

Healthy Recipe Development for Implementation in School Meals

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Outreach Collaborative for a Healthy Oregon

- OSU School of Public Health Accreditation project
- OCHO Grant of \$25,000 – “Healthy Recipe Development for Implementation in School Meals”
- Connect and Coordinate Campus Faculty from BioPop or SoBe, Field Faculty in FCH & 4-H, and local Health Department with a meaningful public health project
- Meet a need in the community
 - Mt. View Community Health Improvement Partnership
- Recipes, testing for cultural acceptance, school gardens

Recipe Development

Units

- OSU Moore Family Center Foods Lab
- Middle and High School OSU Nutrition Ed Staff
- Culver School District Kitchens
- OSU Extension/Deschutes County Kitchen
- High School Health Classes
- Jefferson County School District Kitchens

Development role

- Initial conception of recipes and initial testing
- Gave recommendations for school implementation
- OSU Student Interns adapted recipes w/ cooks
- OSU staff & student Interns adapted recipes for home-style use
- Made and tested recipes
- Adjusted recipes, provided samples for taste tests

Challenges in recipe development

- Modifications for fat and sodium have impact on products that affect taste and acceptability
- A child's ethnic preferences have some influence on food acceptability
- Decreasing school lunch participation decreases funding for school lunch program—kids need to want to eat the food
- School lunch cooks have influence on the lunch program

Recipes



Black Bean Spinach Quesadilla



Saucy Sausage Calzone



Kickin' Chicken BBQ Calzone



Tortilla Soup

Recipes



OSU Nutrition Students in Culver Kitchens



VIPs taste Cowboy Sliders



Sloppy Garden Joe



Moore Family Center
Foods Lab Testing



Buff Elementary School
Taste Testing

Research Process

- Develop recipes
- Test with OSU students
- Sampled with kids at both OSU FMC lab and in Corvallis High school cafeteria
- Translated into kitchens in Central Oregon Schools
- Get kids input in Central Oregon School
- Tested using sensory evaluation tool

Results

**Table 1. Participant ethnicity by grade
(N=334)**

Ethnicity	High School n	3-8th grade n	Total (%)
White	27	62	(26)
African Am	0	4	(1)
Hispanic	47	63	(32)
Asian	1	2	(1)
Native Am	22	106	(38)
Count Total	97	237	

Table 2. Participant ethnicity by gender (N=334)

Ethnicity	Gender	
	Female	Male
White	46	43
African Am	3	1
Hispanic	52	58
Asian	2	1
Native Am	69	59

Table 3. Schools , grade level and ethnicities of participants in recipe sampling (N=341)

School	Grade n (% of Total Sample)	Participants Ethnic Breakdown by School	Recipes Sampled
High School	9 th - 12 th n=98 (29%)	26% white	Black Bean Spinach Quesadilla; Sloppy Garden Joe; Tortilla Soup; Saucy Sausage Calzone
		0% African American	
		50% Hispanic	
		1% Asian	
		23% Native American	
Elementary School A	3 rd n=49 (14%)	40% white	Black Bean Spinach Quesadilla
		6% African American	
		46% Hispanic	
		0% Asian	
		6% Native American	




Table 3. Schools , grade level and ethnicities of participants in recipe sampling (N=341) (cont'd)

Elementary School B	4 th n= 44 (13%)	40% white	Sloppy Garden Joe
		2% African American	
		37% Hispanic	
		2% Asian	
		19% Native American	
Elementary School C	5 th n=58 (17%)	100% Native American	Kickin' Chicken (Barbeque) Calzone
Middle School	6 th n=92(27%)	28% White	Tortilla Soup
		0% African American	
		26% Hispanic	
		1% Asian	
		40% Native American	

Taste Test Form

Name of Recipe: _____

Directions: Circle the number that best answers each question. 1 is the worst and 6 is the best.

						
How does the food look?	1	2	3	4	5	6
How does the food smell?	1	2	3	4	5	6
How is the texture? How does the food feel in your mouth?	1	2	3	4	5	6
How does the food taste?	1	2	3	4	5	6
Would you eat this food again?	1	2	3	4	5	6

Office Use Only

Panelist Code:	Date:
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Table 4. Overall mean rating of recipes taste liking and willingness to eat again (n=344) (Scale 1 (low) to 6 (high))

Recipe	How does the food taste?	Would you eat this food again?
Black Bean Spinach Quesadilla	4.4 (1.6)*	4.1 (1.8)
Sloppy Garden Joe	4.0 (1.6)**	3.6 (1.8)
Tortilla Soup	4.8 (1.6)*	4.4 (1.7)
Saucy Sausage Calzone	4.0 (1.3)*	3.7 (1.5)
Barbeque Chicken Calzone	4.8 (1.6)**	4.3 (1.9)

* Matched pair t-test reveals significant differences at $p < 0.05$

** Matched pair t-test reveals significant difference at $p < 0.01$

Table 5. Significant differences in recipe taste liking and willingness to eat again between grade and high school

Recipe	Taste High School (n=65 BBSQ); (n=66 GSJ)	Taste Elementary School (n=50 BBSQ); (n=44-GSJ)
Quesa- dilla	4.1 (1.4)*	4.8 (1.8)
Joes	3.7 (1.6)**	4.6 (1.6)
Recipe	Eat again High School (n=66 GSJ); (n=65 TS)	Eat again Elem/Mid School (n=43 GSJ); (n=92 TS)
Joes	3.2 (1.7)**	4.2 (1.)
Soup	3.9 (1.6)**	4.6 (1.7)

*Independent t-test reveals significant difference at $p < 0.05$

** Independent t-test reveals significant difference at $P < 0.01$

School Gardens



Westside School Garden



Warm Springs School Garden



Lessons learned

- Recipe/menu adaptations work better when working with the schools, kids and staff.
- Scratch cooking is generally needed now.
- Liking of a food or recipe may not translate into choosing it.
- Engaging students in growing a garden promotes students' desire to eat those fruits and veggies in their meals.

Next Steps



- Commercial Recipes entered in Nutri-Kids
- Home-style recipe tests completed on 2 more recipes
- Submit recipes to national school lunch resource website.
- Post recipes on web-site
 - <http://extension.oregonstate.edu/deschutes>