

## Modifying the Recess Before Lunch Program: A Pilot Study in Kaneohe Elementary School

Cathy Tanaka<sup>1</sup>, Katherine L. Richards<sup>2</sup>, Leilani S. L. Takeuchi<sup>2</sup>, Mitchell Otani<sup>3</sup>, Jay Maddock<sup>2</sup>

<sup>1</sup>*Healthy Hawai'i Initiative, Hawai'i Department of Health*

<sup>2</sup>*University of Hawai'i Department of Public Health Sciences and Epidemiology*

<sup>3</sup>*Kaneohe Elementary School*

### Abstract

Moving recess before lunch (RBL), though a simple schedule change, may provide many benefits for both students and elementary schools. Having recess before lunch has been shown to decrease plate waste (Bergman, et al., 2003; Gettlinger, 1996; Montana OPI, 2003; Ruppenthal & Hogue, 1977), and may improve discipline problems. The RBL schedule change has not previously been implemented in Hawai'i schools. The purpose of this pilot study was to assess the feasibility of implementing a modified version of RBL into elementary schools in Hawai'i. The modified version of RBL allows for implementation into a three-bell lunch system, a system used by many elementary schools in Hawai'i. A one-grade-per-lunch period RBL switch was assessed among 6th grade students for 1) shorter lunch line wait, 2) increased access to recess equipment 3) decrease in conduct-related referrals, and 4) moderate decrease in food and milk waste for the affected grade(s). Results indicate a significant decrease in lunch line wait, a decrease in discipline referrals, and a slight non-significant decrease in lunch waste. Additional comments from administrators and teaching staff indicate positive changes in student behavior on the playground, in the cafeteria, and in the classroom. One major finding was the reduction in discipline problems after the implementation of RBL, as seen in both the quantitative referral counts and qualitative teacher and administrator questionnaires. The positive results of this study support further implementation of RBL into schools in Hawai'i. Kaneohe Elementary School has continued to apply recess before lunch to the sixth grade lunch periods and is considering further implementation into other grades. The Hawai'i Action for Healthy Kids team plans to approach more schools in Hawai'i about using the modified recess before lunch program.

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*Keywords: Hawaii, elementary school, fitness, nutrition*

### Introduction

The National School Lunch Program provides low cost, nutritionally balanced meals for millions of students each school day, including approximately 182,000 public school students in Hawai'i. These lunches must meet the recommendations of the Dietary Guidelines for Americans and provide essential nutrients to students (USDA, 2003). Healthy eating patterns and adequate nutrients are important for school-aged children to promote cognitive development, prevent health problems and reduce under-nutrition which has been linked to increased behavioral and emotional functioning (MMRW, 1996; USDA, 2003). Research has shown that students who participate in NSLP

have better nutrient intakes than students who eat sack lunches, from vending machines, or off campus (Gordon, Devaney, & Burghardt, 1995; Rainville, 2001).

Though the NSLP provides nutritious meals to school students, environmental or system-related factors, such as having lunch before recess may decrease the amount of food students are eating as well as the nutrients they need to function and learn throughout the school day (Bergman, Buerger, Englund, and Femrite, 2003; Gettlinger, Laughlin, Bell, Akre, & Arjmandi, 1996; Ruppenthal & Hogue, 1977). In the 'normal' lunch schedule with lunch first and then recess, the alluring qualities of recess may push students

to eat less and rush through their meals to get to the playground. Students may come off the playground and go to class with excess energy and freshly disputed playground problems, which has a possibility of causing more disciplinary action and referrals. Students may also reduce their lunch time by waiting in longer lunch lines to receive their meals (Bergman et al., 2003; Buergel, Bergman, Knutson, & Lindaas, 2002). In a study done by Mauer (1984), amount of time spent waiting in a lunch line was also identified as a significant negative factor in students' participation in school lunch programs.

Moving recess before lunch (RBL), though a simple schedule change, may provide many benefits for both students and elementary schools. Having recess before lunch has been shown to decrease plate waste (Bergman, et al., 2003; Gettlinger et al., 1996; Montana OPI, 2003; Ruppenthal & Hogue, 1977), and may improve discipline problems. Results of the School Health Policies and Programs Study (SHPPS, 2000), show that only 18.2% of U.S. elementary schools have half or more of their classes participating in recess immediately before lunch. The RBL schedule change has not previously been implemented in Hawai'i schools. However, in the fall of 2004, the principal at Kaneohe Elementary School on the island of Oahu, was willing to try this change.

### **Purpose**

The purpose of this pilot study was to assess the feasibility of implementing a modified version of RBL into elementary schools in Hawai'i. The modified version of RBL allows for implementation into a three-bell lunch system. A three-bell lunch system consists of different grades participating in recess and lunch together at three separate time periods. One grade level from two of the lunch periods, 5th graders in the second lunch period and 6th graders in the third lunch period, were chosen to participate in RBL. This modified program reduced the amount of scheduling changes and decreased the amount of students on the playground and in the lunch room.

A one-grade-per-lunch period RBL switch was assessed among 6th grade students for 1) shorter lunch line wait, 2) increased access to recess equipment 3) decrease in conduct-related referrals, and 4) moderate decrease in food and milk waste for the affected grade(s).

### **Methods**

#### **Administrative Buy In**

In September of 2003, the Hawai'i Department of Health, Action for Healthy Kids Team learned about the success of Recess Before Lunch (RBL) from the Action for Healthy Kids national conference. After reviewing literature on the program, the team set off to promote this strategy to selected Hawai'i elementary school administrators. Although some of the schools approached expressed an interest in RBL, they could not determine how to implement the program into a three-bell lunch schedule without causing major disruptions in staffing and playground supervision. The principal at Kaneohe Elementary School (KES) was very interested in RBL, especially in the fact that previous studies had reduced discipline problems. This strong interest from the KES principal helped push the program into action. In September of 2004, he decided to implement a modified version of the program, by changing only the 5th grade classes during the second lunch period which was shared with grade 2. The 5th grade students were chosen because the principal felt they would benefit most from the possible RBL effect on behavior. Through use of the modified RBL program, implementation and scheduling problems associated with the three-bell lunch schedule were solved. Positive visual results were seen in KES 5th graders, and after a month of the program, the principal decided to expand RBL to include 6th graders in the third lunch period, which was shared with grades 3 and 4. Due to the fact that the RBL program was implemented at two different times for 5th and 6th graders, a range of data was collected from both groups. For the 6th graders, baseline and post data were collected, consisting of plate waste, time spent in the lunch line, time spent at the lunch table, and discipline referral counts. From the 5th graders, qualitative surveys on RBL from teachers and administrators were collected. No RBL change occurred in the

Kindergarten and 1st grade first lunch period because of issues with having these young students hold on to their lunch cards during recess and walk themselves up to the cafeteria after recess.

**Plate Waste Data**

Data was collected on two consecutive days at both baseline and post time-points. Collection days were also matched to include the same menu at baseline and post time-points. Data collectors set up a food weighing station at one end of the cafeteria. Four food collection bins were positioned to separately collect milk, fruits and vegetables, and all other food. When finished eating, students brought their entire plates to the data collectors. Plates were then put on a holding table, where milk, fruits and vegetables, and remaining food was separated and placed into their appropriate bin. Milk cartons and all paper trash were discarded into a separate bin. Plate waste was weighed separately adding each category of food into the main collection bin on the scale. Weights were recorded after each food item was added, and weight calculations were made by subtracting the previous weight from the total weight. Weights of the separate categories were then calculated by dividing the weight from each of the categories by the total number of 6th graders eating school lunches that day.

**Lunch Line and Table Time Data**

On a typical day, with absences, there are approximately 80 6th graders eating lunch. At baseline and post time-points, lunch line wait and table time was collected for the 1st, 40th, and last sixth grader to enter the cafeteria. Upon entrance to the cafeteria, the 1st, 40th, and last

sixth graders were given pink cards, making them easy to identify. Lunch line wait time was measured via a stop watch which was started when the student entered the lunch line and stopped when the student picked their lunch up from the counter. Information was recorded directly after the stop watch was stopped. To measure table time, the stop watch was started when the student sat down at the lunch table and stopped when the student left the lunch table.

**Teacher and Administrator Reflection Surveys**

Qualitative surveys were disseminated and collected from 5th grade teachers and administrators at KES, 12 weeks after implementation of the 5th grade RBL program. The surveys assessed before and after opinions of RBL, opinions on schedule changes, and strengths and weaknesses of RBL.

**Disciplinary Data**

The total number of discipline referrals for 6th graders was collected through a school-based electronic database of student misconduct. Data on the number of students referred for behavior misconduct was retrieved for the entire school year, before and after RBL implementation.

**Results**

**Lunch Line Wait**

Table 1 shows that the average amount of time 6th grade students spent waiting in the lunch line (average total of 1st, 40th, and last student) significantly decreased after implementation of RBL. Students at Baseline had lunch after recess; students at post had lunch before recess. The decrease in wait time was more than two minutes,  $p < 0.05$  (Table 1).

Table 1  
Lunch line wait-time in seconds for 6th graders

Time-point		1 <sup>st</sup> Student to Enter Cafeteria	40 <sup>th</sup> Student	Last Student	Mean	Mean Difference
Baseline	Day 1	116.00	103.00	332.00	242.33	136.0 (96.0) seconds $p < .05^*$
	Day 2	155.00	275.00	473.00		
Post	Day 1	23.00	75.00	58.00	106.33	
	Day 2	66.00	178.00	238.00		

**Time Spent at Lunch Table**

Data in Table 2 shows a small non-significant decrease in average time spent at the lunch table for 6th graders (average total of 1st, 40th, and last student) after RBL implementation.

**Discipline Data**

The total number of discipline referrals for 6th graders decreased from 14 in the four weeks prior to the implementation of RBL to 0 in the four weeks after RBL implementation. There continued to be no sixth grade referrals for 12 weeks after RBL implementation. In the months before RBL implementation, sixth graders accounted for 26% (20 out of 78) of the total discipline referrals for K-6th grades. After RBL

implementation, for the remainder of the school year, sixth graders accounted for 0.03% (7 out of 247) of the total referrals for grades K-6.

**Plate Waste**

Though a series of t-tests did not show statistical significance, most likely due to the small sample size of only one school, there was a slight non-significant decrease in the average of total food and milk waste (per lunch) after RBL implementation. Food waste was broken down into milk, fruits and vegetables, and all other food. There was a small decrease in the average waste for milk, all other food, and total food though no decrease was seen in fruit and vegetable waste.

Table 2  
Time spent at lunch table in minutes for 6th graders

Timepoint		1 <sup>st</sup> Student to enter Cafeteria	40 <sup>th</sup> Student	Last Student	Mean	Mean Difference
Baseline	Day 1	18.95	17.17	9.40	11.1	-1.65 (5.02) minutes p=0.46
	Day 2	9.33	8.00	3.75		
Post	Day 1	11.00	10.00	7.15	9.5	
	Day 2	12.63	11.38	4.57		

Table 3  
Average plate waste collection for 6th graders in ounces per lunch

Food Item	Baseline oz/lunch N=152 lunches	Post oz/lunch N=155 lunches	Waste Difference* (oz/lunch)
Milk	2.32	2.06	-0.26
Fruits and Vegetables	3.20	3.53	+0.33
Other Food	2.16	1.38	-0.78
Total	7.68	6.97	-0.71

\* None of the differences were significant

**Teacher and Administrator Surveys (regarding 5th grade RBL implementation)**

Teachers and administrators completed a brief survey to 1) describe their general opinion and reaction to RBL, 2) report strengths and weaknesses of RBL implementation, and 3) provide observations of student behavior. When first introduced to the RBL schedule change, one

teacher reported that s/he was confused with schedule change logistics; two teachers reported that they were willing to support the change. After RBL implementation, all three teachers reported positive reactions to the RBL schedule change. Table 4 provides teachers' initial reactions to RBL and their reaction after RBL implementation.

Table 4  
Fifth Grade Teacher reaction to RBL implementation

Teacher	Initial Reaction to RBL	After RBL Implementation
1	Confused...not sure how the logistics would work (yard duty...students reporting to lunch, orderly & on-time).	After the initial excitement/confusion, students appear to enjoy having the RBL, this could be in part to them having the entire play area to themselves.
2	No problem...willing to try	It has been an excellent opportunity for the students to have the field to themselves. There have been fewer problems (behavior).
3	I wasn't too "crazy" with the idea but I was willing to be supportive	It's a good idea. It seems to work well.

Administrators were also asked their reactions to RBL before and after implementation. All three administrators (principal, vice principal, Primary School Adjustment Program officer) were supportive of the RBL change. However, the

principal did express concern about adequate playground supervision with the recess schedule change. Table 5 provides administrators' initial reactions to RBL and their reaction after RBL implementation.

Table 5  
Administrator reaction to RBL implementation Baseline and Post

Administrator	Initial Reaction to RBL	After RBL Implementation
1	Thought it was worth a try – concerned about playground supervision.	I'm still concerned about adequate playground supervision.
2	Good idea – maybe the students will eat more and be more settled at lunch.	I think students are more settled because they are not so anxious to go out to play.
3	Delighted...I am always open to changes, new ideas, new projects.	The students liked the change.

Additional comments from administrators and teaching staff indicate positive changes in student behavior on the playground, in the cafeteria, and in the classroom. Due to the staggered lunch schedule, fewer students were on the playground at one time and had more access to playground equipment. Fewer problems were also reported on the recess field, with fewer students on the field at one time. Misbehavior during the lunch line lessened as students spent less time waiting in line. The cafeteria was more relaxed and quiet; students ate their lunches without the rush of going out to

recess. Teachers reported that students returned to their classrooms more settled and ready to learn. Students also stayed more focused throughout the afternoon. The number of student visits to the health room for stomach aches also decreased after RBL implementation.

Teachers not participating in the RBL schedule change also reported positive effects of RBL implementation. Second graders no longer shared the recess field with fifth graders; third and fourth graders did not share the recess field with sixth graders. Students had more access to

recess equipment and the cafeteria was less full at one time, resulting in shorter lunch lines and less misbehavior. Overall, teachers and administrators reported positively to the RBL schedule change. The majority of teachers and administrators reported that other grade levels and elementary schools should implement the RBL schedule change.

### **Discussion**

The positive results of this study support further implementation of RBL into schools in Hawai'i, based on improved student behavior, reduction in lunch line wait time, slight decrease in plate waste, and positive feedback from teachers and administrators. One major finding was the reduction in discipline problems after the implementation of RBL, as seen in both the quantitative referral counts and qualitative teacher and administrator questionnaires. Fewer students on the playground at the same time led to an increased adult-to-student ratio during recess and may have contributed to decreased behavior problems. The principal observed that many of the 6th grade referrals resulted from students misbehaving in long lunch lines; the reduction in lunch line wait time could have also had an impact on discipline referrals. Although this decrease could be due to multiple factors, RBL implementation is a possible influence. Further studies should collect more data on discipline counts before and after RBL implementation.

The reduction of lunch line wait time after RBL implementation was another positive finding. This could be due to the fact that students enter the cafeteria on their own accord, after the bell rings, instead of entering the cafeteria all at once as done when lunch is eaten before recess. Teachers mentioned that this gives the students a sense of responsibility, but also may reduce the amount of time they have to eat lunch. A

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reduction in time spent at the lunch table was observed, and could possibly mean that students have more time to be physically active at recess. RBL still allows students up to 20 minutes of eating time. Subsequent studies of RBL should collect physical activity data during recess and also ensure that students arrive in the cafeteria quickly in order to give them adequate time to eat.

The novel part of this program was the implementation of RBL to selected grades only. This modified program seems to work well for the three-bell lunch schedule used by many of the schools in Hawai'i. Because scheduling changes are required with RBL implementation, strong support from administrators and teachers is needed for it to be implemented and sustained. Proposition of a RBL program with a one-grade-per-lunch-period switch with less scheduling changes than a full RBL program, is more likely to increase buy in and support from teachers and administrators.

### **Future Direction**

Kaneohe Elementary School has continued to apply recess before lunch to the sixth grade lunch period and is considering further implementation into other grades. The principal at KES also plans to implement RBL with kindergarten and 1st graders. The Hawai'i Action for Healthy Kids team plans to approach more schools in Hawai'i about using the modified recess before lunch program. Comparison schools are needed to assess the validity of KES recess before lunch results. In future implementation sites, plans for data collection include: data collection for a longer period of time and additional time-points; survey collection at each time-point from administrators, teachers, students, and food service staff; physical activity data collection during recess; and plate waste data collection.

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### **Acknowledgements**

This project was funded in part by the Department of Health's Tobacco Settlement Project and supported by Hawaii's Action for Healthy Kids and the Hawaii State Department of Education's (DOE) Office of Hawaii Child Nutrition Programs. Thank you for the support of DOE's Lynn Shoji, KES's Curtis Loo and Debbie Nekomoto, and all the entire KES staff for their support. We would also like to acknowledge the support of the DOE's Instructional Services Branch, DOH Healthy Hawaii Initiative and Tobacco Prevention & Education Program in our data collection efforts.

#### Author Information

Cathy Tanaka, M.P.H.\*  
Hawaii State Department of Health  
E-Mail: [cathykt@doh.hawaii.gov](mailto:cathykt@doh.hawaii.gov)

Katherine L. Richards  
Leilani S. L. Takeuchi  
Jay Maddock  
University of Hawai'i  
Department of Public Health Sciences and Epidemiology

Mitchell Otani  
Kaneohe Elementary School

\* corresponding author