



## **Impacts of Recess Before Lunch on Students' Food Consumption: Plate Waste Study at Roosevelt Elementary**

By the Whatcom Farm to School Support Team  
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### **Abstract**

The Whatcom Farm to School Support Team conducted a plate waste study at Roosevelt Elementary to determine if a change in the school schedule to have recess before lunch impacted students' eating behavior. The findings showed that students ate more of their meal when recess was before lunch than when recess was after lunch. This included increased consumption of fresh fruits and vegetables, grains, and protein. The results were consistent with findings of other research studies and confirmed that scheduling recess before lunch is a best practice that promotes healthy eating behaviors, and it is worth the effort to continue investing in and supporting this practice at Roosevelt Elementary.

### **Introduction**

In the attempt to promote healthy eating, many schools are adopting recognized best practices in the cafeteria such as changing the schedule to have recess before lunch so that students don't skip eating or rush through their meal to go out and play. Bellingham elementary schools have switched to recess before lunch and there is anecdotal evidence that the results have been positive (e.g., students stay seated longer and eat more lunch, they return to class ready to learn). The schedule change to recess before lunch can be tricky for school staff to manage however, as extra adults are needed to supervise the transition from playground to cafeteria and ensure students clean their hands before eating.

In the 2017-18 school year, Roosevelt Elementary changed the school schedule to have recess before lunch (RBL) and the task of overseeing handwashing fell to the principal and assistant principal. Given the impact on these administrators and the rest of the Roosevelt staff, it was important to determine whether it was worth continuing to do recess before lunch.

The Whatcom Farm to School (F2S) Support Team had plate waste data from a study they conducted at Roosevelt prior to the schedule change to RBL. They compared this data with new plate waste data collected on two days when similar lunch menus were served after RBL was instated. This enabled them to measure whether the shift in schedule at Roosevelt positively impacted students' food choices and the amount of food they ate.

### **Method for Measuring Food Consumption**

For this study, only students who ate the school-prepared meal were included. The F2S Team measured the types and amount of food students ate by selecting every third person as they went to sit down with their lunch tray. The researchers put a number on the student's tray and took a picture of the food, and then, when the student was done eating, the researchers took another picture of the tray. Data analysis involved visually estimating the number of portions of each food group the student ate (i.e., fruits & vegetables, protein, and grains). This subjective way of measuring food consumption had its drawbacks, but using the same person to analyze all the pictures helped to increase the reliability of the data.

The photos presented below show examples of each of the lunches before and after the change to RBL.



Cheeseburger lunch before RBL, March 2017



Cheeseburger lunch after RBL, March 2018



Pasta lunch before RBL, February 2016



Pasta lunch after RBL, April 2018

## Results

**Students ate more of their meal** – *The amount of food students ate after implementing recess before lunch was significantly more than the amount students ate with recess after lunch (average number of portions eaten with recess before lunch=2.6; recess after lunch= 2.3, average with recess;  $t = -2.17$ ;  $p < .02$ ).*

Breaking the data down in terms of *what* students chose to eat:

### **Students ate significantly more fresh fruit/vegetables**

- Fresh fruit and vegetable consumption increased after the switch to RBL (.75 portions after RBL compared to .56 portions with recess after lunch,  $t=-2.1$ ,  $p<.02$ ). It should be noted that the school started offering a complete salad bar in between the first and second data collection periods. We have found in previous studies that students eat more fresh fruit/vegetables when they have salad bars with a greater variety of produce to choose from.
- In looking at consumption of different food groups, the side dishes offered had an obvious impact on the results. The cheeseburger meal before RBL included roasted potato wedges and students could choose cups of canned pineapple, while the cheeseburger meal after RBL was served with pasta salad. The pasta meal before RBL was served with roasted squash and the pasta after RBL was served with garlic bread.
- Looking specifically at the cheeseburger meals, students ate significantly more fresh fruits & vegetables after the switch to RBL (1.0 portions after RBL compared to .6 portions before RBL,  $t=-2.86$ ,  $p<.003$ ), but when the potato wedges and canned pineapple were added into the equation, the results were the reverse and students ate significantly more fruits/vegetables before the switch to RBL (1.0 after RBL compared to 1.3 portions before RBL,  $t=2.54$ ,  $p<.006$ ).
- Comparing fruit/vegetable consumption specifically for the pasta meals, there was a non-significant increase following the switch to RBL (.57 after RBL compared to .51 portions before RBL).

### **Students ate significantly more grains**

- Students ate nearly double the amount of grains after the switch to RBL (1.0 portions of grains after RBL compared with .6 portions before RBL,  $t=-7.23$ ,  $p<.0001$ ). Again, the menu made a difference since pasta salad was served with the cheeseburger, and garlic bread served with the pasta meal after RBL.

### **Students ate some more protein**

- For the cheeseburger meals, there was a significant increase in protein consumption following the switch to RBL (.9 portions after RBL compared to .7 portions before,  $t=-2.9$ ,  $p<.002$ ). There was not a significant difference in protein consumption for the pasta meals.
- Combining the cheeseburger and pasta meals resulted in a small but significant increase in protein consumption following the switch to RBL (.9 portions after RBL compared to .8 portions before RBL,  $t=-1.26$ ,  $p<.10$ ).

### **Conclusions**

Scheduling recess before lunch has a positive impact on the amount of food students consume. They are not in a rush to get outside as they are when recess is after lunch, and they may be hungrier by the time they get to the cafeteria. In terms of the students' food choices, this study shows that students consume more fresh fruits and vegetables, grains, and protein when recess is before lunch. When processed fruits and vegetables that students tend to enjoy are served (e.g., roasted potatoes, canned pineapple), students will readily eat them regardless of when recess happens. As was noted above, the addition of full salad bars with additional fruit/vegetable choices likely added to the observed increase in fresh/fruit and vegetable consumption.

The reader should keep in mind that this is a small study at one elementary school, and that the methods for estimating quantities of food consumed are subjective. That said, these findings replicate those of many other studies using a variety of methods.

Regarding the pros and cons of recess before lunch, the primary drawbacks that have been noted at Roosevelt Elementary are:

- Staff time needed to supervise students washing their hands before entering the cafeteria.
- Slower eaters cannot stay in the cafeteria to eat (i.e., skip some recess), since, with RBL, all students must return to class with their teachers after lunch.

Benefits of RBL that Roosevelt staff have seen, in addition to increased food consumption, are:

- Teachers would occasionally bring their classes to the cafeteria late when lunch was before recess, so students actually had less time to eat than with RBL.
- Since the switch to RBL, classes help clean their lunch tables with teacher supervision, which gives them a role in maintaining their school environment and helps the cafeteria staff.
- Finally, teachers note that since the switch to RBL, students are calmer and have fewer conflicts to resolve when they return to class after lunch; another finding that is consistent with the existing research.

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Please contact [coordinator@whatcomfarmtoschool.org](mailto:coordinator@whatcomfarmtoschool.org) with any questions or comments about this study.