

APRIL

ELEVATING SCHOOL MEALS WITH THE SCIENCE OF CRAVEABILITY

Your perception of how tasty and appealing food is begins long before it actually ends up in your mouth. From colorful presentation to mouthwatering aromas to complementary flavor layering, small sensory changes to the food you serve along with an inviting cafeteria environment can have a big impact on how students perceive and enjoy their meals.

BY MARI BRAND



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For many people, kids and adults alike, the words “school lunch” don’t exactly conjure up images of culinary greatness. Students might view the cafeteria as a place to socialize and get a break between classes, not necessarily a destination for a great meal. But here’s the thing we all already know: School meals can be genuinely delicious, exciting and worth looking forward to—getting your students to see that too is the tricky part.

There are lots of tried-and-true strategies school nutrition teams often turn to for getting students more excited about their school lunch or breakfast, from taste tests and student-led advisory committees to menus focused on trending flavors or cuisines and DIY or build-your-own meal options.

Those are all great starting points—serving foods that you already know your students want, either because they’ve told you themselves, you’ve done your research on hit menu items at popular restaurants or you’ve connected with fellow school nutrition professionals to tap into what’s working for them, is naturally one of the best ways to ensure your menu is drawing students into the cafeteria in the first place. But what about the core of what really makes food appealing (or unappealing) to someone? From viewing the food in the serving line, to putting it on their tray to actually sitting down and digging in, what are all the factors that determine how likely students are to clear their plates and leave excited to come back for tomorrow’s meal?

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THE SCIENCE BEHIND WHAT MAKES FOOD IRRESISTIBLE

Whether you're fully conscious of it or not, we all know the appeal of food isn't solely about the flavor. Eating is a full-on multisensory experience, and research shows that everything from the color of the plate to the smell wafting from the serving line can influence how much students enjoy (and eat) their meals. Understanding the science of craveability and using it to your advantage isn't just for food manufacturers and high-end restaurants; it's useful knowledge with practical applications for anyone running a school cafeteria too.

SIGHT

It's not just a cliché—you really do eat with your eyes first. It sounds obvious: Of course if food looks good, you're going to be more enticed to eat it, and the opposite is often even more influential. If you don't like what you see on your plate, your brain isn't going to be thrilled about eating it. But the impact of appearance and presentation goes deeper and gets much more specific than that.

A review of scientific research published in the journal *Food Quality and Preference* (bit.ly/SNPlus-Food-Quality-and-Preference) identified a wide range of visual factors that boost the

eye-appeal of food: symmetry, shape, freshness cues, glossiness and color contrast all play a measurable role in how delicious food looks before anyone takes a bite. Cognitive neuroscience research into the question of how our brains respond to food visuals has found that as soon as we see something we deem as edible (even if it's just an image on a menu or screen), our brains immediately start estimating the likely energy density of the food and direct our attention to the part it evaluates as the most energy-dense and visually appealing.

Other research published in the journal *Foods* (bit.ly/SNPlus-Foods-Journal) drives those points home further, finding that study participants consistently rated food as tastier and healthier when it was served on more visually attractive plates—not because the food changed, but because the presentation did. The study found that the beauty of the plate pattern had a meaningful halo effect on the entire meal experience, even triggering emotional responses based on the food's appearance that affected how enjoyable the meal was for participants overall. Even the position of the food on the plate had an impact on how it was rated, with the food served in the center of the plate being perceived as tastier compared to the food around the edge.

The color of food is one of the most powerful influences on our brains. Colorfulness and color contrast have been shown to significantly enhance how visually appetizing a dish is—bright, varied colors on a plate signal freshness, variety and nutritional richness, and presenting food against a high-contrast background makes it stand out and be perceived as better tasting too. Think about the difference between an entirely beige cafeteria tray—a scoop of mashed potatoes, pale chicken and a side of plain, canned corn served on your standard white or tan tray—versus the same protein served in a grain bowl loaded with roasted red peppers, dark leafy greens and a drizzle of bright sauce.

Shape and variety also matter more than most people realize. Research published in the journal *Appetite* on chicken nuggets—yes, really—found that groups of food items presented with greater shape variety were rated as more visually appealing than uniform presentations (bit.ly/SNPlus-Appetite). For school kitchens, this means that even cutting vegetables or fruits in different ways, combining round and elongated food items or presenting a meal with a variety of shapes and textures on the tray can make the whole thing look more interesting and worth eating from the start.

The practical takeaway from this sensory experience? Presentation matters, and simple changes can make a surpri-

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singly significant difference in how we subconsciously rank the taste and healthfulness of the food before we even start eating. A pop of color from some fresh fruits or vegetables or a brightly colored sauce, intentionally serving the food with the best part in the center of the tray, adding contrast with different colors and shapes of food or even investing in more attractive trays are relatively low-effort and low-cost moves that can influence how enticed students are to choose (and actually eat) a school lunch for that day. Visual appeal is the very first interaction a student has with their food, and it sets the tone for everything that follows.

SMELL

Aroma can be one of the most powerful and underutilized tools in a school food-service operation. Think about it: What makes walking past a bakery almost impossible to resist? It's not the sight of bread through the window. It's the smell. That same principle applies in a school cafeteria.

How food smells is deeply linked to our eating experience, and for some people, it's just as important as how the food actually tastes. Our appetites are often triggered by easy-to-identify smells like meat on a grill, cookies baking or onions sizzling in a pan, but beyond just stimulating hunger, the nose is key to helping us

experience the full flavor of food, with that first smell setting expectations for the taste to come. Strong, natural aromas from ingredients like citrus, garlic, spices or roasting vegetables can meaningfully enhance both anticipation and enjoyment of a meal. Aroma is also deeply tied to memory and emotion. Certain food smells conjure up comforting, nostalgic associations that set a positive start for the meal that follows.

For schools, this means thinking strategically about cooking methods and timing. Techniques that produce enticing smells—roasting, grilling, sautéing, baking—create an aromatic environment that primes students' appetites before they ever reach the serving line. Even simple moves like blooming spices in oil before adding them to a dish, or finishing a protein with a quick sear, can introduce an appetizing aroma that sets a positive tone for the whole meal.

TASTE

Naturally, this sense is perceived as the most important one when it comes to enjoying food. The aroma and visual appearance of the food determine how badly we want to dig in, but once the eyes and nose have done their work, the mouth takes over—and how the food tastes is what really determines how much of it you eat, plus how excited you are to go back for more the next day.

Flavor layering is one core strategy for making food more compelling: combining multiple, complementary flavors to create a complex taste profile that keeps people engaged. Food that

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balances sweet, salty, savory, sour and umami flavors tends to be far more craveable than one-note dishes, which is why so many beloved comfort foods and fast-casual staples hit several of those notes simultaneously.

One important consideration, however, is that our taste preferences are dynamic, not fixed. The types of food we eat regularly influence what we find appealing, and your palate genuinely shifts over time. This can be a challenge in school foodservice because people's tastes can vary drastically from one another, and you don't have the resources or time to cater to all of your students' personal palates. That being said, there are always some picky-eater staples—chicken nuggets, pizza, sandwiches, pasta, etc.—that you can rely on to appeal to most students, the more adventurous ones included. Plus, students who are exposed to more complex flavors are more likely to develop a taste for them, so gradually adding foods with bolder seasoning, spicier sauces and more diverse ingredients or flavor profiles to your menu can draw in older or more adventurous students right away and slowly influence others to try new things down the line. This is also where the intersection between presentation, aroma and taste all come into play. If you offer something like a sweet and spicy chicken stir fry or a smoked chipotle burrito bowl that smells incredible and looks equally delicious on the tray, more students are going to be enticed to try it, even if it's out of their usual comfort zone.

INVITING CAFETERIA SPACES = TASTIER FOOD

Food doesn't exist in a vacuum—the environment in which it's eaten matters just as much as what's on the plate. In fact, one study conducted in China found that food served in an aesthetically pleasing environment was perceived as smelling, tasting and looking better than the same food in a less inviting environment (bit.ly/SNPlus-Food-Environment). And let's be honest, many school cafeterias are not exactly cozy or inviting. Bright fluorescent lights and bare institutional walls generally don't set the stage for an enjoyable meal.



Yes, there are real constraints—most schools have very short lunch periods, so the focus has to be on efficiency, and things like lighting, the tables and chairs and how much space you have are most likely out of your control. But there's still a lot that can be done to make cafeteria spaces feel more welcoming without major renovations. Fun, colorful murals or food-themed wall art can completely change the vibe of a space. Rotating seasonal decorations or themed displays around events like National School Lunch Week, National School Breakfast Week or cultural celebrations and holidays add positive energy and make visiting the cafeteria feel like a special occasion. Even something as simple as playing upbeat, age-appropriate music in the cafeteria during lunch or breakfast service can make the space feel livelier and more like a place students actually want to be—and a place where the food subconsciously tastes better, even before they actually start eating.

PUTTING THE SCIENCE TO WORK

The beauty of food science is that its insights are actionable, even in budget-conscious, regulation-heavy school foodservice settings. You don't need a culinary school-trained chef or expensive equipment or ingredients to apply these principles. What you do need is intentionality: thinking about how a meal looks on the tray before it's served, what the cafeteria and food smells like when students walk in, whether the dish has enough flavor complexity to hold their interest and how inviting the cafeteria environment is. Even small, consistent improvements in these areas can shift how students experience their school meals—including how much of those meals they actually eat and, maybe most importantly, how likely they are to return for another the next day.



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