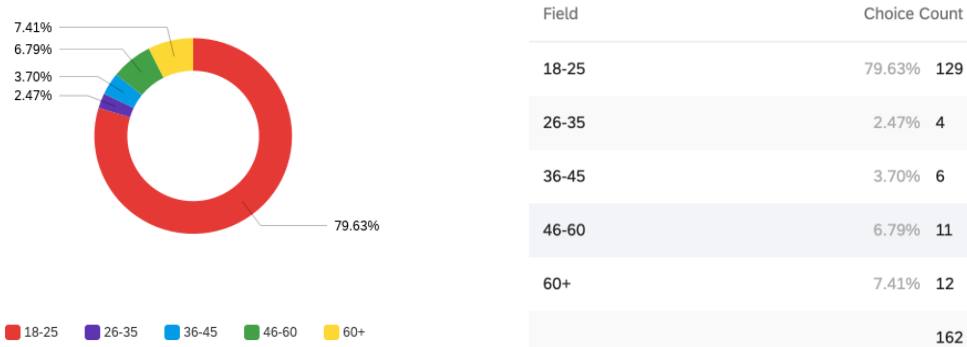


Figure 14: Respondent age distribution survey results.

We identified another strong data distribution when the respondent was asked if they have children. 132 out of the 162 (82.72%) survey participants reported that they do not have children. Additionally, when the respondents were asked if they had experience working with children, the results were skewed in the opposite direction when compared to if they had children. 117 of the 162 (72.22%) survey participants reported having experience working with children.

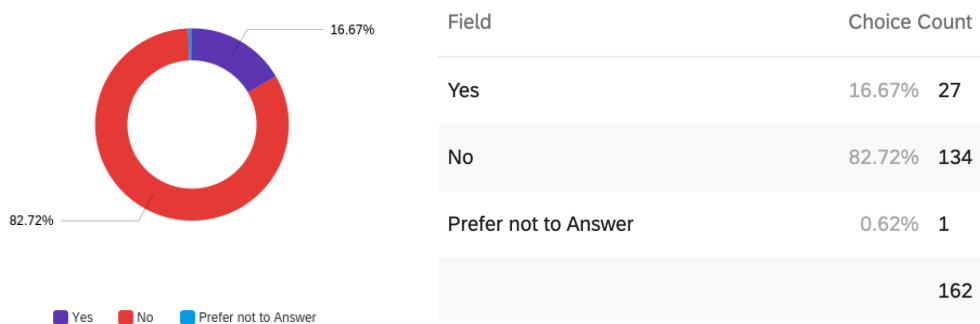


Figure 15: Respondent distribution of people who have children survey results.

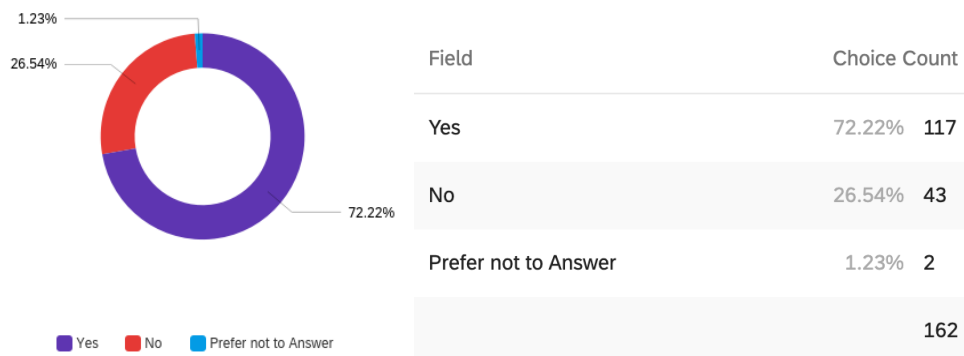


Figure 16: Age distribution of our survey for people who have worked with children.