A Vision for the Elementary Learning Environment

Guidelines for building planning & design.
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What is the vision for the district? We know that learning happens outside of the school day, outside of the seven hours and 180 days that a child is in school. And if learning happens far more outside school than within it, then how do we align our efforts and our language to build a culture that wraps around our kids so they are learning all day, every day, and throughout the year? That is the ultimate challenge for which there is no answer.

Where does the visioning document fit in? The visioning document isn’t an answer. It’s a list of the best questions we have that should be asked relentlessly by all people who are committed to partnering with us, including community-based organizations, the business community, and parents.

Where do we start? We start with guiding principles and questions. How do we create an environment where kids are continuously challenged, relentlessly supported, and engaged in a way that’s safe and healthy? How do we ensure that we are challenging all of our students and keeping them engaged? How do we ensure that all of our kids are healthy and supported? How do we ensure that we are keeping our kids safe socially, emotionally and academically? We must start with these questions and relentlessly ask questions. There are no single or right answers.

What are the critical questions that a designer must ask? As an educator, I ask myself how I engage and support my students. For the facility, how do you do that? Step back and ask yourself what it means to be a student. Am I a student? Are a child’s parents, grandparents, aunts, and uncles students, too? How do we ensure that we build healthy environments? Healthy means more than just green or sustainable; it means an environment that is welcoming. It also means using our knowledge of colors to affect mood such as brightening spaces darkened by our climate here in the Pacific Northwest. How does the environment challenge our students? When we talk about environment, what do we mean? Is the environment the block that we select and call the school? Or is it all that we can walk to, drive to, and even access online? You must relentlessly ask questions. There are no single or right answers.

How do we engage students with the built environment? What does it mean to engage four or five hundred students in the most meaningful way? How do you create an environment that allows a child to be present physically, emotionally and even spiritually? Our kids know more now than ever before. They have an unprecedented level of access to information, and that scares people. We cannot contain the information any more than we can control our children. We must ask ourselves how we can build environments that influence them, not control them.

Meta-cognition matters. It is the moment when a child is able to step outside of herself and reflect upon what she just learned and experienced. It is the moment when she realizes that the community, her environment, is changing the way that she is thinking, and as a result, she deliberately chooses a path and follows it. Kids are becoming more aware. That excites me.

How can the built environment stop and make students pause for a split second and adjust their thinking or their actions? That is what I mean when I say spiritually. The definition changes every time our students learn. The definition is evolutional, and that’s the tension we face when building our environment. Culture is a living, breathing organism.

In the same way that you describe engaging students, the vision must engage readers. Is that right? We know that the brain works from comprehension to analysis to interpretation to meta-cognition. Comprehension builds upon itself every day. With the visioning document, we are building a new level of comprehension so that others may analyze it. Some will agree with parts, some will disagree with others, and in so doing, new interpretations will be created. Every time that we build a new building, we build a new interpretation because we will have learned more.

We have the opportunity to write a tool that truly sustains itself for the next decade if the questions are right and the process is articulated in a manner that allows the reader to either consciously address the questions or consciously determine that the questions should be ignored.

You don’t come to Tacoma and copy. You come to Tacoma and learn. When you ask: what does that mean, what does that mean for my community, you create your own interpretation.

Foreword
An alternative to the traditional ed spec
A conversation with Dr. Josh Garcia
Part 1
Our story

The audience of this document is the community in the broadest sense, as opposed to a more narrow understanding which is typical of educational specifications where the audience is only the designer. A document that is valuable to educators, the community and the designer allows each to inform the others, so that through dialogue, a better understanding of the relationship between the built and learning environments becomes possible. We begin the document with our particular point of view, what we consider our successes and weaknesses, what we are trying to do, and our vision for a path to get there.
We are serious about innovation.

We are the state’s first-ever and only district-wide Innovation Zone for education.

11 of our schools earned the Innovative Schools Award.

We foster life-long learners by matching students with unique schools that play to their passions and interests.

Two of our innovative schools

Geiger Montessori
Geiger’s educational approach emphasizes self-directed learning. Each classroom is a mix of ages. For example, first through third grade or three-year-olds through kindergarten. Students work uninterrupted for long periods of time on tasks that they choose. The approach aims to cultivate concentration, leadership, self-motivation, and a sense of community.

Stafford Elementary
Stafford provides students with an arts-infused education. The teachers use art in all subjects to help students better understand concepts. Principal Cyndi Evans says, “We’re using art as a vehicle to cement student learning. Our kids have multiple experiences, they ask questions and they’re risk takers. The end product is less important. Instead the artwork helps provide context.” Asked to provide one word for the results, Evans replies, “Magic.” Despite more than 70 percent of Stafford’s students qualifying for free or reduced lunch, the majority of Stafford students meet or exceed the state’s standards in math, science, reading, and writing.
Looking into the future

There are significant challenges ahead

Tacoma Public Schools is committed to offering our students more innovative choices for their education than any other district in the state, and as a result, a large number of our students are succeeding. At the same time, we took a hard look at the current state of our district. We found that Tacoma is very diverse. In a number of our schools, students are under-performing. We analyzed the numbers and found that two factors, socioeconomics and peer relationships, account for 85% of our students’ success. Put simply, the data clearly shows that our influence is limited if we think of our schools in the traditional way.

What the data tells us

The percent of students who qualify for free or reduced lunch is a statistic associated with lower test scores.

- More than 80 percent of students qualify for free or reduced lunch in 17 of our 35 elementary schools.

- Of these schools, 15 are below the state’s standards in reading and math for third grade performance.

- Of these schools, 5 are slated for modernization or replacement.
We accept the challenge

Schools must become agents for change

Inequity is not acceptable. We are committed to providing a learning environment that allows every student to succeed. We have successes, but we need to do more. We are providing more support to the schools that need it most. But resources are only part of the answer; significant change requires supporting our built environment as well. As we modernize and replace ten of our elementary schools over the coming years, we have the opportunity to build a better future for our children.

“Seeing Lister Elementary today brings me to tears. So much has changed. It’s obvious that the neighborhood values our children.”

– Former Lister student, Class ’78
In order to bring about serious change, work must happen at the levels that influence socioeconomics and peer relationships. The school may begin to work on these deeper levels by rethinking the concept of school, empowering our community partners, and establishing a positive culture. If organizations already exist that are doing this kind of work, then we must open up a discussion, provide access to our resources, and make them stronger.

McCarver Elementary School serves one of Tacoma’s poorest student populations. It has the highest turnover rate and largest number of homeless students in the district. Deep poverty, homelessness, and housing instability are the primary causes of families moving in and out of the area. The impact of turnover on teachers and students is devastating. Michael Power from Tacoma Housing Authority (THA) explains, “For teachers it’s like trying to teach at a bus station. Every time a bus arrives, you’ve got a whole new class.” Carol Ramm-Gramenz, McCarver’s school counselor, describes the situation for students: “Many of our behavioral challenges are a result of poverty and homelessness. For kids who don’t know where they’re going to sleep at night, or don’t know where they’re going to be next month, the stress and anxiety that’s on their shoulders; they act it out.”

In 2011, THA partnered with Tacoma Public Schools to provide families and children with the stability of a permanent home and a permanent school where they can thrive. THA provides five years of rental support to previously homeless families with a child enrolled in kindergarten, first or second grade at McCarver. Parents are required to actively participate in school activities, be closely involved in their children’s education, pursue education themselves, receive financial and career training, and become able to afford housing on their own. The district gives THA’s caseworkers dedicated space within McCarver for working with students and parents. To further support stability, the school implemented the Primary Years International Baccalaureate Program.

An independent party, funded by the Bill and Melinda Gates Foundation, evaluated the program early in 2014. The numbers are awesome: turnover greatly declined, student performance greatly improved in the first year, and the performance gains continued through the second year; in fact, students in the program outperformed their classmates and all other homeless children in the district. Perhaps more significant, the mean income for families in the program doubled.

Change begins with partnerships.

Part 2
Our vision

The more a school is built around present conditions, the less it will adapt to unknown conditions in the future. The traditional educational specification creates a rigorously programmed school. In our experience, most rigorously programmed schools are often obsolete upon opening. We share with you our district vision as an alternative to the traditional educational specification. Our vision expresses an environment where students are continuously challenged, relentlessly supported, and engaged in a way that’s safe and healthy. Vision is generic, and generic is adaptive.
Our position. Our voice.

Safety isn’t a metal detector in every entrance. Safety is our relationships. It’s a student having a positive connection with a teacher and the courage to say, “Something isn’t right.” How do we create a positive culture?

If we build beautiful buildings with lots of open spaces and flexibility that support really dynamic teaching and learning, then it is up to us to teach our teachers how to use these spaces. That’s the key. Whatever we build, we must help our people use it.

Students have the ability to research and study, design and test, fabricate, and then take it outside to get really dirty. Project-based learning culminates in the alignment of all of these design potentials and activators. It’s full circle learning.

Promoting collaboration between teachers starts with the feeling of the space. Like a cafe, it should feel comfortable and familiar. Teachers should immediately recognize it as a space for relaxing, enjoying the company of others, or just getting work done.
Our vision for the built environment

Follow the Guiding Principles

What are the needs of a 21st century learner?

In November 2013, Tacoma Public Schools invited thought leaders across varying disciplines to answer this question during an intensive two-day brainstorming workshop. Attendees included district leadership, department directors, principals, teachers, students, and our industry partners, including architectural design teams, educational consultants, and leadership from surrounding school districts. In relationship to the culture of our district and the particular communities served, we identified the essential qualities of the 21st century learner and the built environment that fosters them. The Guiding Principles represent our vision for the elementary learning environment. We hope they are a tool that will sustain building planning and design for the coming decade.
Our Vision

Guiding Principles

VALUES

The Built Environment Will:
Be responsive to human needs of light, air, sound & connection to natural environment exceeding acoustic standards in every classroom and space.

Be inspirational with colors, natural day-lighting, artificial lighting, finishes & branding, with areas for student work to be displayed and presented.

Embrace values such as community and empathy to establish a positive culture.

Be designed to meet student physiological needs to provoke critical thinking.

Promote safety & security - provided by clear hierarchy of site and building organizations.

Be an inquisitive learning environment.

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Become a community asset, maximized to promote use by our partners and the community at large.

Be risk tolerant & implement innovation.

Be flexible & agile to allow for customizable space for a wide variety of teaching and learning opportunities both in terms of daily change & facility convertibility.

Support a professional learning community where collaboration is encouraged, through team planning areas and transparency for promotion of best practices.

Planned for the future.

100% Commitment To
The District's Strategic Goals

BUILDING FOR ACHIEVEMENT
Relationships

The Built Environment Will:

- Be learner-centered and designed to foster and support life-long learners.
- Support a learning model that is interdisciplinary, experiential & intergenerational.
- Foster a caring school community that values trust and respect between adults & students.
- Support positive, cooperative & nurturing relationships: adult to adult, adult to student, and student to student in both work and socialization.
- Sized for personalized learning, collaboration, community facilitation and stewardship supporting contemplative space, small group, large group, school-wide and community-wide.

Methodologies of Teaching & Typologies of Learning

The Built Environment Will:

- Be conceptualized into learning-scapes with distinctions on the types and modalities of how we want to teach and have our students learn.

Think - contemplation, critical thinking, assessment, research
Create - teamwork, collaboration, fabrication
Discover - experiment, idea application, hands-on, project-based
Impart - sharing, teaching, discourse
Exchange - social learning, exhibiting, presenting

Guiding Principles
What does it mean to involve the community? Let’s return to the elements of culture: safety, health, engagement, challenge and support. Let’s return to twenty-four hours every day of the year, to the total environment that includes what happens outside of the school. The learning culture is more than the school; it is the total environment. Too often we build schools in isolation of the culture.

How do we build within the culture? Think about Community Asset Mapping. What is outside of the school? If we want to engage people, including the 95 year-old, then we should be asking what is not in the community. Those missing elements, they are the ones that will engage people to come here. What are the needs of the community? At what point do we draw boundaries? Although I speak to the depth of community, of its complexity, you must draw lines at some point. Human beings need comprehension; they require it. Living in a world with too many unknowns is not healthy.

By asking the critical questions, we find existing and deficient assets. Tension arises naturally through the process. In the design, we ask ourselves: what resources already exist? How do we resist duplicating environments? At the same time, there is an opportunity to explore new environments. If I say we need a garden, then I must also ask: do we really need a garden?

Are there gardens that already exist? If so, have a conversation with those people over there. Ask them if they are willing to work differently, or if they are willing to partner. The definition of school changes according to these interpretations: assets, deficiencies and relationships. We are only able to understand the school once that happens. Our comprehension of the community changes our understanding of the school; it creates a new definition.

You are asking the designer to shape the culture. When working with an existing school and an established way of doing things, what are the tools for doing this kind of work? Look at your process for building relationships. How do you anticipate the resistance, and what is your plan to address it? The best response to resistance is going towards it, going towards the pressure.

Part of ensuring safety and creating a healthy and positive culture is bringing the community into the school. In order for a community to support a school, they must understand it first. There must be transparency; they must know what it looks like inside and be involved in the daily affairs. If they understand it, they will protect it. So how do we get to that point? We don’t have the answer. And the answer for one community may not be right for another. So ask yourself: how do we start to get there?

Give the community a reason to be there. If culture is knowledge, then how do we share knowledge? What are those key spaces? We value libraries, museums and theaters. As a school administrator, I tell myself: I need safety, I cannot have people in there all day every day, and I need to lock those spaces down. So think about it differently. Use two entrances. What are we missing in the community? If we engage the community, such as creating a library where people are allowed to come in from the outside, then partner with the local public library systems; ask them to run it, and it’s no longer the responsibility of the administrator. Why have two libraries?

You also speak of creating a positive culture. Safety isn’t a metal detector in every entrance. Safety is our relationships. It’s a student having a positive connection with a teacher and the courage to say, “Something isn’t right.” How do we create a positive culture? We say that we value collaboration. If the outside of our school looks like a prison, then what message are we sending to our community partners? If we value collaboration in the classroom, what message are we sending by only offering individual desks? We tell parents that their involvement matters. Yet when we ask them to sit with us and talk, we offer them terribly uncomfortable furniture.

Is this what you mean by going towards the pressure? It’s counterintuitive, but the safest school may be the one that is most open, accessible and transparent.

Interview
Rethinking the role of community
A conversation with Dr. Josh Garcia
Learning is safe and secure

Foster a community that cares

Fostering a safe and secure learning environment requires new thinking about the relationship between school and the public at large. Without being allowed within the school, it is difficult for community members to understand what happens within and therefore make a personal connection. Without personal connection, public support is difficult. Only by welcoming the community into our schools and making the inner-workings transparent will community support become possible. We must identify ways in which the school may serve the community and vice-versa.

*How do we ensure that our students are safe?*

Address the four zones

Develop safety and security strategies that strengthen and bolster each of the school’s four zones.

Zone 1  Up to the curb

For example, consider the zone up to the curb. In order to develop strategies appropriate to this zone, you must first understand traffic patterns, access points and safe walking routes. While adequate emergency access and site egress are mandatory requirements, alternative routes are equally important. Secondary access routes are critical during bottlenecks; design for worst-case scenarios, such as an emergency event during school pick-up. Know the Safe Routes to School. If they don’t yet exist, propose developing them. Your design must respond to the broader context and patterns of use.

Invite local police and fire to participate in the safety discussion. They know the neighborhood thoroughly and are a great resource for developing site access strategies. Ask your Design Advisory Committee about the Safe Routes to School.

Zone 2  Curb to the building

Site perimeter security includes landscaping, lighting, walks, service areas, parking, public zones, private zones, student use areas, busing, signage, cameras, out buildings, overhangs and covered areas.

Zone 3  Building exterior

Building perimeter security includes doors, windows, signage, hardware, security entry devices, cameras, roof access, vandalism potentials, line of sight, and lighting.

Zone 4  Building interior

Building interior security includes vestibules, hardware, transparency, sightlines, areas of refuge, classroom layout, vertical circulation, hard and soft zoning, cameras, security entry devices, PA and phone systems, restroom configurations and placement.

Transparency and security

Transparency is an important part of providing a positive learning environment and promoting community use. It is also a strategy for security. Transparency makes it easy to identify threats early, thereby increasing available time for closing blinds, locking doors, using emergency communications, moving children to an area of refuge, or fleeing through a secondary exit. Removing windows limits an offender’s ability to see in, yet it also limits a teacher’s ability to see out; a teacher may not know an offender is present until it is too late. As classrooms become more transparent, areas of refuge must be rethought. If the learning suite is protected from the school by a security door, then it becomes an area of refuge.

*How do we design strategies that balance transparency with security?*
Learning starts with physiology

Provide for and exceed a child’s basic needs

When we think about a child’s environment, we must consider their total environment, including home, neighborhood, and school. Ideally, each environment is a positive one; unfortunately, this is not always the case. Environmental threats like unstable homes and unsafe neighborhoods can lead to malnutrition and poor sleep. Remember that for some students, basic needs are not always met outside of school. School becomes a place of refuge, yet there are too many examples of ones that are not healthy. The built environment must provide for a child’s basic needs first.

How will we ensure that our students are healthy?

Air

Because a child’s body is still maturing, their organs and immune system are more sensitive than an adult’s. A child’s lungs are more sensitive to airborne contaminants due to higher rates of metabolism and physical activity. A child spends more time on the floor and rarely washes their hands before eating.

Design healthy environments

- Use safe, non-toxic materials
- Make surfaces that are easy to clean
- Exceed indoor air quality requirements
- Allow the built environment to become a teaching tool for developing good habits

Sound

Elementary school is a critical time when students are developing the ability to hear and comprehend speech. Comprehension depends heavily upon filling in missing words and correctly identifying consonants. Because children possess a smaller vocabulary, their ability to comprehend speech despite partial hearing is limited. Learning disabilities, learning English as a second language, and temporary hearing loss from illnesses worsen the situation. We must get acoustics right.

Exceed acoustics standards

- Minimize background noise from the outdoors, adjacent classrooms hallways, and HVAC systems
- Control reverberation and self-noise
- Review construction details and verify assemblies
- Provide classroom amplification systems

Light

Consider the profound influence of natural light. It is the most influential factor in the maintenance of circadian rhythms and the body’s natural clock. Daylight is linked to cortisol levels which influences a child’s ability to focus. Daylight is necessary for physical growth, a factor compounded by the amount of time a child spends in school.

The influence extends further. In 1999, Lesher and Mahone conducted a comprehensive study analyzing test scores of more than 21,000 students across three districts in California, Colorado and Washington. The results showed a direct correlation between amount of daylight and student performance. Consider the following: Students in classrooms with the most daylight improved 20% faster on math and 26% faster on reading tests. The rate of improvement was 15-23% faster in classrooms with the most window area and 19-20% faster in those with skylights.

Learning is connecting with nature
Make the outdoors abundant

Nature is a critical part of the learning environment that exists both beyond the building and within it. The site presents the opportunity to be in nature, and more importantly, the opportunity to establish an immediate awareness of and connection to the natural world.

Being outside is not only important, it is a necessary condition for learning. According to John Medina, author of Brain Rules, being active while outdoors provides the optimal condition for a child’s cognitive development. When speaking before school designers, Medina makes two important points. First, exercise is critical, particularly with children. The human brain is most active during exercise; additionally, lack of exercise impairs cognitive function. Ideally, students should be active at least once every hour. Second, being outside matters. The human brain performs best when it is outdoors. Put simply, recess and PE are not enough. You must build opportunities for students to be active and outside for the maximum amount of time possible.

How will we ensure that our students are engaged?

Learning is inspiring

Engage students with color, light and display

Colors, natural and artificial lighting, materials and student work form much of the sensory education that underlie the learning environment. Brain research tells us that the senses are the gateway to the mind, and through them, we develop our intellect, build memories, and make meaning. The research also says that students retain, retrieve, and learn best within environments that are sensually rich. Because we engage the built environment through our senses, it has a profound impact on our psychological and physiological wellbeing. Given the impact on mood and behavior, the built environment will either enhance or impair the learning environment. Consider the bland and chaotic sensory environments of schools past with their locker-lined corridors, fluorescent lighting, shade-drawn classrooms, cacophonous cafeterias, and concrete schoolyards. Over- and under-stimulating spaces make for poor learning environments. At that same time, spaces that are intentionally designed to balance these stimuli are shown to reduce students’ stress, improve their attention span and ability to focus, alter their perception of time, and reduce both absenteeism and vandalism. We must expand our design thinking beyond sight and sound; a healthy learning environment includes the smells and tastes of life, too.

How do we create environments that are rich in all five senses and allow our students to integrate them together?

Children need to be inspired by their environment

How do we inspire students with color?

Brain research tells us that the brain develops through seeing patterns and relationships. Seeing contrasts between colors is vital, such as contrasts between light and dark, saturated and muted, or warm and cool. Color also has the power to enhance mood and compliment particular activities. In spaces that are used for focused work, rest, and contemplation, colors that are cool and soothing enhance feelings of calmness and repose. Colors that are warm and bright stimulate activity, so they are best suited for play, fitness and other energetic spaces. Colors also communicate what activities are appropriate. Color can improve wayfinding as well as demarcate territories, such as giving each learning suite a unique, personalized identity. Consider how the culture of the community, site, and climate influence color, and remember that color preferences change for different student ages.

How do we inspire students with natural and artificial lighting?

Consider natural light and the detrimental and positive effects it has on a space. Views of the outside world provide bright colors and full-spectrum lighting, yet glare ensures that blinds will stay closed, no matter how beautiful the views are. As much as they need light, students also need darkness and shadow. Natural light is neither consistent nor entirely predictable, and alone, it cannot satisfy the needs of the learning environment. Artificial lighting is critical. Artificial lighting provides a range of qualities depending on light source, whether it is concentrated or diffused, temperature and shadows. Because every student learns differently, what qualities of artificial lighting are needed for the learning environment?

How do we inspire students with material?

Materials stimulate the senses in a variety of ways with finishes that range from smooth to rough, soft to hard, wet to dry, and transparent to opaque. Some materials are even fragrant; consider the range of smells between leather, mahogany and steel. They provide a number of ways for learning about the world. Some materials weather and change over time while others, like glass, maintain a more permanent state. We experience conductance through touch; at the same temperature, steel feels colder than wood. Students learn how light and sounds behave through the patterns of different materials. Hard materials are louder, and glossy materials reflect more light. When a student knocks on a surface, what sound does it make?

How do we inspire students with the display of their work?

Making 2D, 3D and digital artifacts is not only a form of thinking and communicating with others, it is a means of self-expression; for some it is their preferred way of working. Displaying student work adds color, and it enables students to track progress and personalize their environment. Students learn that there are multiple points of view. They learn to critique their own work, critique the work of their peers, accept criticism in return and ultimately develop internally-driven measures for success. Display teaches students that their work matters to others, particularly with caring adults. Perhaps more important, the elementary years have a profound impact on students’ identity and their relationship to creativity. Ask a first grader, “Are you an artist?” Most if not all say yes; ask them again in five years; all but a few say no. How do you engender a learning environment where every student learns the language of design?

34 OUR VISION
Learning is healthy
Learning lifelong habits for healthy living

Our schools’ role in promoting lifelong habits such as diet, cooking, fitness, and self-care is significant. Providing healthy environments is not enough; we must think about the culture and habits of mind that our environments engender. Done well, dining plays an important role in providing sensory-rich experiences: food has different textures, smells, sounds, and temperatures. Ask the hard questions. Do we provide opportunities for learning about the full cycle of food? Do we provide opportunities for learning how to cook food that is tasty and nutritious? How do we build rituals that celebrate the communal aspects of eating? While current practices may exclude such offerings, design the school to allow for them in the future.

How do we build environments that foster healthy living?

Interview

Reinventing the school lunch
A conversation with Stephen Murakami

Why is the lunch experience important? A recent study shows that for the first time in history, kids today have a shorter life expectancy than their parents because of lack of nutritional smarts. We play a huge role because we feed kids two to three times per day. We provide breakfast, lunch, and an afternoon snack. In some schools, we send food home for the weekend. In twelve of our schools, nearly all students eat for free.

What are the challenges? Students typically have about twenty-three minutes to get into the queue, get food, sit down, eat, clean up, and get back in line for drop-off before racing out to recess. That’s no time at all. I’d like to see recess and dining flipped. Give the kids the exercise they need, allow them to burn off energy, and at the same time, get them involved in an outdoor experience that actually shows where food comes from. Instead of a race to the playground, I imagine that we create opportunities to see the full cycle of food.

What would teaching the full food cycle look like? We must get our students talking about how food is cultivated, harvested, planted, produced, and managed as waste. They must see it and experience it. Given the legal ramifications and requirements imposed by the risk management pools, these experiences will likely need to be demonstrative and not for production; legislators aren’t supporting that yet. If we are envisioning for the future, then imagine a farm-to-school-based system with a full circle learning opportunity to get kids aware of the decisions they make and to promote healthy living. We must help our students build lifelong skills that will carry them throughout their life.

Are there examples? Bainbridge Island School District has a lunch program called “Bite of Bainbridge,” where third graders plant and fourth graders harvest potatoes for student meals. I would love to see our district start a conversation with Metro Parks and City of Tacoma about creating a community kitchen, where we work together, mitigate the legal concerns and ultimately build something that becomes a focal point for truly engaged, multi-generational learning around nutrition. The ability to do that, not only for the kids, but for their parents and the local community too, is what we mean when we say community asset.

Is there a way to make the dining experience more meaningful? There are a lot of benefits to slowing down and moving to smaller scales. Grouping students in smaller, more meaningful ways may help alleviate bullying and bridge socioeconomic divisions. We talk about creating shared learning areas throughout the school. Can these be used for dining? They may become places to slow down, break down the scale, and have more of a family setting.

Talk more about slowing down the dining experience. In order to slow down the lunch experience, we must find ways to make the period educational. Right now, students typically have twenty-three minutes to quickly eat their meal. Every minute in the day of a student is critical. So how do we maximize lunch as a learning experience? We give students a say in what’s on the menu, and a role in producing, distributing, and composting their food. If we make lunch educational, we can give it more time.

Is there a way to make dining less formal and more ubiquitous? Operations have been built around the adult for many years now. As we move to a more student-centered model, we must think about students’ physiological needs, such as when and how often children need to eat. How do we support children with different learning as well as physiological needs? Many workplaces now offer their employees the freedom to eat when they want based on their schedule and needs. If they are doing it, then we can too. The Starbucks model offers grab-and-go selections and a surprising amount of variety with little more than a microwave. An early learning center in Renton provides mobile hot carts to teachers so that students eat meals within the learning suite. Other districts are starting to offer these types of experiences.
The learning environment today

Be sensitive to the way students learn

It’s important to remember that the educational experiences of today’s students are different than the ones we experienced as children. The circumstances of students we design for are different, and the spirit of the times change for each successive generation. The learning environment must reflect and support today’s students.

There is an ongoing shift from a teacher-centered model to a student-centered one. Educators believe that students must encounter a diversity of learning experiences. As a result, the role of the teacher changes from the one who imparts knowledge to the one who facilitates. The shift is precipitated by a fundamental belief that children exhibit multiple intelligences, and every child learns differently.

Direct instruction of singular subjects is no longer the only method available. While important, today’s students are presented with a much greater range of options. Project-based, collaborative, and self-directed learning are integral to the learning experience. Subjects are presented in a variety of ways, and students work independently and together. Students learn the content in their preferred learning style, and at the same time, they learn how to collaborate, communicate and think on their own. In other words, students are learning how to learn.

Before discussing the built environment, we must acknowledge some of the changes that are happening in the classroom. Acknowledging these changes are not meant as reference to a specific pedagogy but to the fluidity of learning, and more importantly, to a broad reorientation between teacher and student.
Imagine an inquiry-based environment where the curriculum is framed as a project. Consider a fourth-grade class divided into groups and tasked with marketing a new snowboard. To complete the project, students learn physics, material properties, and communication skills. A project may be a driving question that students cannot answer with prior knowledge alone. They must construct knowledge while working alone and in groups. They draw upon and make connections between multiple subjects.

The importance of working alone and together cannot be overstated. Working independently in self-directed study, students learn to make decisions, solve problems, and ultimately form their own positions. Working together with collaborative learning, students learn how to share their position with others and how to evaluate the position of others. Again, they learn to see the world from multiple points of view. By focusing on investigation and decision-making, the responsibility of learning rests with the students. Working this way shapes students’ knowledge, skills, and attitudes; students learn how to think, and more important, they learn to reflect on the things they are doing.

These changes do not discount the teacher; they do the opposite. As facilitator and mentor, the role of the teacher is more important than ever. Curriculum design, instructional scaffolding, and maintaining intimate connections with every child’s learning style and path are but a few of the challenges presented by these changes.
Fostering and supporting life-long learners is the end goal for every student, yet the way we get there is different for every child. Not every student learns the same way, and we must create an environment for all learners. We support a variety of learning styles by providing each student with multiple methods of presentation, multiple options for participation and multiple means of expression. The importance of variety is two-fold: students stretch themselves in their dominant modes while being exposed to and developing non-dominant ones at the same time.

Learning on your own path

Foster multiple intelligences

We began our visioning of the built environment by looking ten years in the future and imagining a typical day for a typical elementary student. We considered the learner's total environment, including family life, social and emotional challenges, and interests. We paid special attention to the type and duration of learning styles throughout the day. At the end, we “introduced” our imagined student to the group.

What we found

Personalization
Every learner had unique interests and needs.

Group Learning
Learners spent a significant portion of their day in small (2–4 person) and large (6–8 person) group settings.

Extended School Day
Students spent a significant portion of their day on the school campus (11.5 hours average). Students ate three meals a day on campus. School provided more family wraparound services such as adult education and community functions. Before and after school programs were tightly integrated into the school day.

A day in the life

We began our visioning of the built environment by looking ten years in the future and imagining a typical day for a typical elementary student. We considered the learner’s total environment, including family life, social and emotional challenges, and interests. We paid special attention to the type and duration of learning styles throughout the day. At the end, we “introduced” our imagined student to the group.

For consideration

Classroom
Consider tuning the core learning spaces more toward student-centered learning in small and large groups rather than direct instruction.

Shared Learning Spaces
Consider making shared learning spaces with the capacity to do more: more meals, more services, more types of users.
As education shifts from a teacher-centered model to a student-centered one, the classroom must support a variety of learning typologies including active, self-directed, and project-based learning in addition to standard instruction. In the same day, a class will collaborate in small groups in the morning, watch a presentation in late morning, study in a self-directed fashion in the afternoon and play a class-wide game at the end of the day, all within the same space.

In this way, the classroom performs like a design studio. It supports a variety of group sizes in a variety of configurations. It supports a variety of working styles, from reading and writing, to online research and messy, hands-on projects. In addition to variety, the classroom must be easily and quickly reconfigured by both students and teachers alike. Support a student-centered model by making agile classrooms.

**Learning is right-sized**

**Support a variety of learning styles**

How will we ensure that our students are continuously challenged?

### The multimodal classroom

**Project introduction**

**Presentation**

In the morning, the teacher introduces students to the project. Every student has at least one elbow partner for turn and talks.

### Project preparation

**Small group**

After the presentation, students rearrange the classroom for small group work. They discuss parameters, formulate questions, prepare and gather resources for the project. The teacher quickly visits each of the groups and offers feedback.

### Project work

**Self-directed and small group**

Students rearrange the classroom into unique, smaller spaces and make configurations that support their preferred style of learning. Some students work on the project alone. Others, who struggle with self-directed work, continue working in small groups. The teacher has the ability to quickly visit all of the individuals and groups. The flexible arrangement supports classroom management and minimizes behavior issues.

### Project debate

**Large group**

After project work, students make their thinking visible through chalk talks. They present their work, question one another and discuss what they are learning. Students form caucuses in preparation for a class-wide debate. Once debate starts, students continue rearranging the space. Groupings are dynamic; students’ positions shift, and the furniture responds in kind.

**Make the classroom agile.** Furnishings and systems enable rapid reconfiguration of space.
Environments we like

The expanded classroom

The learning environment at A.G. Bell Elementary School

The classroom is opening up. The self-contained room once dominated by standard instruction has become part of a larger series of spaces. Several classrooms, group spaces and shared activity areas join to form a fluid, cohesive unit. In addition to standard instruction, students work quietly by themselves or in groups of changing size. Shared learning spaces provide opportunities for longer-term projects, and work with paraeducators. The expanded classroom enables teachers to deal effectively with all types of learners in the same space.

At A.G. Bell in the Lake Washington School District, the shared learning area and classrooms are connected by full-length, transparent, and operable walls. Open, the walls give the classrooms immediate access to the shared learning area; closed, they provide transparency while maintaining acoustical separation. Equipped with small group space, a kitchen and teacher planning area, and bathrooms, the learning suites function more autonomously. All spaces have views to nature, and there is a direct connection between the shared learning space and the outdoors.

What we liked

Transparency
Core learning and shared learning spaces are connected by full-length, transparent, and operable walls.

Outdoor Connection
All spaces have views to nature, and there is a direct connection between the shared learning space and the outdoors.

Safety
A high degree of visibility and a layered zoning strategy enhance safety and security.

Above A view of the shared learning area at AG Bell. Notice how the shared learning space is connected to the classrooms and outdoor learning areas by transparent, operable walls. Left A diagram of the learning suite’s configuration. Bathrooms and flex spaces create a threshold and secure connection between the learning suite and the rest of the school.
Learning is connected
Support teachers working together

Supporting a variety of learning styles changes the way teachers work together. Teachers work with a number of paraeducators, student teachers, and special education counterparts. Counterparts may share the classroom, use the shared learning space or work in a designated area. Further still, team teaching is one of the ways in which educators are approaching the student-centered model. Team teaching allows students to work with different personalities and teaching styles, providing additional opportunities for self-directed, and small group learning.

As teachers work in teams and the classroom expands, the relationship between learning spaces becomes important. Consider the reconfiguration of a series of smaller spaces into a larger one. Joining classrooms supports team teaching, self-directed learning and small group work. Joining the classroom and shared learning space supports longer-term projects. Consider using high levels of transparency. Visibility provides supervision as more spaces get used and students spread out. Transparent walls provide visual connection with acoustical separation. A group of students doing contemplative learning and another doing collaborative learning can be connected while working separately. We must make learning pervasive and visible.

How will we ensure that our students are relentlessly supported and continuously challenged?
Learning is active and interdisciplinary
Make spaces for creativity and discovery

The snowboard project mentioned earlier does more than highlight the qualities of an inquiry-based environment. It suggests the possibilities of embracing creativity. By pairing art with science, students work with different types of thinking, and they learn to move fluidly between them. Working in one mode not only informs the other, it makes creativity possible. Students learn to see the world from multiple points of view. Presented with the right tools and information, students are able to make discoveries. They learn to actively form their own thoughts, feelings and impressions in response to the tools at hand. When students are given a degree of choice, the work becomes more meaningful, and the learning becomes more robust.

Interview
Making DaVinci spaces
A conversation with Stephen Murakami

How is the district using the Da Vinci spaces? The district has built two Da Vinci rooms, with Geiger’s room being the prototype. Basically it’s a flex space that’s unassigned, allowing students to experiment through means unavailable in an ordinary classroom. It is designed to be agile, to be messy, and to allow a student to do almost anything.

What are the key elements that make it special? There are three zones: a table layout area, a kitchen zone with an island, a really wet and messy area with deep sinks with room for pottery wheels or similar equipment, and a garage door allowing projects to move outside. It’s a successful piece and a very popular classroom.

Are certain grades using it more than others? We are surprised by how much it is shared.

How are they using the room within the curriculum? Geiger developed a cultural exploration month so that all grades get into the Da Vinci room. When I visited in November, they were using the space to cook Ethiopian food. I saw a house of students explore culture through food. Remember that Geiger is a Montessori school and a house comprises three grades. Second and third graders talked about why the Ethiopian culture ate this food, and they talked about geography and what type of agriculture is suited towards growing it. They discussed why the food is symbolic. Underlying the discussion of preparation and quantities was math and science. It was brilliant. The food was amazing.

Is it changing the culture of the school? Yes, but its use as a cultural piece, in the Montessori way, happens because Geiger’s educational approach is more student-centered, and it inherently supports self-directed learning. At Jefferson, the room is programmed differently where it is used for PTA meetings. It has popcorn machines and an arcade game. Different schools embrace it differently.

What is the second space like? At Washington, we are taking the Da Vinci room to the next level. It is not so much a wet room as a resource for the whole school. Three spaces are paired. It starts with a linear library with a transparent, operable partition that goes into a 2D Da Vinci space. From there, a second operable partition opens into a wet, 3D creative space with garage doors that connect to an outdoor amphitheater. Students have the ability to research and study, design and test, fabricate, and then take it outside to get really dirty. Project-based learning culminates in the alignment of all of these design potentials and activators. It’s full circle learning. And it’s the first time I’ve really seen how a facility can implement education delivery. The setting reinforces the learning.

How is the space positioned within the building? Given the nature of the building, the activities wing is zoned completely separate so it can be used after school and on weekends. It is its own entity, a shared asset for all.
Learning is particular
Support a variety of learning environments

We must support a diversity of learners by providing them with a variety of environments and allowing them to choose places most appropriate to their learning style and task at hand. Consider places for reading: one student chooses a soft, quiet window-seat overlooking the outdoors, another chooses a noisy cafe table surrounded by others, and another chooses a dark, enclosed nook overlooking the cafeteria. Give students a variety of choices, ranging from more light to less, more noise to less, more enclosure to less, and more connectedness to less.

Further still, providing a variety of spaces also encourages students to actively form their own point of view, and to learn about and reflect on their personal choices. Remember that students are learning about themselves and the world through their environment. Given a variety of locations, teachers are able to shift locations of regular activities. Through working in and exploring a variety of environments, students learn that steel is cool and wood is warm, corridors are great for channeling voices, and shadows are longer in the morning than at noon. Give students the opportunity to use different intelligences throughout the day.

The ideal spot for reading
It’s different for every student.

OPEN. CONNECTED.
“The noise helps me concentrate. I lose my mind if it’s too quiet.”
“My best friend and I like the bench near the front.”
“The rock is a perfect chair.”

ENCLOSED. CONNECTED.
“When we do well, the teacher lets us read outside of class.”
“I like to read and watch other kids play.”

ENCLOSED. INTIMATE.
“Reading in the window is like being in a tree.”
“Caves are the best.”
“There’s a soft bench in my classroom where I read every day. It reminds me of my bedroom.”
Environments we like

Learning is serious and playful

The work environment at Google

Google is known for the quality and innovation of their products. They understand that the built environment is integral to the quality of their work. They get great work from their employees because they give them a lot in return. Upon visiting Google’s Kirkland campus, our team was struck by the playful and often “quirky” work environments. It is really about creating places where people want to be and promoting a sense of community and collaboration.

Getting great work from employees relies just as much on playful spaces as it does on productive ones. Creativity requires downtime, release and time for not being serious. So when we think about children, we must remember that they too require places to play as much as they need ones for serious learning. They require informal play spaces just as much as they need traditional ones like playgrounds and gyms.

Play is more than a pathway to creativity. It is a way for children to learn how to make decisions, take turns, cooperate, and trust their peers. If we foster play throughout the day and throughout the building, the built environment will be better-suited towards children’s natural way of being.

What we liked

Small Group Spaces
Great spaces for a one-on-one interaction or curling up with a book.

Community Space
Warm and welcoming gathering spaces were scattered throughout the work environment. Well suited for various activities from independent work to small group, both formal and informal.

Transparency
A high degree of transparency helps create a stronger sense of community and shares the natural daylight.
Learning requires a positive culture

Foster collaboration among teachers

The teacher must play a variety of roles as we shift towards a student-centered learning environment. As the curriculum changes, collaboration between teachers becomes more important than ever. Interdisciplinary and project-based learning, for example, require creativity, constant iteration and critical feedback from peers. Working this way requires great spaces for teachers beyond the classroom; we must provide alternatives to working alone in an isolated space. We must build spaces where teachers will collaborate and create, as well as concentrate and prepare. At the same time, we must foster a professional community throughout the school. The inhabitable space in-between, from classroom portals to corridors, is just as important to collaboration as formal spaces. And given the challenging nature of the work, teachers require ample downtime. Give them spaces to get away, relax and recharge.

How will we create environments that foster collaboration?

Professional learning environments

A conversation with Ryan Prosser

How should the building support a culture of collaboration between teachers? In the school where I first taught, everyone met in the staff lounge because planning space was limited. In the second, each grade level met in a particular classroom. The building has a major impact on how teachers work together. Ultimately, promoting collaboration between teachers starts with the feeling of the space. Like a cafe, it should feel comfortable and familiar. Teachers should immediately recognize it as a space for relaxing, enjoying the company of others, or just getting work done. Make resources available. At the end of the day, it needs to be a nice space to work in. So make it inviting, not utilitarian. If the space feels like little care was put into it, then it won’t be used.

Beyond teacher planning spaces, are there other opportunities within the school? Consider the typical workroom that feels more like a storage room. At the UW Cultural Center, the workroom is reimagined as a leadership space. It still houses the copier, paper, and typical resources. However it feels like a great space to build banners and make posters. Because it is open, you see what’s going on, and it feels available to everyone. It becomes a resource for teachers and students alike.

Should spaces for teacher collaboration be centralized or distributed? Proximity to the classroom is key. With a thirty-minute lunch, a lounge that requires a five-minute walk gives you only twenty minutes to relax, socialize or work. Time is valuable to teachers. If a space is convenient, then it is more likely to be used. If a space is truly special, then teachers are more inclined to use it. However at the end of the day, convenience matters most. With that said, are we losing resources if we move to a decentralized model? While spaces for smaller planning and team meetings are great, we still need a main space for larger meetings and larger group work. You must understand the culture to find the right balance.

If we are visioning and really thinking big, then what might that balance look like? Ideally, there is a large space for whole group collaboration and smaller ones for daily informal and spontaneous interaction. Google solves the problem in an interesting way. We saved some really cool spaces when we toured their Kirkland campus. There are really small spaces, almost broom closet size, for skype-ing abroad. There are reading nooks, where you face another person, almost like a couch. There are lots of booths that are large enough for four to five people. Some are open; others have sliding doors with frosted glass so they can be open or private. And there are spaces for larger gathering and recreation. Providing a variety of spaces encourages people to get together and meet up.

Are educators open to moving away from the model of “one teacher, one classroom” to a learning suite where a team of teachers own a series of spaces? In addition to having a district vision, we need teachers who appreciate collaboration. Personally, I am all for teaching this way. It is exciting to see learning environments that promote a high degree of collaboration. We saw several examples during our building tours. I was particularly impressed by the central space of Valley View Middle School [in Snohomish School District]. While some educators are resistant to this type of teaching, the overall perception is changing: we want more spaces that support collaboration.

What features are critical to making these types of spaces a success? Visibility. It must be easy to see out. Consider behavior management. If you need a student to leave the classroom and calm down, then you have the ability to send them into a different learning space. A hallway evokes feelings of being punished. This only works if it is easy to see out. At the same time, when I send a group of students out into the shared learning area, I want to know that they are doing their work.

In terms of sharing resources and staying connected with your teaching team, is there an ideal number of core learning spaces within a single suite? It is important that teachers meet on a regular basis, then eight is definitely too high. While three works, it is on the low end. Between four and six is good, but personally, I feel that five works very well. Suites may include teachers from different teams representing each of the content areas, such as language arts, social studies, science, math, and an elective. Or suites may include teachers from the same team, such as all of the language arts teachers together.
More students are succeeding because of our innovative practices. We develop our portfolio of offerings by looking at the district as a whole, by considering what is available for all students, at all grade levels. Innovation is not about trying new things just because; innovation is matching students with unique schools that play to their passions and interests. And when we succeed, students are more engaged; when students are more engaged, learning is deeper. Learning includes each of five modes: to think, to create, to discover, to impart, to exchange. Equally important, students are developing the way in which they relate to self, others, and the world.

By exercising choice, personalizing space and finding their own particular point of view, students develop their relationship to self. They develop their relationship with others by learning alongside peers and other children, both younger and older, as well as adults of all ages and backgrounds. By learning with and being in nature, the neighborhood, and building, students develop their relationship to world.
Here in Tacoma, we do things differently than other districts, and we ask you to do the same. Our relationship is a partnership, and partnerships require process-driven design. In order to build an environment where students are continuously challenged, relentlessly supported, and engaged in a way that’s safe and healthy, we expect you to include a particular set of directives within your process.
We build great schools.
Let’s work together
A partnership to build innovative schools

In the last section, we asked a series of questions while communicating our vision for the learning environment. Our vision is the beginning of a much longer conversation, one that will continue through workshops, charettes, observations, and other encounters with the district, the Design Advisory Committee, staff, teachers, students, and our community partners. Ask open-ended questions and listen to our voice. Based on our answers, we expect new interpretations of our learning environment. Teach us, and learn from us about the relationship between curriculum and the building. Transforming education starts with partnership. Partner with us, and we will design innovative schools together.

Building to last for 50 years
Design with our working directives

We looked critically at the past processes used to build our schools as well as those of surrounding districts. We found a series of powerful processes that we ask you to follow in order to ensure that we build great schools. We hope that you will make them your own, and as such, make them better. In no way are we dictating your design process; we simply ask that you include the following working directives within your planning and design.
**Directive**

**Community Asset Mapping**

Community Asset Mapping is a proven process towards identifying existing and deficient assets. We must leverage existing assets instead of replicating them and get our students out into the community. Leveraging nearby and adjacent amenities not only saves construction dollars and frees up potential program space, it reinforces the importance of our community partners within the neighborhood. Examples include adjacent playgrounds, parks, play fields, recreational facilities, libraries, churches, galleries, and performance spaces.

At the same time, deficient assets create opportunities for the school to become a real community amenity. Our goal is giving our partners and the greater community unprecedented access to what is typically the largest civic investment in the neighborhood, our schools.

**Intent**

Identify existing and deficient assets by performing a thorough investigation of the community and gathering input from the design advisory committee. Invite the community to be a part of the mapping process. Consider holding meetings at their sites.Invite them to give design input. Most important, ask the critical questions, such as:

1. How do you define the community boundary and catchment area?
2. What assets exist within the community that may be leveraged by the school?
3. What are the learning spaces in the neighborhood that can be used as classrooms?
4. What assets are deficient within the community?
5. Is it possible for the school to provide or support these deficiencies?
6. Who are our partners currently?
7. Who should be our partners that we are not partnering with already?

**Map the following**

Work with your Design Advisory Committee (DAC) to identify and map all current and notably absent amenities located within the school’s catchment area. Items to be mapped are to include but are not limited to the following:

1. Schools
2. Early childhood centers and pre-schools
3. Community based organizations
4. Community centers and support centers
5. Community organizations that lack a physical location
6. Hospitals and clinics
7. Fire stations
8. Libraries
9. Places of worship
10. Colleges and universities
11. Parks
12. Transit centers
13. Bus stops
14. Walking and biking trails
15. Museums and other civic amenities
16. Natural features (Greenways, water bodies)
17. Retail districts
18. Business community
19. Corporate partners
20. Future or proposed amenities (currently under construction, planned communities, neighborhood plans)
21. Other

**Implementation**

Community Asset Maps should be completed early in the Pre-Design / Schematic Design phases in order to appropriately address the design issues revealed by mapping.

Additionally, the district is providing additional building square footage (1000 SF) to support existing or desired community partners or academic programs. The design team, in concert with the Design Advisory Committee, shall submit a formal request to the Capitol Projects director in order to finalize the project scope.
Walk Score: 77/100 (very walkable)

Our Process

After completing the mapping exercise, the design team reviewed their findings with district leaders, teachers, administrators, and advocates from nearby community programs. Despite cataloguing resources in a rigorous manner, some assets were missed; resources were difficult to locate, and others had significance known only to locals. Further still, the advisory committee helped refine the neighborhood boundary: a steep slope limited the western boundary, concerns regarding safety limited the southern one, and what was considered walkable to the north was far greater than expected. While identifying existing assets was straightforward, identifying deficient ones required community input. Discussions revealed the following deficiencies: a community library, access to fresh produce and groceries, and a theater for performance. Perhaps more important, the discussion suggested what cultural shifts were needed, at both the district and community level, to reimagine the school as a community asset particular to the Hilltop neighborhood.
Benchmarking performance

Our relationship is a partnership. With every project, you help us become a better district. Benchmarking helps us expand our understanding of performance beyond the immediate design to include a longer time frame. Working together, we will gather data for both student and building performance today and then compare that data to our new and remodeled schools. The process will help develop best practices and standards for performance.

Collect the following

**General School Information**
- School name
- School address
- Date of construction
- Building gross SF
- Is the building historic?
- Total site area
- Total enrollment
- Total # of staff

**Building Performance Data**
- What is the age of the existing facility?
- What is the current energy use intensity (EUI)?
  - Electricity EUI
  - Fuel EUI
  - Total EUI
- What is the annual water usage?
- What are the typical hours of daily operation?
- How many buildings?
- Provide descriptions for the building systems:
  - Heating
  - Cooling
  - Sanitary/Septic
  - Irrigation system
- What is the heating set point?
- What is the cooling set point?
- What is the building cleaning routine?
  - Frequency
  - At what time do they clean the building?
  - How long does it take for each cleaning?
- What type of kitchen?
- How many meals are served daily?

**Student Performance Data**
- Annual # of student sick days
- Annual # of staff sick days
- Annual incidence of vandalism
- Annual incidence of disciplinary action
- % teacher turnover
- % student turnover
- % of students receiving free and reduced lunch
- # of special education
- # of ELL
- # of annual lockdowns
- # of security incident reports
- Transportation distribution for students (bus, walk, bike, car)

Implementation

Collect the data in coordination with the district. For existing schools, complete a pre-occupancy survey. The district will provide you with a formatted report. From the report, develop and submit performance criteria.

Intent

You must collect the following data prior to the start of design and construction in order to:
1. Establish accountability
2. Establish appropriate project goals for both student and building performance
3. Understand the unique conditions of each school
4. Understand the student needs for each school
5. Understand each school in the context of our other schools
6. Understand unintended consequences of previous decision making and operational choices
Daylight analysis

We know that access to daylight has a significant effect on student performance. We must provide quality daylight to all of our learning and community spaces. We believe that this will improve the performance of our students and staff while also reducing the energy use of the building.

Directive

Establishing lighting criteria, designing daylight strategies and confirming the results with rigorous simulation throughout the project will ensure that all of our learning and community spaces will have access quality daylight and the building’s energy performance.

Considerations

1. Building orientation
2. Floor plate geometry
3. Window orientation
4. Window height
5. Section depth
6. Glass area ratio
7. Fenestration patterns from two or more sides
8. Interior furnishings
9. Blinds and shades
10. Fixed building shading
11. Review practicality of maintenance routines with high story glazing

Documentation requirements

Document lighting objectives and visual comfort criteria as established with the district and the Design Advisory Committee. At the end of both Schematic Design and Design Documentation, you must provide the district with daylight analysis reports, graphs and renderings that demonstrate the daylighting performance of the particular design.
The following description provides a frame of reference for what a typical daylight analysis report may include; in no way is it meant to be exhaustive or prescriptive. It is up to you to determine lighting objectives and visual comfort criteria while working together with the district and the Design Advisory Committee.

**Geometry**
Select typical spaces for the daylighting analysis based upon daylighting strategies, orientation, room size, etc. If a space will benefit from a daylighting analysis, then include it. For example, consider classrooms with different orientations as different spaces. Also, identify spaces that will benefit from top lighting. Model the selected spaces with a daylighting and energy analysis tool such as IES’s Virtual Environment.

**Shading**
Identify shading strategies early. Glare is integral to visual comfort and achieving successful daylighting. Shading strategies must be modeled in addition to building geometry. Early studies of sunny skies will reveal where shading is needed. Based on the results, develop appropriate shading strategies, whether dynamic, fixed or interior, and model again. The critical ratio between daylight at the exterior edge and the interior edge of a space is a good indicator of daylight distribution. In a typical situation, 1:5 is optimum and 1:10 is the maximum ratio for good uniformity of daylight.

**Glass Properties**
Daylighting performance varies dramatically across different glass types, so select glass properties based on the lighting objectives. Consider using two glazing types, one for daylight windows (clerestory) and another for view windows. If multiple glass types are considered, then model each separately.

**Simulation**
Simulate the modeled spaces with a daylighting tool such as Radiance and/or Daysim. The right variety of sky types, dates and times will provide a basis for comparison between different daylighting strategies. For a starting point, consider simulating solar noon on the autumn equinox for both sunny and overcast skies. Spatial Daylight Autonomy calculations may be used as well.

**Iterations**
Daylighting analysis is an iterative process. As the design progresses, simulations are an invaluable tool for testing and feedback. Simulation is not a one-time process; successive design iterations require successive simulations. Situations warranting a new iteration include adding skylights or interior light shelf, raising the ceiling height, adding a north monitor, sloping the ceiling, and adding interior shading device.

**Artificial Lighting and Energy Analysis**
Typically lighting fixtures are not included in the daylighting studies. Perform an energy analysis that simulates the impact of daylighting on heating and cooling. Provide the electrical team with your dimming criteria to ensure potential cost savings. Consider commissioning all lighting controls.

**Deliverables**

1. Graph illuminance values (foot-candles) of the workplane surface for the complete depth of each space. Graph iterations of different strategies as a way to make recommendations.

2. Render the floor plan with footcandles for each space.

3. Render the 3D model also showing footcandles for each space.

A typical report includes a series of graphs and renderings that demonstrate the daylighting performance of a particular design. The following images are examples of what a report may include.
Programming is a powerful process. It makes designing the school’s learning environment possible, and it will anticipate the district’s expectations moving forward. At the same time, programming’s weakness is paying too much attention to the immediate needs of our immediate users, and not enough attention to the future ones. The result is a building that is too favorable to the present and maladaptive to the future. The following pages provide a number of tools that will assist you in the process-driven design of our schools. It is not meant as an exhaustive list; on the contrary, it is a point of departure and an opportunity for making conscious decisions. We expect that you will complete them and make them better.
Driving forces

Before you begin the design, it is important that you investigate the driving forces that will shape the future environment. In education, driving forces may include changes in technology, in pedagogy, in regulations (both state and federal), competition with other schools, and even the definition of the student. If education continues becoming more pervasive and ubiquitous, the age of students may change from 2-14 to 2-98, and the school day may change from 8am to 3pm for weekdays to 24 hours every day of the year. For the facility, driving forces may include changes in technology, in the economy, in the community, and in district use. For example, the old high school is now the central administration building. Additionally, you should identify likely scenarios, such as population growth and densification.

Unforeseeably changing conditions

Imagining the year 2019

In order to understand what challenges the new Tacoma Public Schools must be equipped to handle, we need to consider the environment in which it will operate. What are the elements that comprise our current social and educational landscape and what are the factors that will shape the future environment? This exercise was intended to stimulate dialogue about the current climate, internal and external influences, emerging trends, and unforeseeable factors. Yet perhaps most importantly, we asked “Who is our customer, and what are their needs?”

SOCIAL TRENDS
- Integrated tech focus
- Digital natives
- It comes to you: age of convenience
- Partnerships with business
- Microsoft high

TECHNOLOGY FACTORS
- Bring your own device
- Multiple devices
- 24/7 info and resources

POLITICAL FACTORS
- New governor/president
- Joint & shared use (city/school)
- Transparency

CUSTOMER NEEDS
- Sell services to compete
- What motivates & inspires you?
- Personalized & customized
- Specialized uses (arts, sports, etc.)
- Process places

ECONOMIC CLIMATE
- Boeing not here

COMPETITIVE TRENDS
- Charters
- Online learning
  - (relevant in 5 years?)

UNCERTAINTIES
- Security
- Stranger danger
- What are euromodels anticipating in 20 years?

Exercise
We must accept that there will be unknown conditions in the future. Remember the adage, “Whatever you plan for doesn’t happen; whatever you don’t plan for does.” We cannot accommodate unknown conditions with programming alone. Scenario modeling is a process that reaches into the future (up to twenty years) and imagines multiple and divergent plans instead of a single pathway.

Directive

Scenario modeling

At a minimum, re-think the following components when creating scenarios:

**Educational model**
Re-think the current educational model and create test fit scenarios that explore new patterns for teaching and learning.

**Learning environment**
Re-think the learning suite. How does the learning environment support a continued shift from instruction to discovery? What does learning based on multiple intelligences and increased student choice look like?

**Community connections**
Re-think community connections.

**Information resources**
Re-think information resources. What is the role of the library? No longer a hushed repository of books, how does a “library” space best provide access to multiple resources? How can it support collaborative research? Should library functions be dispersed and support immediate access to information throughout the school and in the learning suite?

**Blended learning**
Re-think blended learning. What if direct instruction is delivered online or at home? Can the school transform into a virtual environment?

**Lifelong fitness**
Re-think lifelong fitness. Should fitness space for elementary age children look more like a health club and less like a gym for basketball? How does simulation and gaming effect how children exercise?

**Lunch experience**
Re-think the school lunch experience. Consider new initiatives in healthy eating, such as farm-to-table and the edible schoolyard as examples. How do schools integrate nutrition with learning? What if food is accessible to students 24/7 and throughout the building?
Three scenarios were used in the design of Panther Lake, an elementary school in the Federal Way Public Schools district. Each scenario accommodates a different organizational model. While good, we ask you to go farther. You should account for driving forces beyond changes in people and organization alone.
Scenario two
Open PreK-5 model

Scenario three
K-8 model

Panther Lake Elementary School
Federal Way Public Schools
 Directive

Wall flexibility

Urban theorist Kevin Lynch declares that we must attend to the future, that we cannot coerce it. He suggests future preservation as a necessary counterpoint to the historic kind. Is not enough to design a building that lasts for 50 years or more; the design must be capable of offering new options for use as well. By designing with flexible walls, we preserve the school’s ability to adjust and even change directions.

Criterion

Directive

Our schools need to be as flexible as possible to allow for the buildings to adapt over time. In order to build flexibility into our schools, we must design our buildings with careful consideration of how these adaptations may occur throughout the building’s lifespan. We require that the design team carefully consider and identify walls based on their ability to change, from highly inflexible to highly flexible. We name these walls as follows: 5-year, 20-year, and 50-year walls.

Criteria

5-year walls
5-year walls are the most flexible type with little or no infrastructure. They are easy to remove or modify. Building this type of wall requires careful coordination; they cannot contain elements that make them difficult or expensive to reconfigure.

20-year walls
20-year walls may change once or twice throughout the lifetime of the building and require a significant effort to move, reconfigure, or modify. Included are walls with a medium-degree of infrastructure, such as gas or water, as well as walls that are expected to be removed if the building expands.

50-year walls
Comprised mainly of infrastructure, 50-year walls are the least flexible type. In most circumstances, they will never move or be removed throughout the lifetime of the building. Walls of this type include structural walls, walls with significant building infrastructure, and fire-rated walls.

Implementation

In order to implement flexible walls, you must get buy-in early from all of the engineering disciplines. Coordinate with your mechanical, electrical, and structural teams to strategically locate critical infrastructure, such as water, power, and data, and keep them away from the 5-year walls.

The design team must submit a plan view of the proposed building that clearly highlights wall types and primary structural elements coordinated with and signed by all relevant engineering disciplines. Submit preliminary documentation upon completing Schematic Design, final documentation upon completing Design Development, and a plan sheet in the record drawings upon completing Contract Administration.
Example

Wall flexibility
Panther Lake Elementary
Building for our learning culture
This is not your typical educational specification

The typical school program is a list of highly specialized spaces with very specific requirements that are seemingly inflexible and can be very difficult to modify over the life of the building. In our experience, highly specialized spaces are underutilized; they work well for one activity and perform poorly for most others. In order to provide a learning environment that meets every student’s needs, it is imperative that we do more with less. We must create spaces that support a variety of uses. If a small group space within a learning suite is able to function equally well for special needs pullout, teacher collaboration, volunteer instruction and student work, then we have succeeded in radically transforming the space. Moreover, the spaces we design must not only serve the current education framework but future ones as well. Often it is expensive and difficult to change spaces that are highly specialized; as a result, they resist change and become less used over time. We must design our spaces so that future users are able to modify them with the least effort possible.

For today, we design our program to do more with less; for tomorrow, we design our program so it is easily changed.
Flexible program framework
An innovative learning environment for every school

Tacoma Public Schools offers students more innovative choices for their education than any other district in the state. Providing more innovative choices ensures that our students are continuously challenged and engaged, that they will find a passion for learning. The Montessori Method, IB, STEM and expressive arts are a few examples of the specialized paths that we offer. Because every school offers a unique portfolio of offerings, you must ask, “What are these offerings? What types and qualities of space are needed to provide them?” Partner with us to understand the nature of your school’s particular learning environment.

We give you a flexible framework for program that will allow you to interpret and thus tailor the learning environment for every school. Tacoma Public Schools has attempted to distill the elementary school into four primary elements: general learning, specialized learning, administration and student support, and building support. By giving you the freedom to configure these large elements of program, we give you the opportunity to make conscious decisions. Throughout the process, we must work together to ensure that all parties are continuously challenged and relentlessly supported.
At once particular, we also give you a framework for making a learning environment that is both agile and adaptive. The learning environment will inevitably undergo technological, spatial, and academic change over its expected minimum life span of 50 years. Spaces that are too specialized rarely work well for anything other than that specialized activity; ultimately these types of spaces lie dormant for much of the day.

The district has attempted to distill the typical specialized spaces into eight flexible space types with the capacity to accommodate a variety of configurations and uses. Multiplicity of use creates complexity through a greater diversity of relationships and interactions between space types. It also keeps utilization rates high. By distilling spaces back to their essential characteristics, we make it possible to change use in the future. Familiarize yourself with the flexible space types. They are the building blocks for configuring the large program elements.

### Flexible space types

**Building blocks for the program framework**

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Group</strong></td>
<td>150 SF</td>
<td>Self-directed work, Small group work, Classroom pullout, Special needs pullout, Private office, Intimate meeting, Small storage, Parent room, Volunteer home base</td>
</tr>
<tr>
<td><strong>Small Flex</strong></td>
<td>300 SF</td>
<td>Small group work, Project/build work, Classroom pullout, Special needs pullout, Instruction, Itinerant services, Conference room, Teacher collaboration, Storage, Community room, Clubs/tutoring</td>
</tr>
<tr>
<td><strong>Large Flex</strong></td>
<td>600 SF</td>
<td>Project/build work, Instruction, Special needs instruction, Community room, Staff lounge, Staff workroom</td>
</tr>
<tr>
<td><strong>Core Learning</strong></td>
<td>900 SF</td>
<td>Self-directed work, Small group work, Project/build work, Typical classroom, Special needs instruction</td>
</tr>
<tr>
<td><strong>Shared Learning / Specialized Program</strong></td>
<td>900 SF / 1200 SF</td>
<td>Shared learning, Specialized program: Science, Wet lab, Da Vinci room, Art, Music, Drama, Teaching kitchen, Language, Technology/video studio, Community room</td>
</tr>
<tr>
<td><strong>Large Group</strong></td>
<td>7000 SF</td>
<td>Student dining, Large group work, Meetings, Presentations, Performances, Athletics, Physical education, Health and fitness, Community use</td>
</tr>
</tbody>
</table>

### Entire School

<table>
<thead>
<tr>
<th>Size</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000 SF</td>
<td>Entire school: Student dining, Large group work, Meetings, Presentations, Performances, Athletics, Physical education, Health and fitness, Community use</td>
</tr>
</tbody>
</table>
Space types

Small group (5)
150 sf

**Services:** Video, voice communication, power, and data located for maximum flexibility.

**FFE:** Movable furniture and fixtures, lockable file storage, small meeting table, guest chair, varied furniture settings.

**Access:** Easy access and visibility from shared learning spaces.

**Considerations:** Accessible after hours, lockable room.

**Adjacencies:** Dispersing Small Group spaces throughout the school accommodates changes in future use. Private offices for General Support are potentially dispersed or centralized. Ownership of Small Group spaces will range from permanent, to temporary or shared. Placing two Small Group spaces together allows future combination into a Small Flex space.

**Notes:** Consider that use as storage may compromise transparency of these spaces. Providing natural daylight to these spaces helps accommodate future flexibility.

<table>
<thead>
<tr>
<th>Occupants</th>
<th>Potential Uses</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5</td>
<td>Self-directed work</td>
<td>Intimate</td>
</tr>
<tr>
<td>User Groups</td>
<td>Small group work</td>
<td>Formal and informal</td>
</tr>
<tr>
<td>Students</td>
<td>Classroom pullout</td>
<td>Flexible furnishings</td>
</tr>
<tr>
<td>Staff</td>
<td>Special needs pullout</td>
<td>Technology equipped</td>
</tr>
<tr>
<td>Volunteers</td>
<td>Private office</td>
<td>Transparent or opaque</td>
</tr>
<tr>
<td></td>
<td>Intimate meeting</td>
<td>Private or semi-private</td>
</tr>
<tr>
<td></td>
<td>Small storage</td>
<td>Acoustical separation</td>
</tr>
<tr>
<td></td>
<td>Parent room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volunteer home base</td>
<td></td>
</tr>
</tbody>
</table>
**Space types**

**Small Flex (10)**

300 sf

*Services*: Video, voice communication, power, and data located for maximum flexibility, sink and/or kitchenette as appropriate, projection or digital display.

*FFE*: Movable furniture and fixtures, small meeting table, guest chairs, movable display, tackable and projection surfaces.

*Access*: Easy access and visibility from shared learning spaces.

*Considerations*: Use physical walls or flexible furniture to define spaces. Functions vary with unique needs depending on configuration of the learning suites and student support requirements.

*Adjacencies*: Dispersing Small Flex spaces throughout the school accommodates changes in future use. Spaces for students and teacher collaboration are best located near learning suites with observation of shared learning areas and otherwise unsupervised student spaces. Ownership of Small Flex spaces will range from permanent, to temporary or shared.

**Occupants**

Up to 10

**User Groups**

Students

Staff

Volunteers

**Potential Use**

Small group work

Project/build work

Classroom pullout

Special needs pullout

Instruction

Itinerant services

Conference room

Workroom

Teacher collaboration

Storage

**Community room**

 Clubs/tutoring

**Characteristics**

Formal or informal

Flexible furnishings

Tackable surfaces

Technology equipped

Transparent

Full to partial acoustical separation

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**Space types**

**Large Flex (15)**

600 sf

*Services*: Video, voice communication, power and data located for maximum flexibility, 2-way communication system with intercom, wireless network access, sink and/or kitchenette as appropriate, projection or digital display.

*FFE*: Movable student workstations, tables and equipment, movable storage units.

*Access*: Easy access and visibility from shared learning spaces.

*Considerations*: Use physical walls or flexible furniture to define spaces. Functions vary with unique needs depending on configuration of the learning suites and student support requirements. Use flexible walls when connecting to adjacent shared learning spaces. Consider acoustical privacy.

*Adjacencies*: Consider placing two Large Flex spaces together for future combination into a Specialized Instruction space. Ownership of Large Flex spaces will range from permanent to shared.

**Occupants**

Up to 15

**User Groups**

Students

Staff

Volunteers

**Potential Use**

Project/build work

Instruction

Special needs instruction

Community room

**Characteristics**

Formal or informal

Flexible furnishings

Tackable surfaces

Technology equipped

Transparent

Full to partial acoustical separation
Space types

Core Learning (25)
900 sf

Services: Video, voice communication, power and data located for maximum flexibility. Zoned lighting controls for various activities, 2-way communication system with intercom, synchronized clock system, wireless network access, audio enhancements to allow full group or small group work, projection or digital display, one sink and bubbler.

FFE: Flexible furniture and fixtures to allow various configurations, easily changeable displays and tackable surface, some limited storage of books and materials

Access: Connectivity, transparent and physical, between two of these spaces and with the shared learning space will provide greater flexibility for team teaching, collaboration and temporary classroom expansion for project work.

Considerations: Consider operable windows, thermostat (zone) control, durable and cleanable surface materials, daylighting and views. Make adaptable for multiple teaching modalities including individual, team and collaboration; adaptable for multiple learning typologies including presentation, self-directed work, small group work, project/build work; supportive of direct and indirect instruction; agile for quick reconfiguration; abundant infrastructure will promote flexibility and maximum use.

Adjacencies: Place classrooms with a direct connection to shared learning space and clear access to the outdoors. Ownership of Core Learning ranges from an individual, team to group of teachers.

Notes: If the district moves to a reduced teacher-student ratio, then 25-student Core Learning will be replaced by 17-student ones with the same features and services. Placing two 25-student Core Learning together allows future subdivision into three 17-student spaces.
Space types

**Shared Learning and Specialized Program (30)**

900 sf / 1200 sf

**Activities:** Shared Learning provides an informal area for classroom break-out activities, small groups, self-directed learning, project creation and work with paraeducators. Specialized Program supports learning activities unavailable in the classroom, teaming and cross-curricular learning.

**Services:** Video, voice communication, power and data located for maximum flexibility, zoned lighting controls, 2-way communication system with intercom, synchronized clock system, wireless network access, projection or digital display, and writable and tackable wall surfaces. Kitchenette, sinks, and exhaust hoods as appropriate.

**FFE:** Movable student workstations, tables and equipment, movable storage units.

**Access:** Easy access and a visible connection between shared instruction and core instruction encourage indirect supervision of student activities. Easy access and a visible connection between specialized instruction and school-wide areas promote connectivity and use. Provide direct access to an outdoor learning space with extra wide openings.

**Considerations:** Provide a flexible space for messy project creation, experiential learning and/or curricula needing specific equipment, access to water and kitchenette, additional mechanical and electrical services, more durable finishes and acoustical separation from other learning environments. Specialized Program requires a flexible location of “teaching wall,” audio enhancements as necessary to for both full and multiple small group student work, sinks, day-lighting controls, ceiling grid (or exposed to structure) to allow for hanging display of student work. As a music room, provide acoustic tuning and separation.

**Adjacencies:** Placed within a group of core instruction spaces, Shared Learning becomes a protected, familiar space for a small community of students. These spaces are owned by the adjacent teachers. Specialized Program is shared by the whole school; locate them for easy access by all students. Consider placing music/drama adjacent to the dining space within Large Group.

### Occupants

- Up to 30

### User Groups

- Students

### Potential Use:

- Shared learning
- Community room

### Specialized program:

- Science
- Wet lab
- Da Vinci room
- Art
- Music
- Drama
- Teaching kitchen
- Language
- Technology/video studio

### Characteristics:

- Formal to informal
- Flexible and varied furnishings
- Tackable surfaces
- Durable finishes (non-carpeted)
- Technology equipped
- Transparent to common activity spaces
- Full to partial acoustical separation

### Flexible infrastructure for future changes
Space types

Library and Information Resources (50)
1800 sf

Services: Video, voice communication, power and data located for maximum flexibility, zoned lighting controls, 2-way communication system with intercom, synchronized clock system, wireless network access, and projection or digital display.

FFE: Movable student workstations, tables and equipment, movable storage units, adequate storage for books and materials, and soft seating.

Access: Easy access to the learning suites and public entry is desirable.

Considerations: Provide easy access to resources and research materials. Provide technology rich and collaborative environment. Create inviting spaces appropriate for research, reading and study. Focus on supporting learning. Provide variety of space for large group instruction and small group collaboration. Consider allowing food and drinks.

Adjacencies: Library resources may be centralized or distributed throughout the school.
Space types

Large Group (Entire school)
7000 sf

**Services:** Video, voice communication, power and data located for maximum flexibility, zoned lighting controls, 2-way communication system with intercom, synchronized clock system, wireless network access, drinking fountains, scoreboard, PA system, assisted listening system, large format projection.

**FFE:** Easily moveable and/or stackable furniture to allow for multi-use of space, abundant display and tackable surface, divider curtains or operable partitions for subdivision, athletics equipment.

**Access:** Easy access to the learning suites, storage, restrooms and direct access to the outdoors.

**Considerations:** Safety/supervision, durability, student-focused, restaurant/cafeteria atmosphere, provide acoustical treatments for noise mitigation, good views and natural light, open floor area to accommodate seating, adjustable lighting and sound amplification systems; after-hours access for student, staff, and community use; special internal acoustical considerations for formal performances; proscenium or thrust stage within performing area, performance is to be flexible. Provide adequate storage for spectator seating. Allow spaces to be subdivided to provide concurrent activities including dining, fitness, and music.

**Adjacencies:** To facilitate access to food services, place the dining space adjacent to the school’s kitchen. To allow for pre-game/event food service, place the gymnasium adjacent to or near the dining space. Zoned for public use.

**Notes:** The Large Group space will be divided into fitness and dining for the significant duration of use. Each should have separate access and have full acoustical separation from the other. The fitness space should be designed as a teaching station to support instruction.

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General learning
Accommodate multiple learning styles

Consider the learning suite’s counterpoint. It is the organizing model that arranges a series of nearly identical classrooms along a connecting corridor. The model assumes that all activities and learning styles can be accommodated within a model. Assigned to a designated location, teachers find it difficult to socialize and use space outside of their four walls. The arrangement makes collaborative work difficult; there are few opportunities and spaces for different group sizes and spreading out. Finally, the lack of variety limits the ability to accommodate future change.

By comparison, the learning suite contains a variety of spaces jointly owned by a group of teachers, thereby accommodating multiple learning and teaching modalities. Teachers determine the utilization of each space as a group. Because each space is equipped for a variety of uses, the learning suite provides flexibility as program and organization models change through the years. Sharing resources locally increases utilization, limiting travel distances for teachers and students alike, and promotes collaboration. The configuration of the learning suite relates to the degree to which teachers share responsibilities.

Interview
Flexibility and openness
A conversation with Christine Hinds

What are the district’s expectations for educational delivery? The district is moving away from the instructional method where the teacher is always in front, always the director of learning. We believe that the more children think about their thinking, the better they learn. We must create opportunities where children engage directly with each other, where they talk about learning and their ideas. The key word is flexibility. While direct instruction is still needed, students need to work in small groups. They need access to resources for working on projects. They need spaces to work alone. It’s awesome to walk into a classroom during silent reading and see kids totally engaged under desks, sprawled on pillows, and in different cubbies. Kids love to take their friend and their book and go into a cubby and do their thing. We need that kind of flexibility in our learning spaces.

Using easily-reconfigured furniture is one way of creating flexibility. What else matters? While flexibility and openness matter, there is a balance that needs to happen. We still need areas where the teacher instructs the whole class, areas with little distraction. Understandably, teachers are wary of spaces that are too open, with too much activity happening on the periphery, because they are distracting. They must be able to balance open, active areas with visually and auditorily calm spaces.

How important is flexibility and openness? Some educators believe that our children cannot handle really open, creative, flexible environments, especially those kids with high needs. We cannot design around perceived limitations. When we visit other schools, the difference is clear. When we walk into a learning environment that is more flexible, the learning continues without interruption. In the more box-like classrooms, we open the door and learning stops. We cannot build boxes within boxes any longer.

In general, some schools struggle with the transition to a more student-centered model, particularly at the younger ages. Where is the district? I worked in an elementary school where one classroom wing had shared open areas in the hallway, and the other did not (for lack of funding). In the hallway with open areas, there were vastly different types of learning. Remember, the quality of teaching was the same. By simply allowing little groups to move into the hallway instead of keeping them in the classroom, the level of student involvement completely changed. Children are more adaptable and creative than we believe, it’s the adults who struggle. If we build beautiful buildings with lots of open spaces and flexibility that support really dynamic teaching and learning, then it is up to us to teach our teachers how to use these spaces. That’s the key. Whatever we build, we must help our people use it. We must ask ourselves, “What skills are required of our teachers to really maximize the space?”

When would a teacher ask students to move out into shared areas? Supervised group work is common during a typical reading period: a small group works at the teacher’s table, a number of kids read in pairs, and a paraeducator or parent volunteer takes another group and works on specific skills. After direct instruction of math problem for example, kids work in table groups. They talk about the problem and share their thinking. In a third example, students spread out to work on shorter long-term projects. Shared areas outside the classroom are used more for independent work; they create a setting for small groups.

How reversible should the school be? Should the school be allowed to return to what was? Don’t let the building go back to what we know. I do not want us going back to the traditional hallway. I would not want to limit ourselves to that box.
In today’s educational framework, Core Learning handles most of the learning, with Shared Learning and Specialized Program spaces providing additional support. In tomorrow’s educational framework, a move to a more collaborative model is likely. In this scenario, the whole suite handles most of the learning, with Shared Learning spaces for self-directed and project-based work, Large Flex spaces for pullout, and only a few Core Learning for more focused instruction. How do you design the learning suite so that it supports today’s educational framework as well as those of the future?

Ready for highly collaborative learning

Learning Suite Size 6750 SF

- **Small Group**: 150 SF, x1
- **Small Flex**: 300 SF, x1
- **Core Learning**: 900 SF, x6
- **Shared Learning**: 900 SF, x1
Our teaching methodologies require that teachers become and remain closely connected with every student. Design Core Learning spaces to be easily reconfigured if teacher-student ratios become smaller in the future. For example, two 900-SF Core Learning spaces may become three 600-SF ones. Configure the Shared Learning space in a way that best supports the learning environment. It is setup to be one, two or more spaces. For example, the space is divided into two labs, a wet area for messy projects and a dry one for research.
Specialized learning
Provide a unique portfolio of offerings

The unique offerings for each school are different. Consider the following example pathways. Continuously engage students by combining three of the four Specialized Program spaces into the super Da Vinci room that Stephen Murakami describes. Or relentlessly support a high needs community by dividing Specialized Program spaces into smaller Large Flex spaces for Learning Resource Centers, a Learning Assistance Program, a Therapeutic Learning Center and English as a Second Language space. Or make the conscious decision to use Specialized Program spaces within the learning suites, thereby making them more capable and autonomous. Specialized Program spaces may be consolidated, distributed or better still, take on new patterns as different interpretations change the definition. These spaces in particular present a significant opportunity for tailoring the learning environment.

What types and qualities of Specialized Program spaces will best challenge, support, and engage the students in a way that’s safe and healthy?

Interview
Making Specialized Program spaces
A conversation with Stephen Murakami

What is the role of the library going forward? The library is no longer a mere portal of information; it supports what you do with that information. Inquiry-based design is no longer about getting the information but driving meaning and applying it. Seeing this as a library of the future, there is a portal for information, and a place where we can research and gather knowledge. But there’s a second part, a place where we derive meaning, where knowledge gets applied. That’s the part that excites me.

Why is knowledge application so important? With the resurgence of science and math, and thoughts around STEM, we need more spaces that offer true hands-on opportunities, spaces that allow students to not just internalize information but apply it in a meaningful way. That’s where engagement happens, where passion is created. We must accept the outlook that we can really create better critical thinkers.

Why not give each learning suite its own Da Vinci space? I’d love to see all of our Shared Learning areas become Da Vinci rooms. That would be my goal. Technology is no longer an event to travel to and participate in. We must get to a point where these centers for wet, messy, hands-on, engaged, and fun activities are dispersed throughout the facility, so they emerge naturally throughout every day.

Is the exception that you go in for direct instruction? That would be amazing, a thing of beauty to see that.

If all Shared Learning areas become Da Vinci labs, is there still a benefit of having school-wide activity spaces? Absolutely. First, there is an opportunity to get higher level sciences down to the lower grades. Educators are telling us that want to see exposure to the hard sciences happen earlier. The conversation started with the middle school, where seventh and eighth graders get into chemistry and work with fume hoods. Now it’s moved to pushing these opportunities to the elementary level, such as giving fifth graders access.

Is the district supporting the move? I am hearing the leadership say make those opportunities available. Even if the current educational model isn’t there yet, start placing the necessary infrastructure. While Geiger is occupied as PreK-5, it’s built for K-8. It’s ready to go for full science; it has air and gas, it is plumbed and ready.

In addition to science, what else? We think of every school as providing a unique portfolio of offerings. No longer are we thinking about neighborhood schools, with specific tracks from elementary to middle to high school. The designer must ask, “What are these offerings?” We take every opportunity to tailor learning to specific students. The conversation is not comprehensive models but what should our portfolio of offerings be. IB, STEM and expressive arts are just a few of the specialized paths we offer. Arlington is a pilot school that wraps traditional curriculum around a fusion of arts and technology. Specialized Program spaces make these pathways happen.

What about technology? We are talking about computer labs, again. Whereas the conversation once centered on portable computing, mobile tablets, making tech everywhere, it’s moved back to specialized computing. Taking learning to the next level requires higher computing power. We want to start running programs that are more advanced, ones that cannot run on a tablet.

Are you imagining video production, music recording and the like? While not specifically, it’s becoming more prevalent at the middle school level, so it cannot be far off for our elementary schools. Grant has some production facilities. It’s definitely coming.
Our Process

Large Group configuration

Fitness, performance and dining

The Large Group space is an informal, malleable element which can be used for any number of activities. It serves as a social hub, it supports wellness and social wellbeing through food, it makes health and fitness more accessible and less intimidating, it supports musical and dramatic performance, and it is an asset for the community. While the flexible program framework gives you the freedom to tailor most of the program, we ask that you follow a specific configuration for the Large Group space. Placing fitness, dining and performance oriented spaces adjacent to one another works best in our experience from the standpoint of flexibility, community use and learning. If you consciously decide to forgo our recommendation, then you must present a case for doing so.

Large Group Planned configuration

Dividing fitness, dining and music/drama by operable partitions with acoustical separation allows each space to function separately when the partitions are closed or together as a large performance hall when the partitions are open.
Conclusion

The ideas presented in the book are not necessarily new. However by telling them differently, in our own voice, we have attempted to evoke new interpretations. If we have succeeded in our efforts, then we will have elicited a series of questions that are the beginning of a rich process for the building planning and design of elementary learning environments.

Early in the book, we set a challenge to provide a learning environment so that every student achieves success. We believe in a learning environment where kids are continuously challenged, relentless supported, and engaged in a way that’s safe and healthy. We believe in a learning culture that wraps around our kids so they are learning all day, every day and throughout the year. We believe in a learning environment that works on all levels including the home and neighborhood as well as the school. We believe in innovation.

The schools we build are just one piece in creating student success. However if we have succeeded in telling our vision, then we will have communicated our fundamental belief that the built environment has a profound effect on the way students learn. So while the facility is not enough by itself, without it, social change becomes far more difficult.

For the designers we have chosen to work with, know that we select you because we believe that you bring far more than your ability to design elementary schools. We believe in your ability to be an advocate, to seek out and forge community partnerships. We believe in your ability to be a partner in the fullest sense of the word, that you will allow yourself to be challenged, and that you will challenge us in kind. Dr. Josh Garcia says it best, “You don’t come to Tacoma and copy. You come to Tacoma and learn.” What will you learn in Tacoma?
Appendix

Resources

Contact Tacoma Public Schools’ Planning and Construction department for available resources, including preliminary community assets maps for all of the projects identified in the 2013 Bond, maps of student performance across all schools, data for student performance across a longer timeframe, our metric for identifying a school’s need for additional resources, a list of community based organizations and partnerships, and worksheets for completing the directives.

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