



# Zero Waste Ambassadors Program



## 2018 Report

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# ZWAP! 2018 Report

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# Introduction

## About ZWAP!

ZWAP!, our Zero Waste Ambassadors Program, is an award-winning, inquiry-based education program for fifth graders. ZWAP! is designed to motivate young Missoulians to think more critically about materials—where they come from and where they go. Our objective is to empower youth with the knowledge that the choices they make and the actions they take can help create a more sustainable future.



Home ReSource educators provide a total of 3.5 hours of engagement for each fifth-grade class through an in-school lesson and a field trip to Home ReSource using our interactive, STEM-aligned curriculum that supports three key messages:

- **We have a CHOICE.** Materials aren't waste until they're wasted.
- **There are a lot of ACTIONS we can take to reduce waste.** Reduce, Reuse, Recycle, etc.
- **We can make a DIFFERENCE by choosing to reduce waste every day.** Choice + Action = Difference

Through ZWAP!, we aim to help students become **ENGAGED** in problem solving around waste, **EMPOWERED** with the skills and knowledge to be Zero Waste Ambassadors, and **INSPIRED** to knock out waste in Missoula. At the conclusion of ZWAP!, our hope is that students have an increased understanding of waste and how to reduce it and feel more confident in their ability to evaluate real-world problems and identify sustainable solutions.

ZWAP! is supported in part by the Dennis and Phyllis Washington Foundation, the Louis L. Borick Foundation, and private donors in our community. At this time, this program is offered at no cost to teachers, schools, or students.



## The ZWAP! Theory of Change

We believe that as students become knowledgeable about waste, increase their understanding of how to reduce it, and feel empowered that their choices and actions can make a positive difference, they will share their knowledge with peers and adults, evaluate where waste happens in their lives, and choose to make changes to move toward a Zero Waste lifestyle. We further believe that if this transformation takes place in a school district that is actively pursuing a Zero Waste goal, the likelihood of lasting behavior change will increase.



## **Recognition & Impact**

In 2018, Home ReSource received an award from the Montana Environmental Education Association (MEEA) for being the business that did the most to aid, support, and promote environmental education in Montana over the past year. Home ReSource has fielded queries from as far afield as Chicago, IL and Harrisonburg, VA about the ZWAP! curriculum. Here in Missoula, involvement in ZWAP! inspired Franklin Elementary School fifth-grade teachers Kim Johnson and Rae Baerlocher to pilot the district's first Zero Waste classroom for which they received local and national press coverage.

## **Zero Waste & MCPS**

Thanks to the leadership of Superintendent Mark Thane, Missoula County Public Schools (MCPS) is working in partnership with Home ReSource to move the district toward the City of Missoula's ZERO by FIFTY goal to reduce solid waste by 90 percent by 2050. Through this partnership, which began in the 2017-18 school year, Home ReSource coordinated a Zero Waste planning effort with the involvement of MCPS administration, staff, faculty, and students. In June of 2018, we presented an MCPS Zero Waste plan to the Board of Trustees. Several trustees expressed support for implementing the recommendations in the plan and Home ReSource plans to offer capacity to assist with implementation as best we can.

With the need for education front and center, Home ReSource is working together with MCPS administration, principals, and teachers to bring ZWAP! to every fifth grade class in the school district. Over the course of the 2017-18 school year, we held several meetings with Superintendent Thane, Dr. Elise Guest, Executive Director of Teaching & Learning, and Instructional Coaches Jenna Briggs and Jodi Hall to discuss and solicit feedback on ZWAP!. An Instructional Coach observed both a ZWAP! in-class presentation and a field trip this spring.

## **About this Report**

This report is a summary of our 2018 iteration of ZWAP! and a distillation of the lessons learned in a set of recommendations to continue refining and improving ZWAP!. We are committed to making ZWAP! as fun and effective as it can be; we see continual program evaluation as a critical tool to get us there.



## **About Home ReSource**

Home ReSource, a 501c3 corporation, was founded in 2003 by two University of Montana graduates who conceived of a retail operation that reduces construction and demolition waste while contributing to a local, green economy. Today, Home ReSource keeps 900 tons of material out of the landfill each year, provides materials and services to over half of Missoula households, and has strong community partnerships, efficient operations, and a growing suite of community programs. Through waste reduction efforts, education, and the channeling of materials and services to those in need, Home ReSource works to build and inspire a more vibrant, just, and sustainable local economy.

At Home ReSource, our end goal is to help create a culture of sustainability. We believe that in order to do so we need to think differently about materials and how to reduce waste. Through ZWAP! and our related Zero Waste work with MCPS, we hope to imbue youth with the skills and knowledge to be Zero Waste Ambassadors in their homes, classrooms, and our community so that they can choose to join the effort to knockout waste in Missoula!



## Summary of ZWAP! 2018

This educational adventure for fifth-graders continues to be an adventure for us as well. While in the midst of program implementation, we pay constant attention to what is working and what is not, we make mid-course corrections, and we devise and deploy new ways to guide students to a place where they think differently about materials and understand how to reduce waste. Without a pre-existing model to use for this kind of interactive curriculum, ZWAP! is evolving as we learn from our experiences.

This section chronicles the changes we made from 2017 to 2018. Some of the changes originated from the recommendations of the second ZWAP! report while others emerged from our team's creative thinking around our programmatic goals. With this iteration of ZWAP!, we sense that we have arrived at a sweet spot balancing limited facetime, hands-on activities, teamwork, reflection, and fun in an effective and memorable program. While some bugs remain to be worked out, we are confident that our experience in 2018 honed the course of ZWAP! and has set us up well for 2019.

### **We made understanding Earth's natural systems a key concept in the in-class lecture.**

In 2017, we simplified the lecture by removing some points to make time for deeper exploration of key ideas. We also introduced the idea that Earth's natural systems can be a guide to improve human-made systems. In 2018, we took it further by asking students to identify examples of natural systems, recognize the shape that such systems suggest (a circle), and reflect on the shape of the linear Materials Economy, the human-made system of stuff that is the framework for the ZWAP! lesson. Understanding that Earth's natural processes are sustainable by design provides a context for students to imagine actions we can take to turn the line into a circle and create a system more akin to systems in nature, an emerging system known as the Zero Waste Economy.

### **We developed additional activities for classes to engage in outside of ZWAP! time.**

The Class Trash Tracker, which provides students the opportunity to observe classroom waste generation and identify opportunities to reduce it, has been around since the beginning. In 2018, we developed three additional activities as an opportunity for teachers to go deeper with their students. The Rethink Activity invites students to rethink how we can learn and/or play using fewer materials and products. The Request Activity reinforces a 4th "R" word we introduce in the lesson, Request, in a letter-writing activity to ask product manufacturers to adopt Zero Waste principles in their operations. The Redesign Activity, intended as a follow-up activity after the conclusion of ZWAP!, is an opportunity for students to apply STEM skills and think creatively to reimagine products and packaging that are "designed for the dump."

### **We expanded the visioning activity during the field trip.**

In 2017, students used pencils and sheets of paper to draw a picture in response to the prompt "What does a Zero Waste world look like to you?". In 2018, we provided buckets of colored pencils and more time for their visions to emerge. The drawing exercise is an opportunity for students to begin articulating their own vision of Zero Waste in their lives—in color!—and to share that vision with their peers. We began showcasing selected drawings on the walls of the ZWAP! Room, aka the Home ReSource Community Room.

### **We removed the competitive element from the field trip while continuing to utilize small groups.**

During the ZWAP! 2016 field trips, students sat as a class in a large group and split into teams for only one activity. In 2017, we grouped the students into 5 teams who competed through each activity to win the most points during the field trip. We noticed the small group dynamic was beneficial to the overall experience, yet determined that the focus on competition distracted students from the content. In 2018,



we created opportunities for small group interaction—from pairs to groups of three to five—throughout the field trip. We optimized group sizes based on the possible roles students could take in each activity to increase individual engagement and regrouped from one activity to another to keep group interactions fluid and fresh.

**We developed two additional alternative field trip activities.**

Some classes choose to bring a sack lunch on the ZWAP! field trip and stay at Home ReSource for longer than the prescribed time. In response to that, and in an attempt to integrate lunchtime into the field trip experience, we borrowed an activity from UNICEF and UNESCO’s World’s Largest Lesson and modified it to encourage students, without shaming anyone, to consider several sustainability factors while enjoying lunch. ZWAP! Bingo added an extra layer of learning (and chaos) to the tour activity.

## What We Accomplished

### Program Reach

**Number of Schools: 11**

Bonner School, Cold Springs Elementary School\*, DeSmet Elementary School, Franklin Elementary School\*, Hawthorne Elementary School\*, Hellgate Elementary School, Lewis and Clark Elementary School\*, Lowell Elementary School\*, Rattlesnake Elementary School\*, Target Range Elementary School, and Sussex School

*\*Missoula County Public Schools*

**Participating Classes: 29**

**Number of Students:**

- Classroom visits: 594
- Field trips: 610

**Number of Teachers who’ve been with us since the Beginning: 16**

### Participant Learning

**The “What do you Know about Waste?” Quiz**

Students took the quiz at the beginning of the classroom lesson and at the end of the field trip. The quiz was used as a tool to measure knowledge of waste reduction facts and concepts prior to and after ZWAP!. Quiz scores by year are shown.

Year	Average Pre-ZWAP! Score	Average Post-ZWAP! Score	Average Gain in Knowledge
2016	55%	90%	67%
2017	59%	86%	45%
2018	68%	79%	16%

The yearly quiz scores cannot be directly correlated as we have changed the content of the quiz each year in an effort to better emphasize the takeaways of ZWAP!. Pre-ZWAP! scores have increased since 2016, while post-ZWAP! scores have decreased. This data begs many questions. Is 16 percent average gain in knowledge good enough? Have we made the quiz too easy? Do we need to reword any questions? Is it too much to ask students to do a quiz at the end of a 2.5 hour field trip, which has become increasingly hands-on? Is a quiz the best way to measure learning in ZWAP!?



## What We Heard

We invited teachers and chaperones to provide feedback on the ZWAP! experience using a Google form. The 35 respondents included 26 teachers and nine parents and chaperones. A summary of the feedback we received is below.

### Overall impressions

Feedback from teachers, parents, and chaperones was generally quite positive!

*"Thanks for the experience." "ZWAP! was an excellent experience, and I look forward to doing it again next year." "It is fantastic." "Great student involvement!"*

### "What did you like best about the ZWAP! experience?"

Several program elements were a highlight for participating adults:

*"The interactive nature of the presentation." "Connection to 5th grade NGSS Science Standards." "You inspire students to help develop loops in our materials economy." "The board game was fantastic." "[The] scavenger hunt part of the field trip- the kids loved this!" "I also really enjoyed the tour with the fun bingo game!"*

Teachers, parents, and chaperones offered positive feedback for the takeaways of ZWAP!:

*"ZWAP! did a great job of discussing the importance of the 3 Rs." "The hands on material [...] makes understanding the process of waste and the 3 Rs more of a reality than just a concept." "I really liked the message about Zero Waste by 2050; it gives the students a great goal to look forward to."*

### "Did you find any of the content depressing?"

Several of the survey respondents found parts of the content to be disheartening. Explanations include:

*"[The fact that] Montanans throw more trash away than average Americans." "I am only saying yes because I feel [that] we, as a city, lack long-term solutions for the problems presented; I don't think students found it depressing though." "There is so much waste we have to make a plan for." "I think the reality of our situation as far as waste is concerned is depressing when you know the facts. However, it is motivating as well."*

### "What are the ways you think we could improve ZWAP!?"

Respondents made a number of suggestions for improving the field trip activities:

*"The classroom portion of the field trip was too long, and the game is more of a puzzle than a game!" "The game was hard for my students. I felt they had a difficult time staying engaged and at times didn't understand the tasks." "The bingo game was a good idea, but having students try to look for and listen for things at the same time can be too much [...] maybe those could be two different activities." "You used to have the kids calculate [the] cost of building their project at Home ReSource. This year you didn't do that, and I think it was effective."\* "[The] teacher could have a*



*little more life and playfulness with the kids. Good knowledge, organized, and capable. But could be more engaging with the kids.” “As always, just keep in mind that the students like to be active, so keep that up!”*

\*In the past, we incorporated a math activity in which students calculated weight of materials, not cost.

Additional responses indicated interest in incorporating a building activity into the field trip:

*“The field trip portion could be more hands on with actual materials found at Home ReSource being used.” “I think it would be wonderful to add a hands-on portion to the field trip where the kids could build something, or make something out of recycled materials.” “What about having a short bit of time to remake something for the classroom? [...] Things that could be ‘ready to assemble’ but a permanent reminder back in the classroom that they did and can remake things.” “There were not enough opportunities for students to move around, engaging activities to keep them focused [...] the students could build an instrument [...], then could play the instruments together as a collective group and make songs about what they learned.”*

### **“Would you be interested in adding a field trip to the landfill to ZWAP! next year?”**

All of the respondents to this question answered “Yes!” As two explained:

*“I am retiring but if I were here, I think a landfill field trip would be excellent.” “I think the landfill addition could be fascinating and really hammer home why we want to be zero Waste.”*

### **What did students have to say?**

Several ZWAP! classes sent thank you cards and letters to Home ReSource after their field trips! This is a great way for us to hear what students have to say! Students wrote:

- *“I think it’s cool that ZWAP! is a thing”*
- *“It was fun, educational, and cool”*
- *“My favorite part was the BINGO and the board game that we played!”*
- *“I learned that most of [the] things that we throw away can be recycled, reused, or reduced”*
- *“One way I hope to be a Zero Waste Ambassador is to remind my family and friends to reduce, reuse, and recycle”*
- *“I can be a Zero Waste Ambassador by using my reusable water bottle”*
- *“I will stop using so many plastics”*
- *“I am going to tell my family about not using so many plastic bags”*
- *“I think the Zero Waste Ambassador Program is a program that the world needs!”*





# What We Learned & Recommendations for ZWAP!

## **BIG PICTURE**

**Challenge:** How do we ensure that ZWAP! is not a “one-off” for participating teachers and classes?

**Recommendations:** Continue collaboration with MCPS Teaching and Learning staff to share overview information of ZWAP! and ensure that the program supports both accepted theories of learning and current educational standards. Identify synergistic units currently used by fifth grade teachers and support the expansion of these units districtwide. Identify opportunities for students to return to Home ReSource to engage in a hands-on building activity.

**Challenge:** How can we continue learning for ZWAP! graduates as they move on to sixth grade and change schools?

**Recommendations:** Offer support to the district’s sixth grade science teacher cohort in developing curriculum that incorporates ZWAP! lessons into regular scope and sequence for middle school students. Conduct outreach to 6th grade teachers at the beginning of the school year to orient them to ZWAP! and to encourage them to incorporate waste and/or sustainability units into their lesson plans. Support MCPS in implementing the MCPS Zero Waste plan and continue to work toward official adoption of the ZERO by FIFTY goal and plan.

## **IMPLEMENTATION**

**Challenge:** Students are not active enough during the field trip, especially since most classes miss a recess during the field trip.

**Recommendations:** Schedule transitions and break times strategically to break up seated field trip activities. Ensure that every field trip has sufficient time for the Reuse Scavenger Hunt, which provides a great opportunity for students to be active. When students’ get bored or antsy, take a quick break to do something physical (e.g., stretching to practice body “reuse” or chanting “Use less stuff!” while doing jumping jacks).

**Challenge:** Post-ZWAP! quiz scores were lower than in previous years, as well as students’ learning as measured by the quiz.

**Recommendations:** Conduct another assessment of the quiz to determine if the difficulty and wording of the questions is appropriate, perhaps in consultation with fifth grade educators. Reiterate quiz content as much as possible during field trips. Consider developing alternate methodology to evaluate student learning at the end of ZWAP!.

## **CONTENT**

**Challenge:** Some students had difficulty engaging in ZWAP! The Game. At times students were unsure of what they were doing and why.

**Recommendations:** Continue improving the clarity of the introduction to and instructions for the game. Have student groups quietly look at keys of each round’s game pieces (see Logistics recommendation below) when going through instructions as a class. Generate new ideas for making the game more exciting for all students while minimizing possible frustration.

**Challenge:** Home ReSource created three supplementary class activities for teacher use to reinforce lessons from ZWAP! (Class Trash Tracker, Rethink and Request Activities, and Redesign Activity), but few teachers completed any of these activities.

**Recommendations:** Continue to schedule class field trips several weeks out from the in-class presentation to allow for opportunities for teachers to incorporate these activities in their lesson planning. Develop a follow-up plan to remind teachers about these activities, in-person or otherwise.



**Challenge:** Some students had difficulty responding to the reflection question “What happens when we choose to reuse at a place like Home ReSource?” after the Reuse Scavenger Hunt.

**Recommendations:** Continue to use the Think-Pair-Share discussion format to get students talking. Consider rephrasing the reflection question to improve clarity. Connect this question to the reflection from ZWAP! The Game on the benefits of the 3 “Rs”. Tell students that they can choose from impacts already listed on the whiteboard or offer up new ideas. Circulate around the room and talk with students during the paired discussion to make sure they are on the right track.

## **LOGISTICS**

**Challenge:** School schedules are tight. Nearly a dozen classes could not schedule a full 2.5-hour field trip to Home ReSource, requiring that the Reuse Scavenger Hunt be substituted with shorter activities.

**Recommendations:** When conducting ZWAP! outreach, provide teachers with an outline of the field trip schedule and activities. Refer to this schedule when working with teachers to establish field trip times, and reiterate the value of a full-length field trip. Aim for morning field trips, and be aware of individual school schedules when communicating with teachers. When possible, begin to offer ZWAP! year-round, not just in the spring semester.

**Challenge:** Keeping the game pieces for ZWAP! The Game organized was difficult.

**Recommendations:** Create new game envelopes for rounds 1, 2, and 3 with a key taped on the back that shows which game pieces go in which envelope. A key can also be created for the brown folders. Use more durable envelopes, and create backup envelopes ahead of time to replace those that get worn out. Number the game boards, the brown folders, and the sets of game pieces, and keep the sets together. Try storing all game materials in the pockets behind the game boards so there are eight numbered sets of game materials which stay together throughout the field trip season. This will help make locating game envelopes or boards that need replacements or repairs much easier.

**Challenge:** ZWAP! Bingo was difficult to manage. The game was distracting to students when it was incorporated into the tour of Home ReSource.

**Recommendations:** Give clear, specific instructions to students before beginning the tour and the Bingo game. Wait to give students Bingo cards until they begin the tour. Consider dividing the Bingo game and the tour into two activities. Give priority to the Reuse Scavenger Hunt activity over ZWAP! Bingo when possible on field trips. See Appendix G for more information.



# Looking Ahead

We look forward to continuing our partnership with Missoula County Public Schools (MCPS) to bring the key lessons of ZWAP! to the entire district and beyond. As we continue this work, we are eager to incorporate feedback from MCPS Teaching and Learning staff into ZWAP!, as well as working with the district to continue integrating ZWAP! into curriculum where possible and supporting implementation of the recommendations from the MCPS Zero Waste plan.

We look forward to a future when ZWAP! aligns with Zero Waste programs and practices currently emerging across Missoula. We believe that, with time and committed action toward Missoula's ZERO by FIFTY goal, students' experience with ZWAP! will eventually become congruent with their day-to-day experience in their schools and their community. At that point, a new Zero Waste norm will coalesce as the next generation of sustainability leaders emerges.

Here are a few examples of what that future will look like courtesy of our ZWAP! 2018 cohort:

