Implementing Design Thinking + Charrette Process in the Classroom

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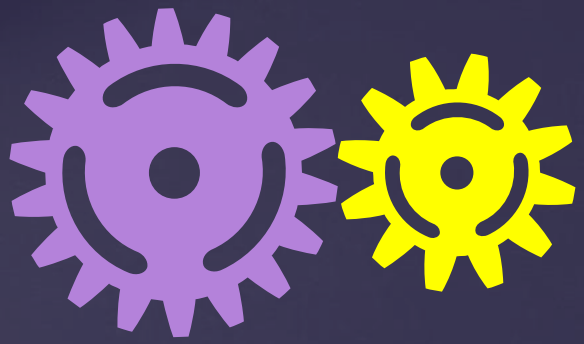
Welcome + Introductions

- Draws upon tools in both design and business venues, creating a framework that integrates user needs, powerful ideas, and enterprise success (Lockwood, 2009)
  - Gear 1: aims to achieve deep user understanding and establish a context for innovation and value creation – to gain context – what users do and how they feel
  - Gear 2: focuses on concept visualization as the goal - implements tools during the strategic creation to explore a broad set of solutions. Creative tools, such as prototyping and ideation, enrich and generate novel solutions.
  - Gear 3: identifies through analysis which strategies will drive success, prioritizes activities in delivering those strategies, and defines how strategies fit together strategically, operationally, and economically (Lockwood, 2009)
- Through this, "broad concepts [align] with future realities through strategy formulation and design of the business model itself" (p. 40)

Three Gears Theory (Fraser, 2009)



Goal 1: Share idea of a charrette to enhance your ability to discover and visualize ideas to make your ____better

Goal 2: Provide structure behind ideas

Goal 3: Share our charrette experience

Goal 4: Share the outcomes of the charrette

Session Goals

What is a Charrette?

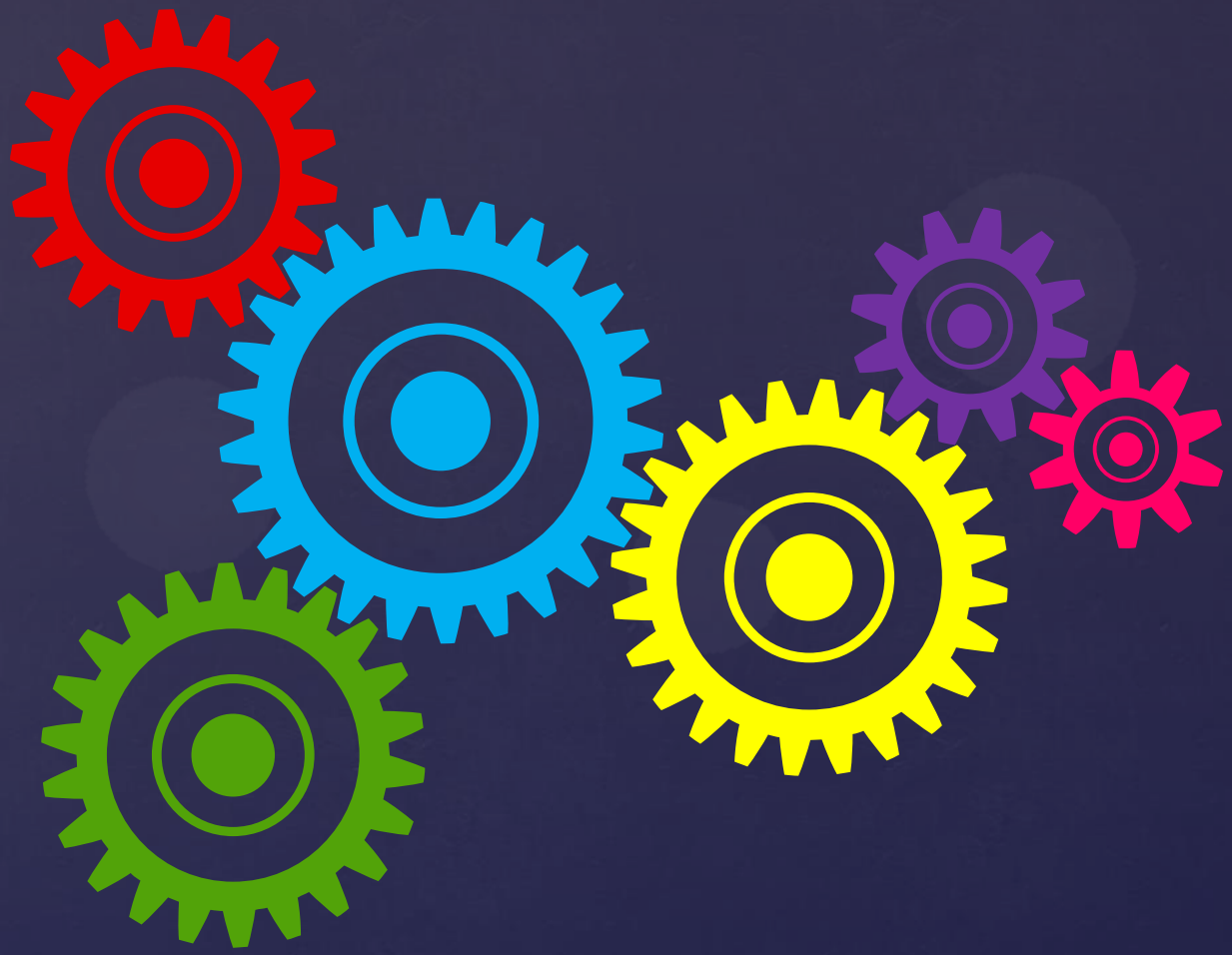
…a charrette is defined as an intensive workshop in which various stakeholders and experts are brought together to address a particular design issue, from a single building to an entire campus, installation, or park…

Definition

Recipe for a Charrette

Ingredients:

- Problem or Challenge
- Diverse Stakeholders
- Unlimited Ideas
- Flexible Space
- Visualization Tools
- Structure (time frame, outcome products, next steps)

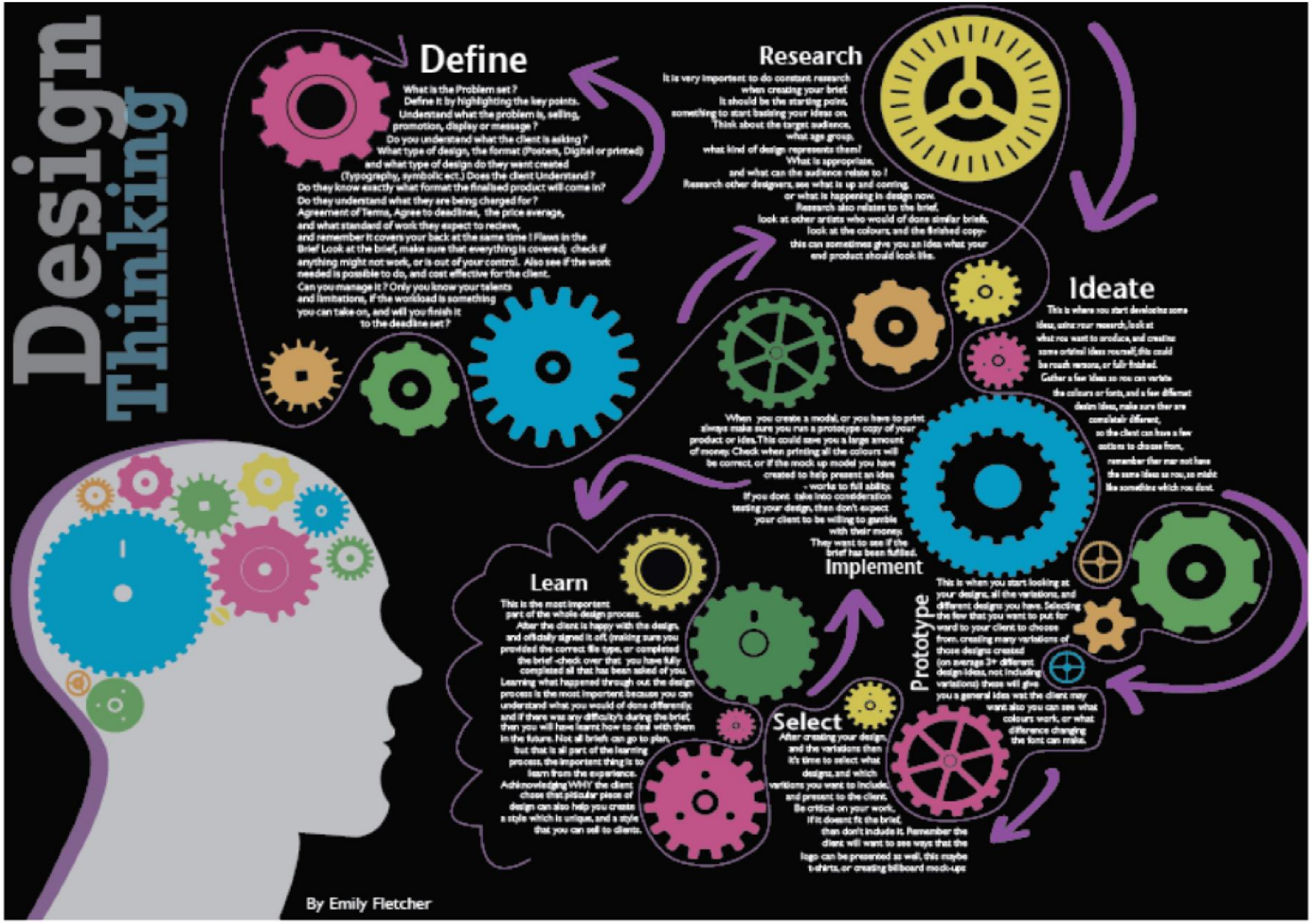


Design Thinking

…**design thinking** is a process—applicable to all walks of life—of creating new and innovative ideas and solving problems…not limited to a specific industry or area of expertise.…

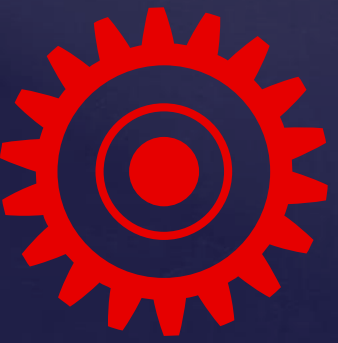
Definition

Design Thinking

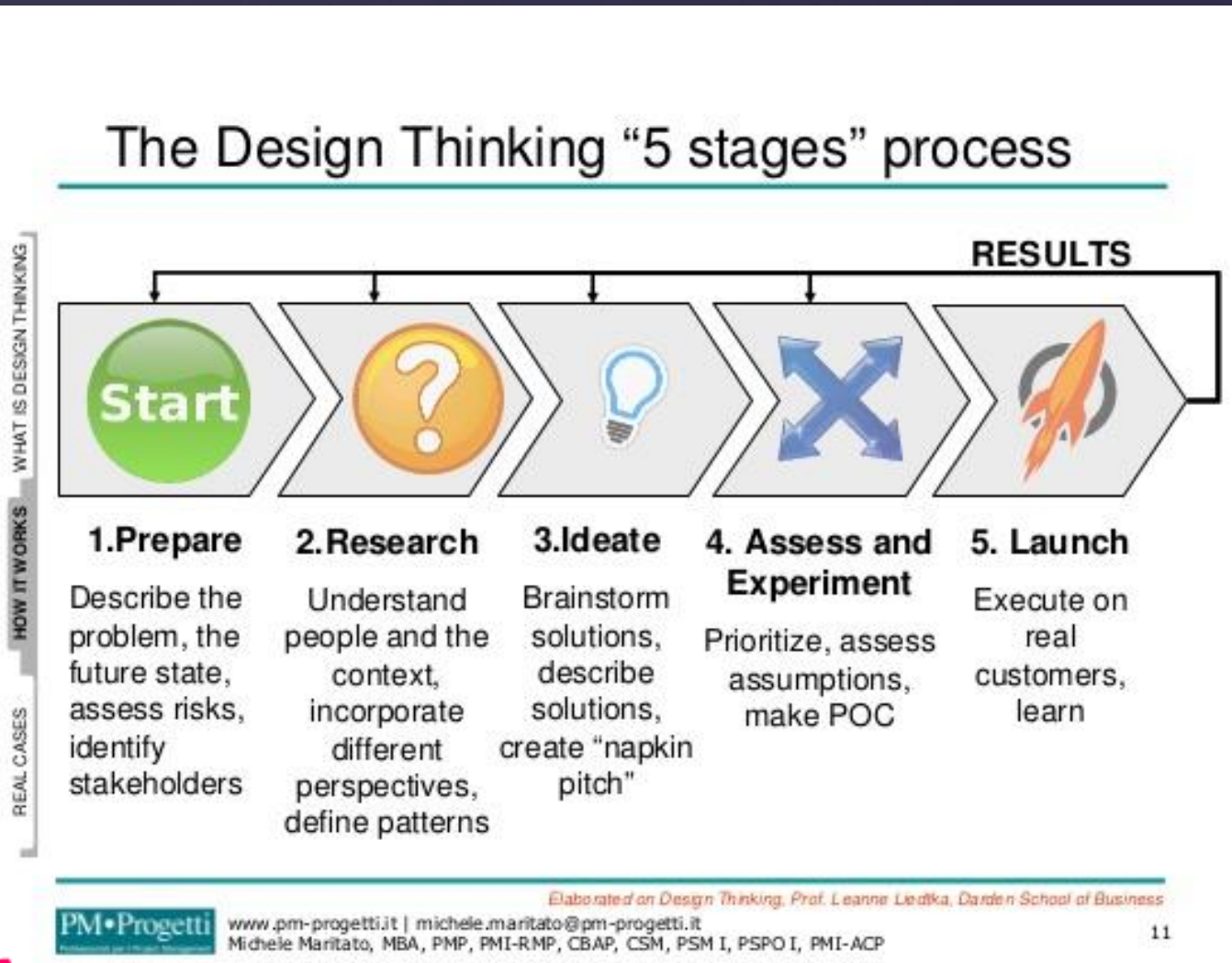


By Emily Fletcher

expertise model... (Kruger & Cross, 2006)	Design Thinking Models (Tschimmel, 2012)				
	IDEO's 3 I Model	IDEO's HCD Model (Human-Centred Design)	Model of the Hasso-Plattner Institute	4 D / Double Diamond Model (British Design Council)	Service Design Thinking (SDT) Model (Stickdorn and Schneider)
1 Gather data	**Inspiration** Identify design problem or opportunity. Deliver the design brief to define a common framework. Observe the target group's behaviour in the design task's context.	**Hearing** Collect stories from people. Prepare and conduct field research.	**Understand** Gather existing information through secondary research.	**Discover**, Search for new opportunities, new markets, new information, new trends, insights	**Exploration**, Understand customer culture and real service problem. Visualize the context. Design the process.
2 Assess value and data validity			**Observe** Qualitative research: observation, interviews, insights on users' needs	**Define**, First insights are reviewed, selected and discarded. Initial development of project ideas.	
3 Identify constraints & requirements					
4 Model behaviour and environment			**Point of View** Share insights among the group with storytelling. Synthesize a visual framework of the user's perspective.	**Develop** Develop and test solutions by multidisciplinary team. Brainstorming, sketches, scenarios, renderings or prototypes	**Creation**, Generate, test and improve ideas and concepts
5 Define problems and possibilities	**Ideation** Synthesis process. Transforms observations into insights. Brainstorming, visual representations. Insights lead to propositions.	**Creating** Workshop to translate insights into frameworks, opportunities, solutions and prototypes. Iteration between "abstract" and "concrete"	**Ideation** Identical to the **Ideation** of the 3 I model		
6 Generate partial solutions					**Reflection** Building on ideas and concepts, prototyping - closely related to previous stage
7 Evaluate solutions	**Implementation** Action plan for selected ideas. Use of Prototyping. Development of a communication strategy.	**Delivering** Action plan for selected ideas: rapid revenue/cost modelling; assess capability; implementation planning	**Prototype** Identical to the **Implementation** of the 3 I model **Tests** Identical to the **Implementation** of the 3 I model		
8 Assemble a coherent solution				**Deliver**. A final concept is taken through final testing, signed-off, produced and launched	**Implementation**. Communicating and testing the new concept. Improving the prototype.



Design Thinking Model: Example #1



Design Thinking Model: Example #2

Co-creative ideation is followed by exploration that focuses on both qualitative and quantitative validation

Idea

Generate fresh ideas to tackle critical business challenges

User research
- User studies
- Diary studies
- Photographic investigation
- Ethnographic studies
- Surveys

Model Generation
- Business canvas
- Startup canvas
- Change canvas

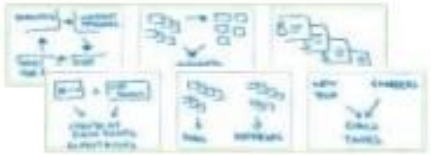
Design Thinking
- Empathy Maps
- Directed storytelling
- Ellto method
- etc.

Explore

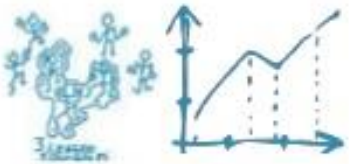
Explore first using qualitative methods…

…then using quantitative methods

Research and explore in order to refine assumptions into measurable hypotheses



User Centered Design
- User personas & journeys
- User Goals & Tasks
- etc



Data Analytics
- Segmentation
- Market
- Customer Lifecycle
- Predictive

Customer Development
- Customer/Problem Fit interviews (Problem Exploration)
- Problem/Solution Fit interviews (The Mafia Offer)

User Testing
- Competitor testing

Design Thinking Model: Example #3

DESIGN THINKING QUESTIONS

DESIGN THINKING is a human-centered approach to identifying and solving a wide range of problems, built on collaboration, creativity, and empathic understanding of human experience. The diagram below represents the iterative process of exploration and creation to finding solutions that are useful, usable, and delightful.

DEFINE What are we trying to solve? How we define the challenge has a big impact on what we do next. Be precise in your words, and frame the questions as, "How might we ...?"

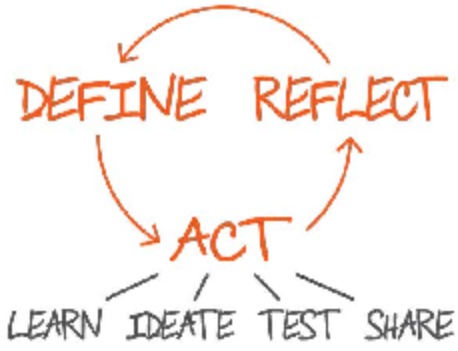
Questions to get started.

- WHAT ARE OUR LONG-TERM GOALS?
- WHAT ARE OUR IMMEDIATE GOALS?
- WHO ARE WE DOING THIS FOR?
- WHAT ARE OUR CRITERIA FOR SUCCESS?

LEARN How might we discover the needs of those we are designing for? Gain understanding and empathy by observing, listening to stories, and studying the world around you.

Questions to get started.

- WHOSE CAN WE GET INSPIRED?
- WHO CAN WE LEARN FROM?
- WHAT IS THE LANGUAGE CONTEXT?
- WHAT'S ALREADY BEEN DONE?



REFLECT How do we learn and improve? Pausing for reflection creates opportunities for insight and connections. Make time to reflect; it will be the best thing you do.

Questions to get started.

- WHAT DID WE LEARN?
- WHAT WAS MOST SIGNIFICANT FOR US?
- HOW MIGHT WE DO IT DIFFERENTLY?
- HOW DO WE FEEL ABOUT OUR WORK?

SHARE How do we best communicate our concepts? A good story helps colleagues and customers understand ideas, build consensus, and provide valuable feedback for future growth.

Questions to get started.

- WHO ARE WE PRESENTING TO?
- WHAT STORY DO WE WANT TO TELL?
- WHO IS THE HERO OF OUR STORY?
- WHAT ARE OUR MAIN POINTS?

IDEATE How do you come up with new ideas? Collaborative creativity is at the heart of innovation. You need clear rules, a facilitator, space for displaying ideas, and an inspiring environment.

Questions to get started.

- WHAT TOPICS SHOULD WE EXPLORE?
- WHO WILL LEAD THE SESSION?
- WHO DO WE WANT TO PARTICIPATE?
- WHAT WILL WE DO WITH THE IDEAS?

TEST How can we best evaluate our ideas? By embracing both failure and success. Rapid prototyping and experimentation is a way of life, and "thinking by doing" accelerates our best ideas.

Questions to get started.

- WHAT CAN WE PROTOTYPE QUICKLY?
- WHOSE FEEDBACK DO WE WANT?
- WHAT QUESTIONS CAN OUR PROTOTYPE ANSWER?
- WHAT ASSUMPTIONS HAVE WE MADE?

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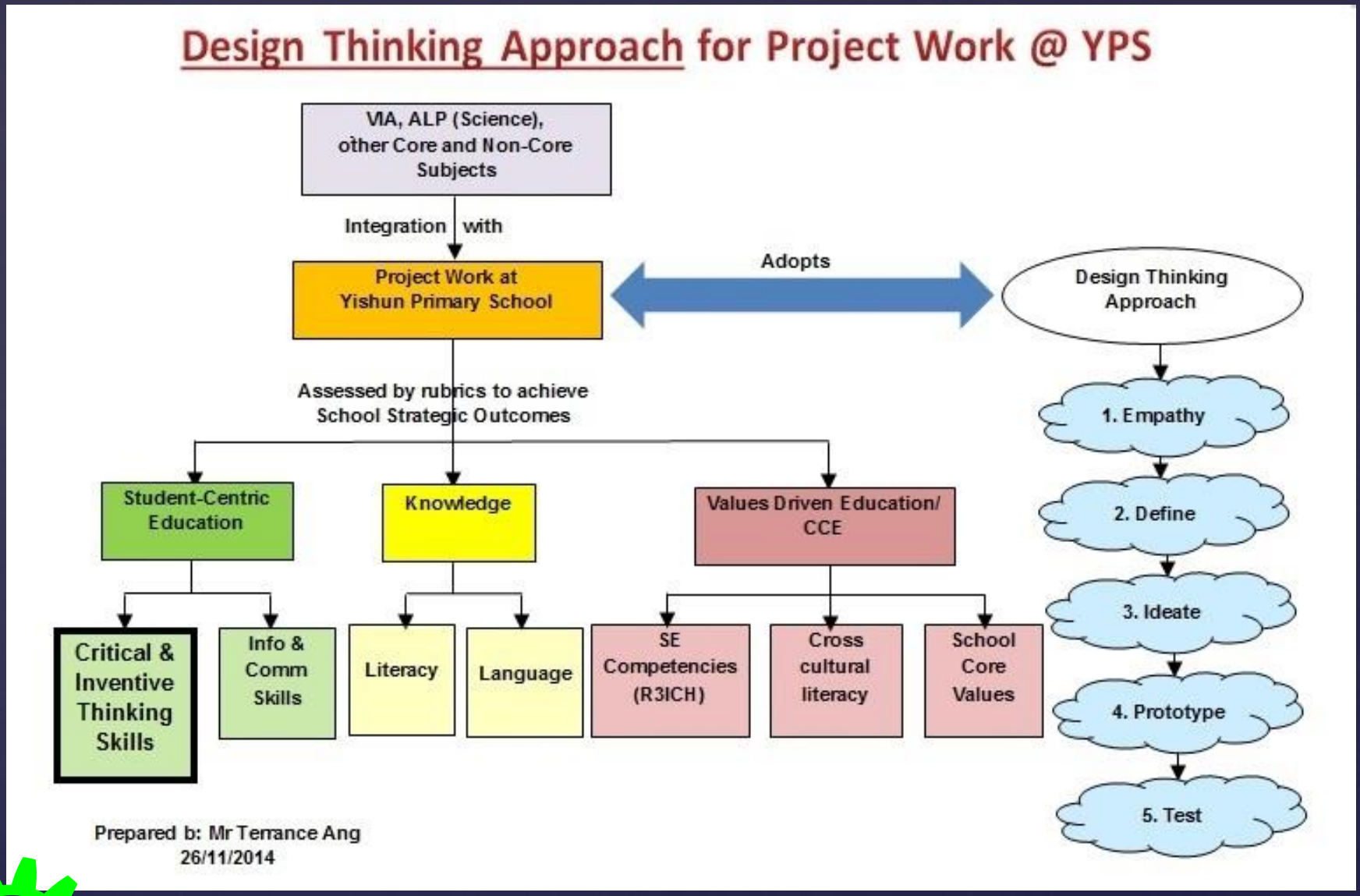
Design Thinking Model: Example #4

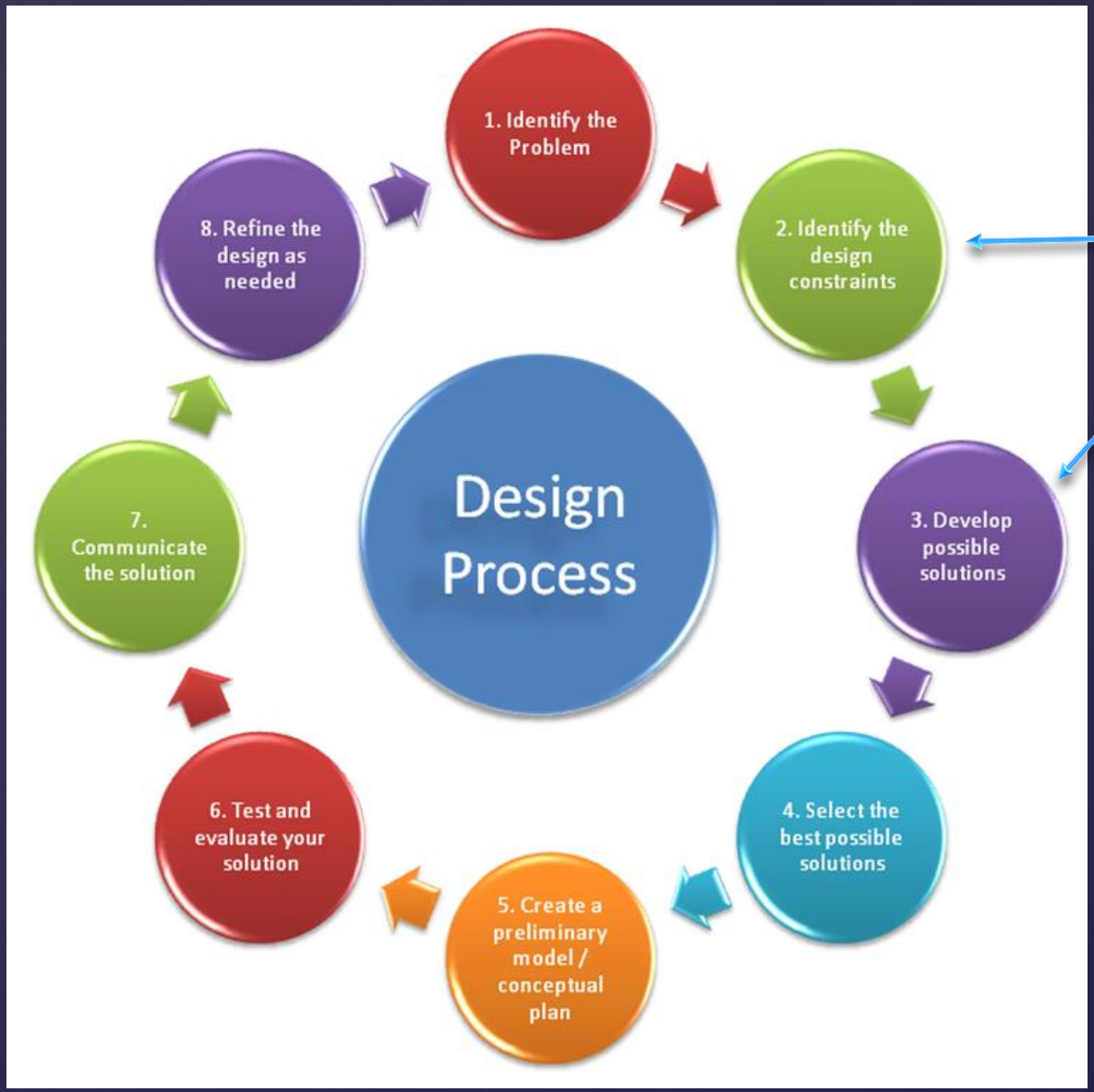


Design Thinking Model: Example #5

- According to the Design Management Institute (DMI) design-led organizations outperform other organizations by 93%, validating the critical nature and impact of design thinking on performance and productivity (2013)

- Value in discovery and visualization (Owen, 2006)

Applying Design Thinking



Discovery

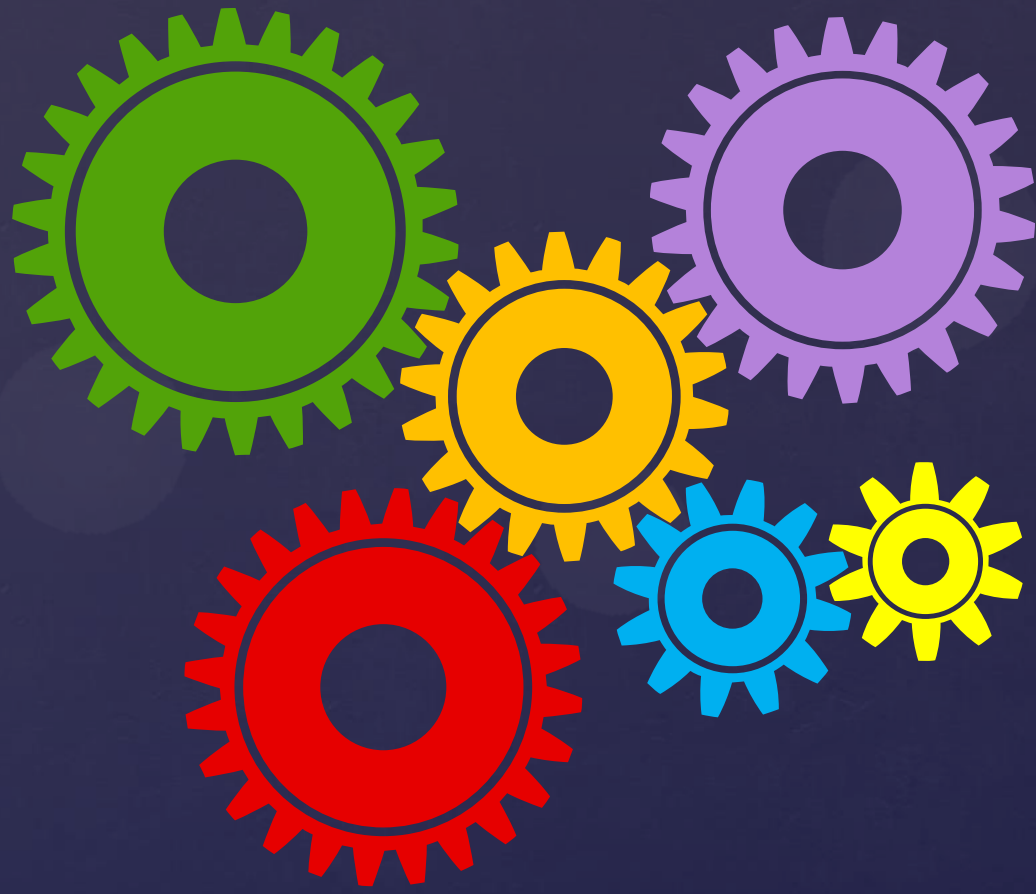
Visualization

Design Process

The learning environment should result from a planning and design process that involves all community interests.

Community Engagement Shaping the Environment

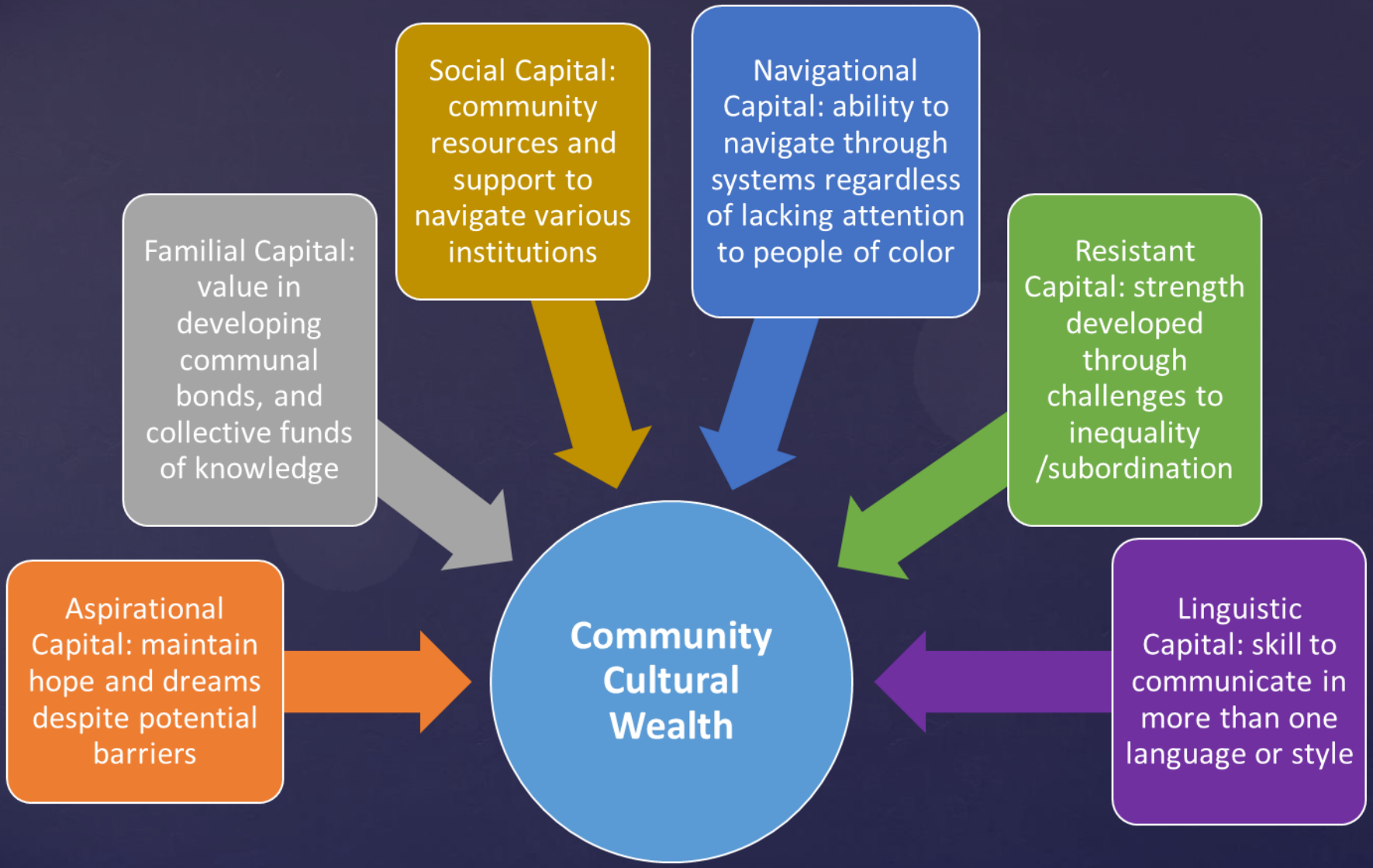
“Schools are more than just bricks and mortar;



…they are about visions for neighborhoods, communities and our state”

- Creativity and innovation
- Enhance teaching + learning accommodating diverse needs of all learners
- Serve as a center for the community
- Engage stakeholders (students, educators, community) in planning + design thinking process
- Provide for health + wellness, safety + security
- Make effective use of available resources and
- Be flexible, adaptable & sustainable

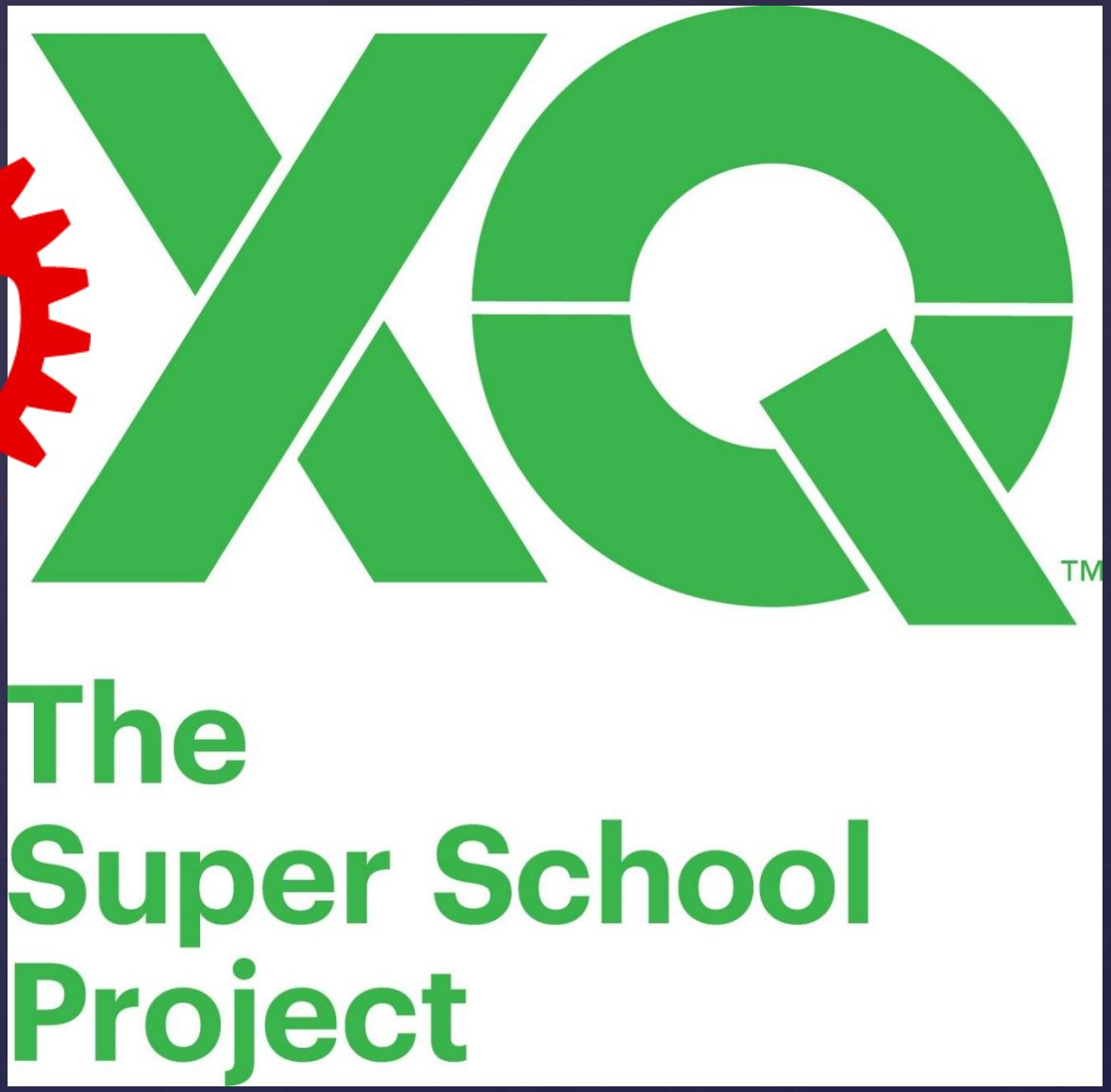
Addressing Needs of 21st Century Students



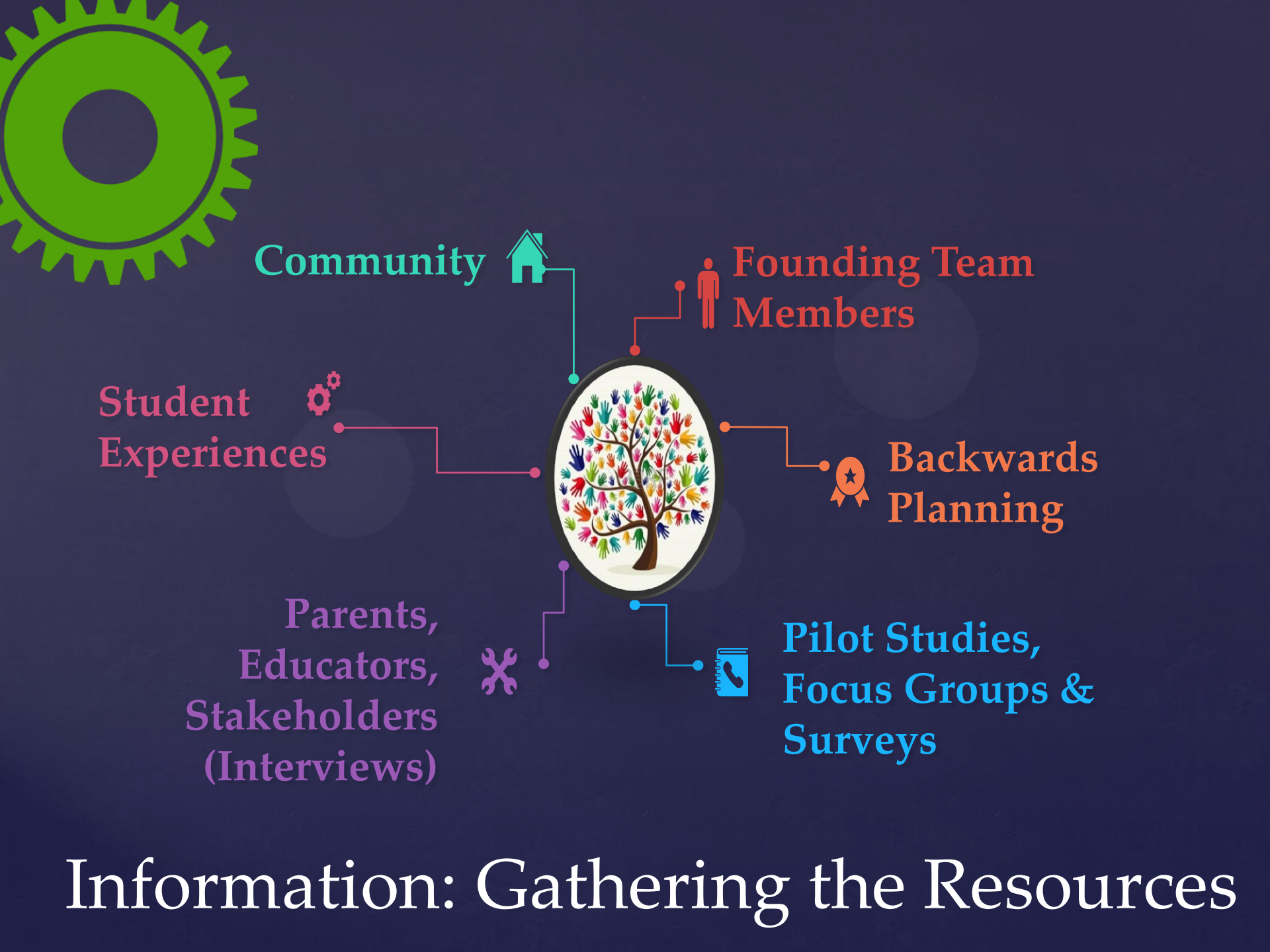
Guiding Principles: Community Cultural Wealth

(Yosso, 2005)

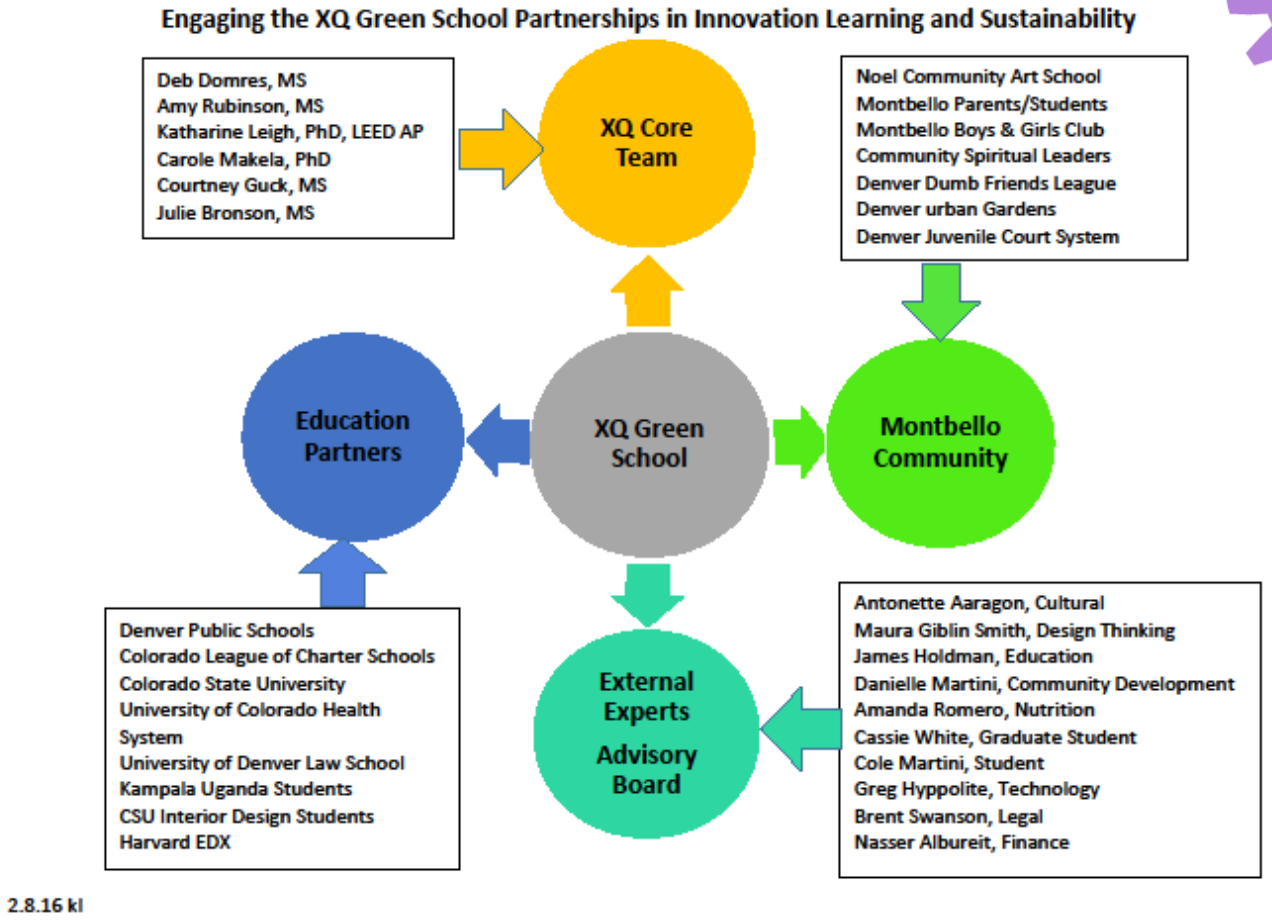
The Montbello High School Charrette



HIGH SCHOOL OF THE FUTURE CHALLENGE



Information: Gathering the Resources



Diverse Stakeholders at the Table

1. What is the **issue** you are trying to address?
2. What are the **guiding principles** or values of your organization and how can you relay these to the charrette participants?
3. Who are your **stakeholders**? Consider those who will use your services, who will fund your services, community members, and those who influence policy.
4. **Where** should you hold the charrette? (Consider the needs of your stakeholders. For example, if your stakeholders are low-income individuals, maybe the event should be in a location they can walk to or take public transportation to. On the other hand, if your primary stakeholders are policy makers, the charrette needs to be in a location convenient to their jobs. How can you accommodate all of your stakeholders' needs?)
5. What do you need to make your participants feel **comfortable sharing** their ideas? (Think about the culture of your target community, what environmental characteristics will make them feel their opinions matter, how can you be culturally competent, do you need to provide meals or snacks?)

Factors in Developing Your Own Charrette (p.1)

- Who will **facilitate** the charrette? (Who knows the culture of your organization well enough to relay that to the charrette participants and can induce energy in your participants encouraging them to participate and understand the value of their feedback?)
- What kind of **experts** do you need to support the development process on the day of the charrette? (Consider the key issues you are addressing, might it be helpful to have educators, community members, prior/current staff members, or students serve as experts to consult during the charrette process?)
- What **information** do your charrette participants need to successfully complete the task at hand? What types of handouts or presentations (live presentations or videos from TED talks, YouTube, podcasts, etc.) would help your charrette participants complete the task?
- What information do you want to know **before and after** the charrette? Would a pre-survey be informative for your big day? Is there any information you would like to collect after the charrette (through a post-survey)?

Factors in Developing Your Own Charrette (p.2)

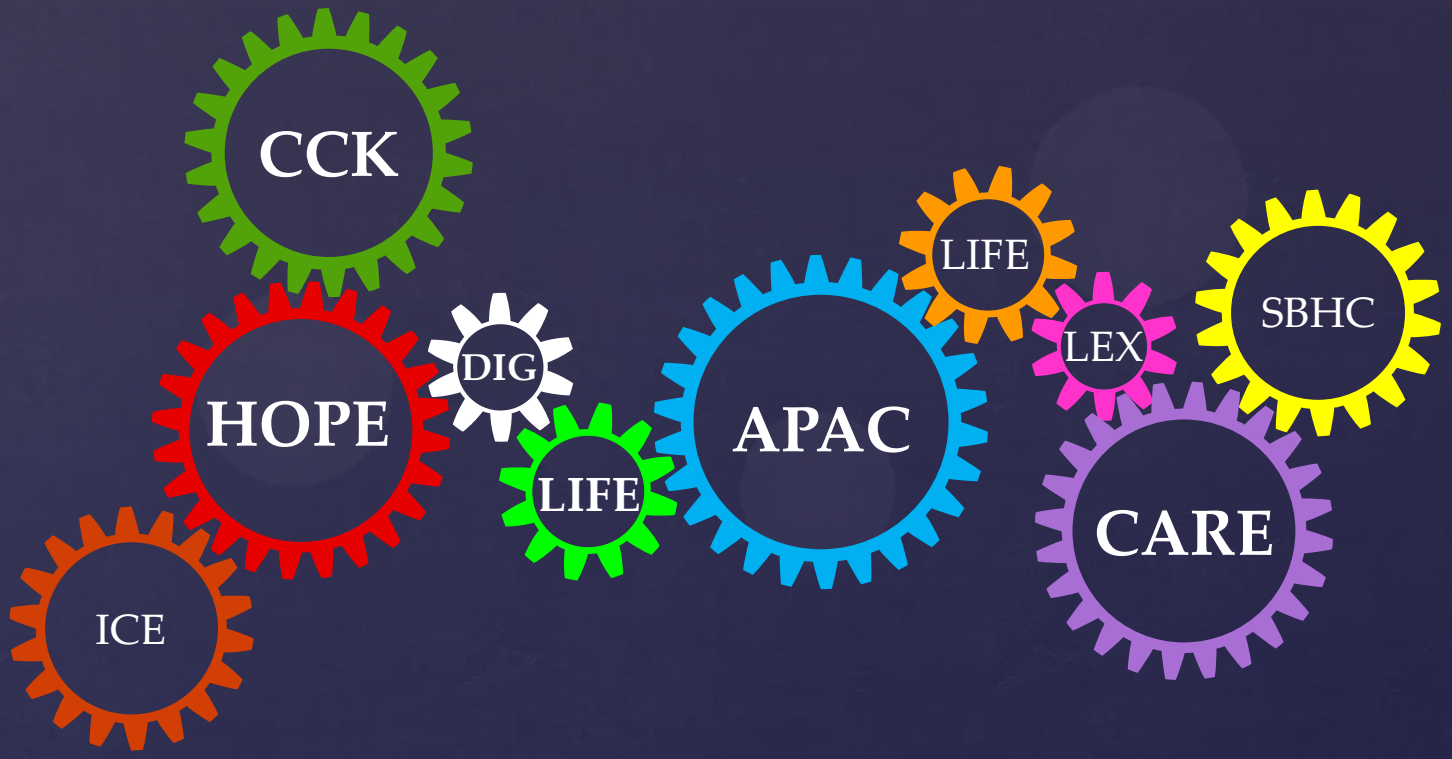
- Use footprint of Montbello High School
- Net Zero Campus
- Year round, late start, extended day, educational + community access
- Student work/career training opportunities
- On site student transitional housing
- Grants, research + student driven funding
- Rain water capture, recycling, composting, zero waste goals
- Alternative energy, WELL + ADA implementation
- STEAM and PODS

Guiding Principles: Charrette Guidelines

- Utilization of grounds for observation/research/learning/ meetings
- Reintroduction of native species + wildlife
- Outdoor labs
- Student designed projects capture: kinetic sculptures, waterfalls, ponds, etc.
- Community gym, sports, fields
- Joint ventures with B/G Clubs, etc.
- Funding, financial & sustainability opportunities

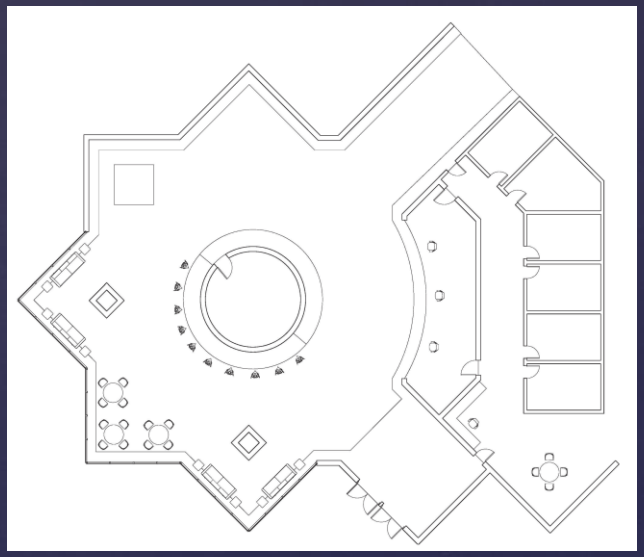
Campus Roadmap

"POD" The vessel that contains the seeds of a plant



PODS Point of Design/Path of Departure

ICE



ENTRY + LOBBY RECEPTION

ICE/Interactive Community Engagement

LEX

LIVE/LEARN COMMUNITY

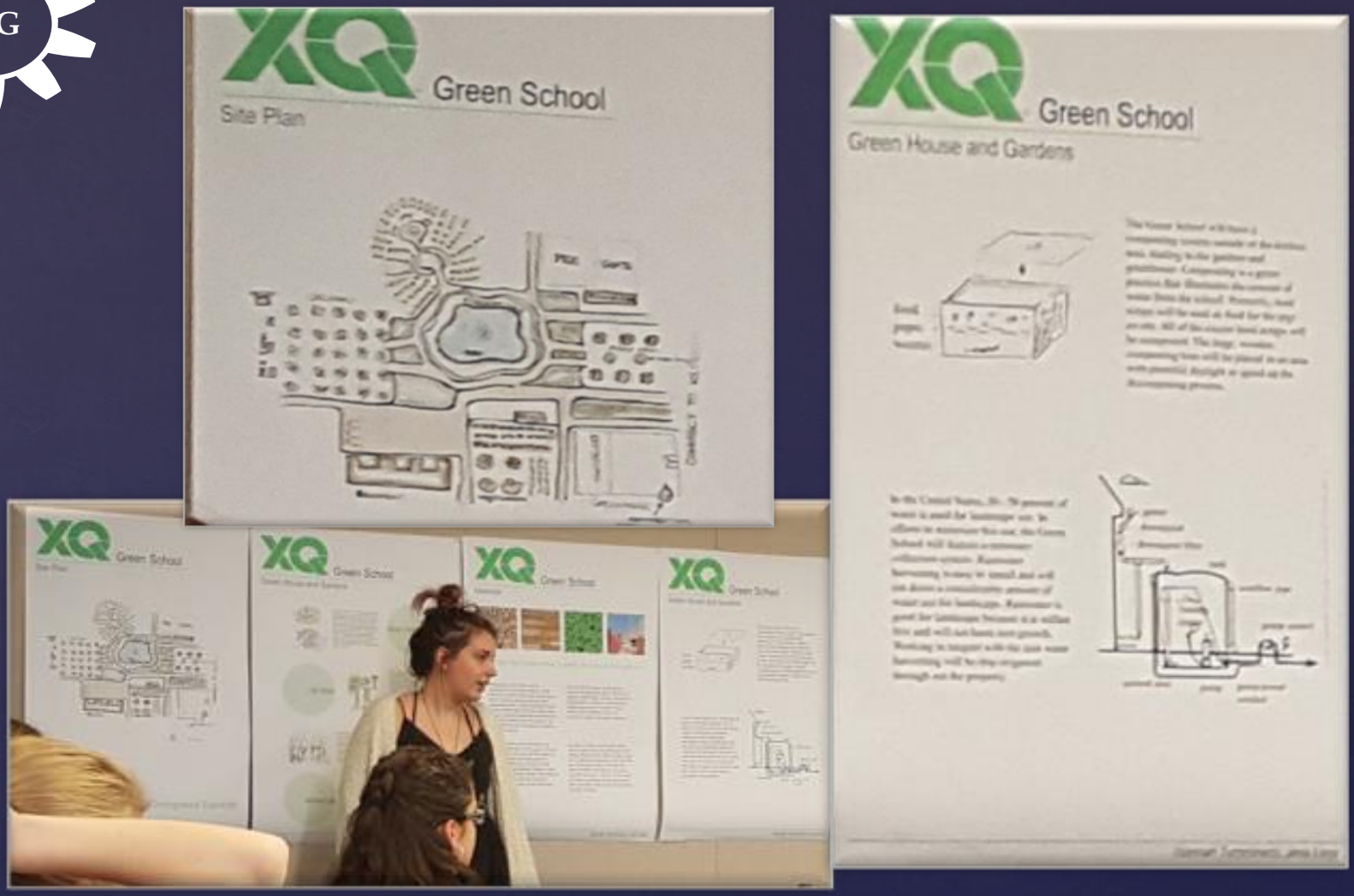
LEX/The Living Exchange

CCK

CAFETERIA + TEST KITCHEN

Community Cultural Kitchen
(The Grubbery + The Bite)

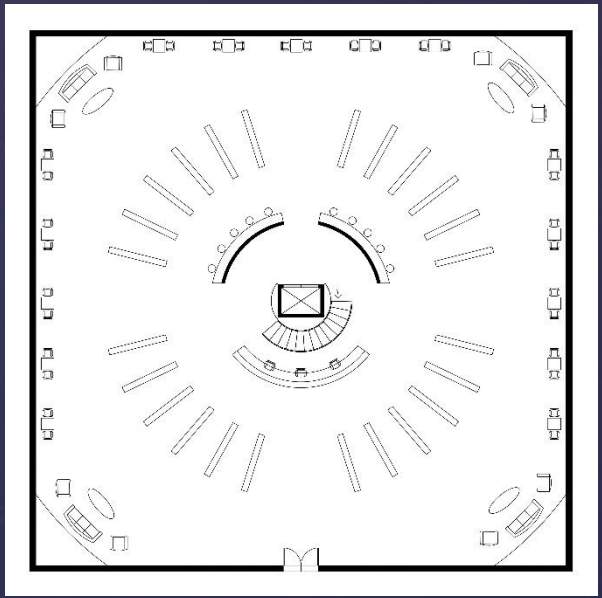
DIG



Green House + Community Gardens

DIG/Development thru Integrated Growth

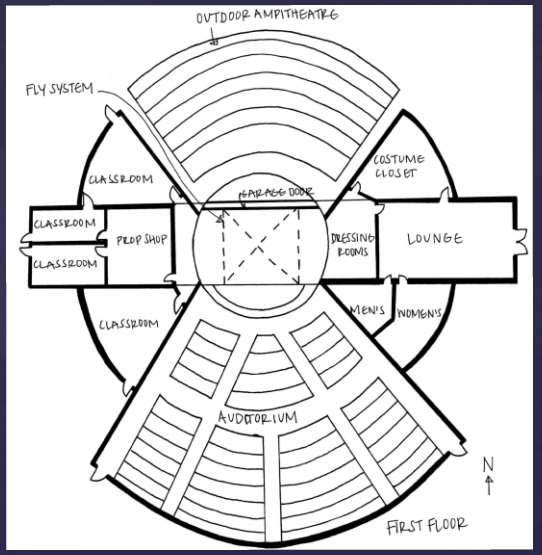
Canopy



LIBRARY + TECHNOLOGY CENTER

CANOPY/Collaborative, Advancement, Nurturing, Outstanding, Performance, Youth

APAC



AMPHITHEATRE + PERFOMING ARTS CENTER

APAC/Amphitheatre Performing Arts Center

LIFE

LIFE SKILL + RESTORATIVE JUSTICE CENTER

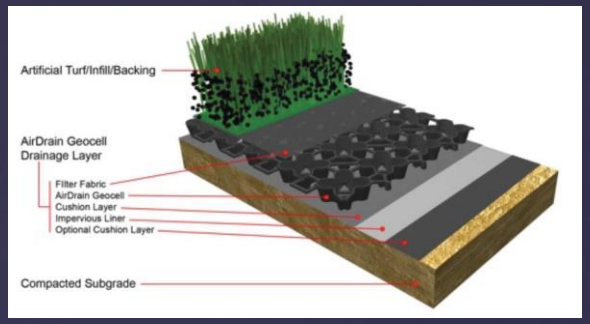
LIFE/Learning Interactive + Fundamental Experiences

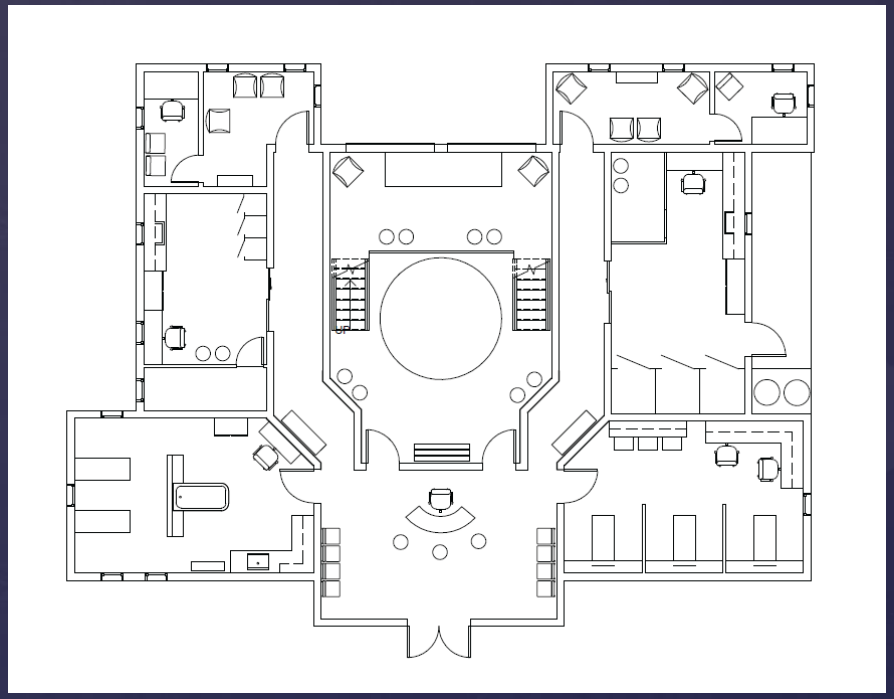
HOPE Housing

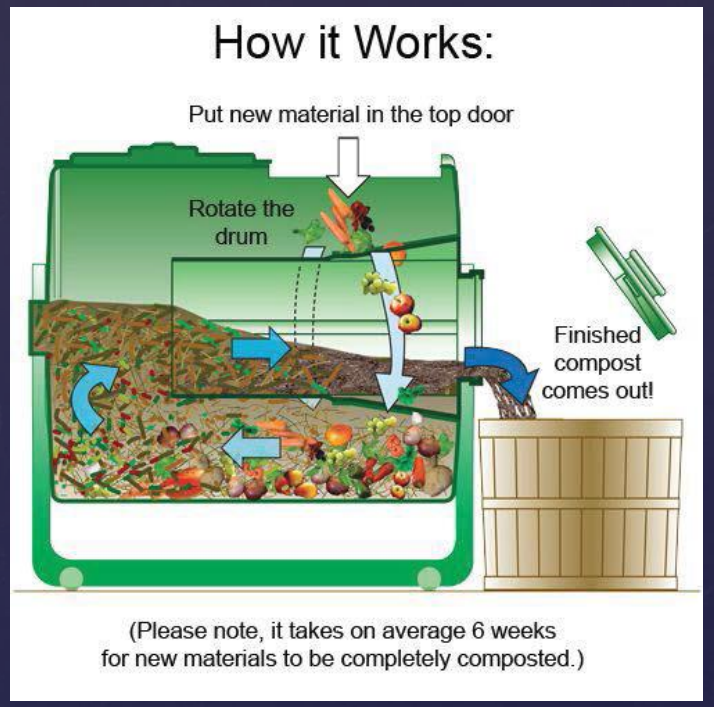
Enduring Vitality
Bringing long lasting,
continuous strength
and growth to
both the students
and the community alike.

Student Transitional/Emergency Housing
(Sports Arts Fitness Green System)
HOPE/Have Only Positive Expectations

CARE







ANIMAL ASSISTED THERAPY

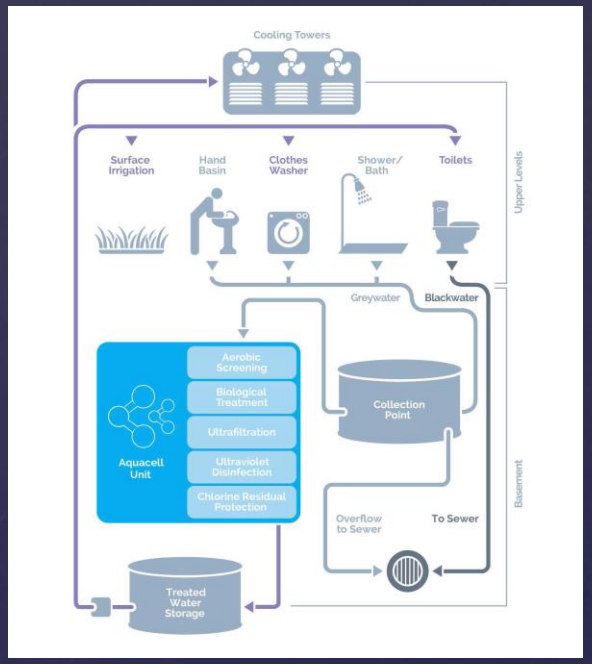
CARE/Comfort, Assistance, Rehabilitation + Empowerment

SBHC

MEDICAL CENTER

SBHC/School Based Health Center

Students Vision



CAFETERIA + TEST KITCHEN

Maya Fulton. . Carly Mansker . Erin Miller

XQ Green School

Concept

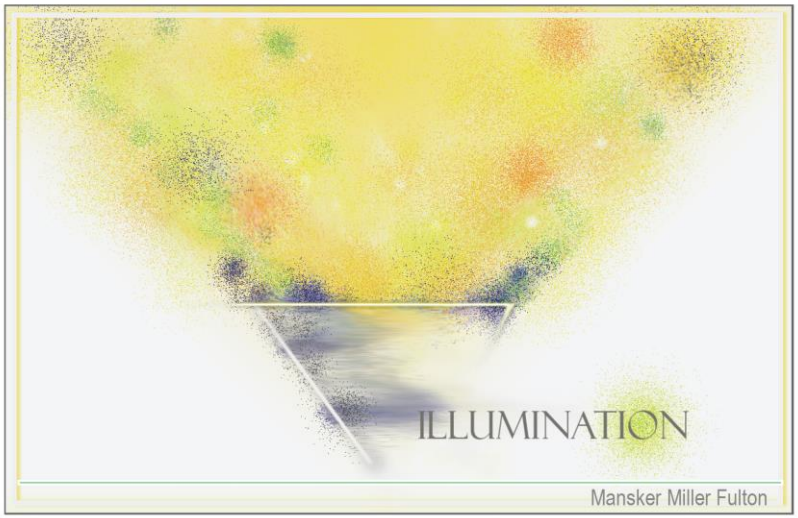
A flashlight allows for illumination and safe guided travel through the unknown. Highlighted objects become magnified, examined and ultimately familiar.

Problem Statement

We have become increasingly removed from the way our food is grown, the resources that food production requires and the nutritional information needed for healthy lives. None of us would argue that food is not among the most important factors in any life, however far too many of us have lost a meaningful connection with our food.

Solution

We will connect the Montbello community and Green School's students and staff to the joys of great food. We will guide students by teaching agricultural techniques tailored to their environment, cooking classes that focus on nutrition and experimentation and finally by providing meals to as many as possible in a safe and lively place. Creating and illuminating these pathways will lead our kids and community back to each other and the wide world of food.



Mansker Miller Fulton

XQ Green School

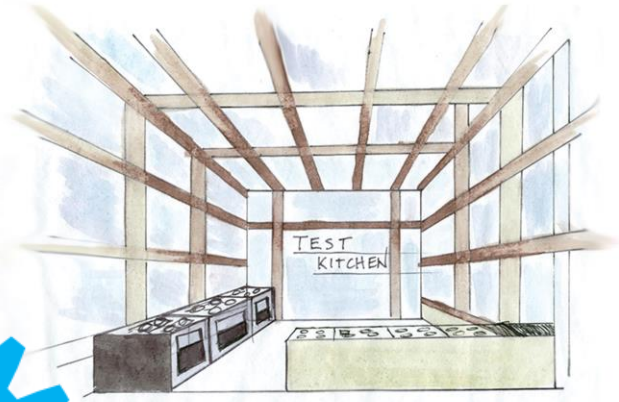
Inspiration for the Grubbery and the Bite

Mansker Miller Fulton

IDEATION.1

XQ Green School

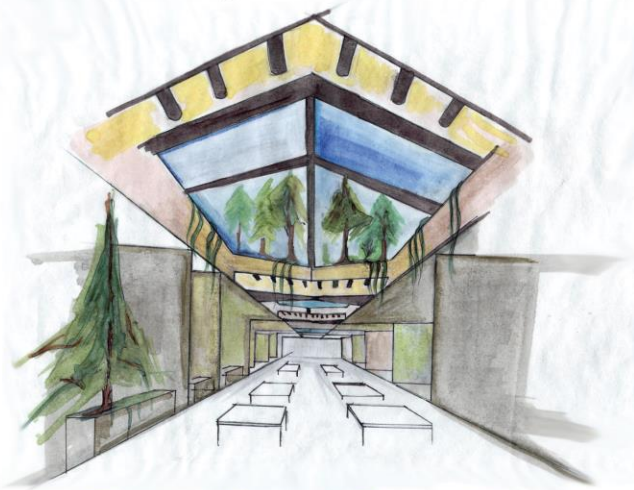
Ideation Sketches: Test Kitchen



Mansker Fulton Miller

XQ Green School

Ideation Sketches: Dining



Mansker Miller Fulton

IDEATION.2

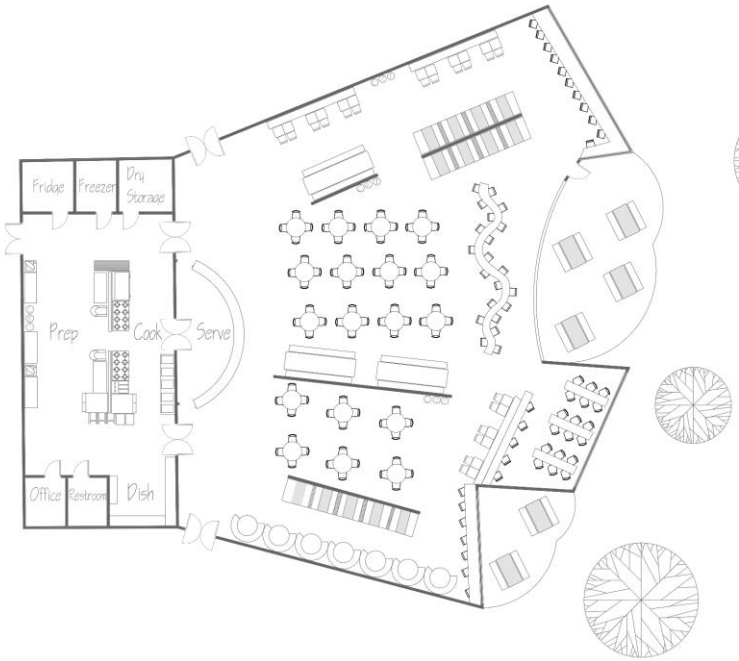
XQ Green School

The Grubbery: Renderings

Mansker Miller Fulton

XQ Green School

The Grubbery: Floorplan



Not to Scale

Mansker Miller Fulton

GRUBBERY.3

XQ Green School

Sustainable Features

Energy Recovery Filter System

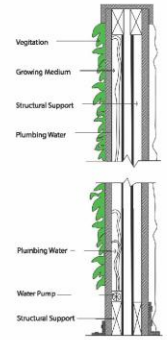
Greenheck's Energy Recovery System is designed for use over cooking equipment producing heat and grease laden effluent (Type 1 hood). The ERHS allows you to capture waste heat from your exhaust air-stream and per-heat your incoming cold water supply before it enters the hot water heater. The temperature differential also allows more grease to condense and be removed from the air-stream which leads to better capture and a reduction in hood and duct cleanings. (greenheck.com)

Commercial Composting

Richard Meier building particle-eating concrete

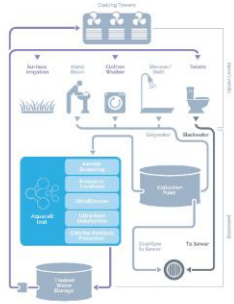
Several companies are developing smog-eating products that can be used in building facades, paint, plaster and paving materials. Extensive testing has determined that construction products containing titanium dioxide helps to destroy pollutants found in car exhaust and heating emmisoins. Another benefit of these matirais is that they essentially clean themselves, minimizing the need for maintenance.Titanium dioxide has photocatalytic properties: sunlight sets off a chemical reaction that accelerates natural oxidation and hleps to break down nitrogen oxides emitted in the burning of fossil fuels. (NYTimes.com)

Living Wall Plumbing Section



The benefits of having living walls indoors are numerous. Living walls add tremendous aesthetic value as living works of art. Indoor plants cool their environment by way of transpiration and increase indoor air quality and provide energy savings by helping to cool indoor spaces by 3-7 degrees C. They also mitigate glare and the urban heat island effect. Living walls act as acoustic barriers that dampen noise pollution and promote health and wellness. Studies have shown that even having a view of greenery increases workplace productivity. (greenovergrey.com)

LEED® Category	Credits and associated point(s) that a green wall helps to earn	
Sustainable Sites	Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan (1 point)	-
	Credit 5: Site Development: Protect or Restore Open Habitat (1 point)	+
	Credit 6: Stormwater Quantity Control (1 point)	O
	Credit 7.1: Heat Island Reduction: Non-Roof (1 point)	O
	Credit 8: Light Pollution Reduction (1 point)	-
Water Efficiency	Credit 3: Water Efficient Landscaping (1-4 points)	+
Energy & Atmosphere	Credit 1: Optimize Energy Efficiency Performance (1-10 points)	+
Materials & Resources	Credit 3: Sustainable Purchasing: Facility Alterations and Additions (1 point)	-
Indoor Environmental Quality	Credit 3.1-4: IAQ Best Management Practices: Reduce Particulates in Air Distribution (1 point)	+
	Credit 2.1: Occupant Comfort: Occupant Survey (1 point)	+
	Credit 3.4: Green Cleaning: Indoor Integrated Pest Management (1 point)	-
Innovation in Operations	Credit 1: Innovation in Operations (1-4 points)	+



Grey Water Collection System

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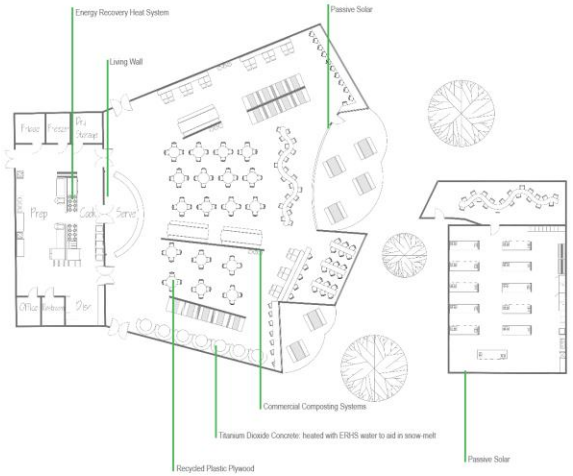
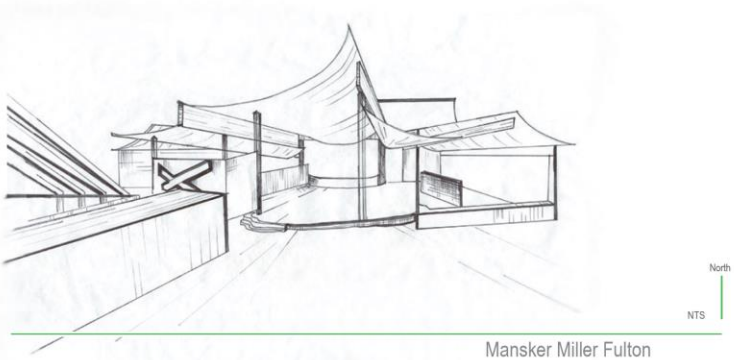
XQ Green School

The Grubbery: Sustainable Features and Roof Sketch



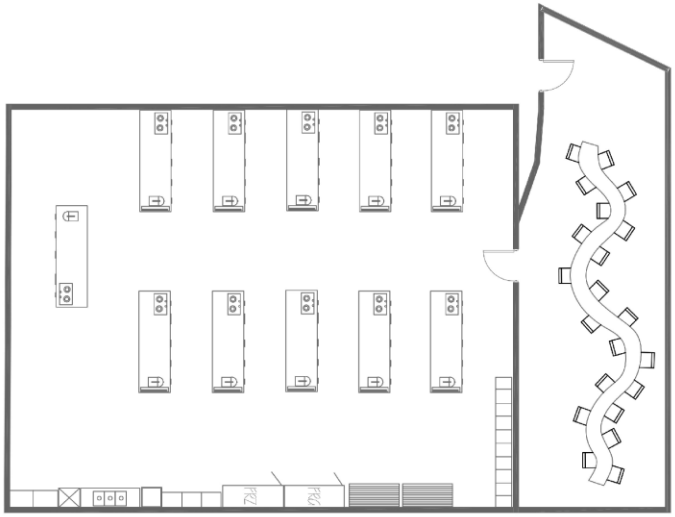


Mansker Miller Fulton

GRUBBERY.4

XQ Green School

The Bite: Floorplan



Not to Scale

Mansker Miller Fulton

XQ Green School

The Bite: Renderings

Mansker Miller Fulton

The BITE.5

XQ Green School

School Lunch

The myth of the value meal

The loss of a social family

The public health

The Hunger-Free Kids Act of 2010 attempts to address many of the child nutrition issues and the modern American diet. The legislation authorizes funding and sets policy for the USDA's core child nutrition programs and expanded food programs.

The policies have gradually been implemented and in 2014 have been in full effect with mixed results. Many schools, 47% of those polled, report that school lunch numbers are down significantly and that no school has yet met the updated nutrition standards, which include that 100% of the grains be whole grain rich, far lower sodium in food across the board and the Smart Snacks in Schools rule, which limits the calories, fat, sodium, and portion sizes for food and beverages sold in school vending machines and snack bars.

Researchers from Cornell and Bringham Young Universities published a study in *Public Health* and Nutrition showing that the mandate to serve a fruit and vegetable with each school meal results in a nearly 100% increase in waste with about $3.8 million worth of produce being thrown in the trash each day, or $684 million a year.

So what does this mean for XQ? Starting at school age is too late because studies show that we develop our food preferences in the first two years of our lives and the reality is that kids eat what their parents eat.

VS

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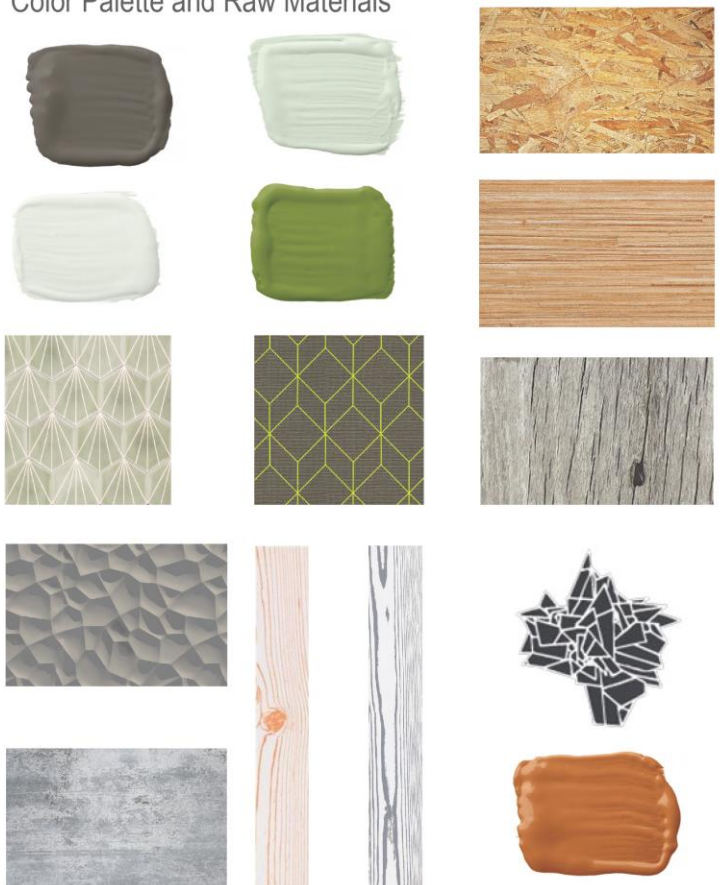
XQ Green School

Color Palette and Raw Materials



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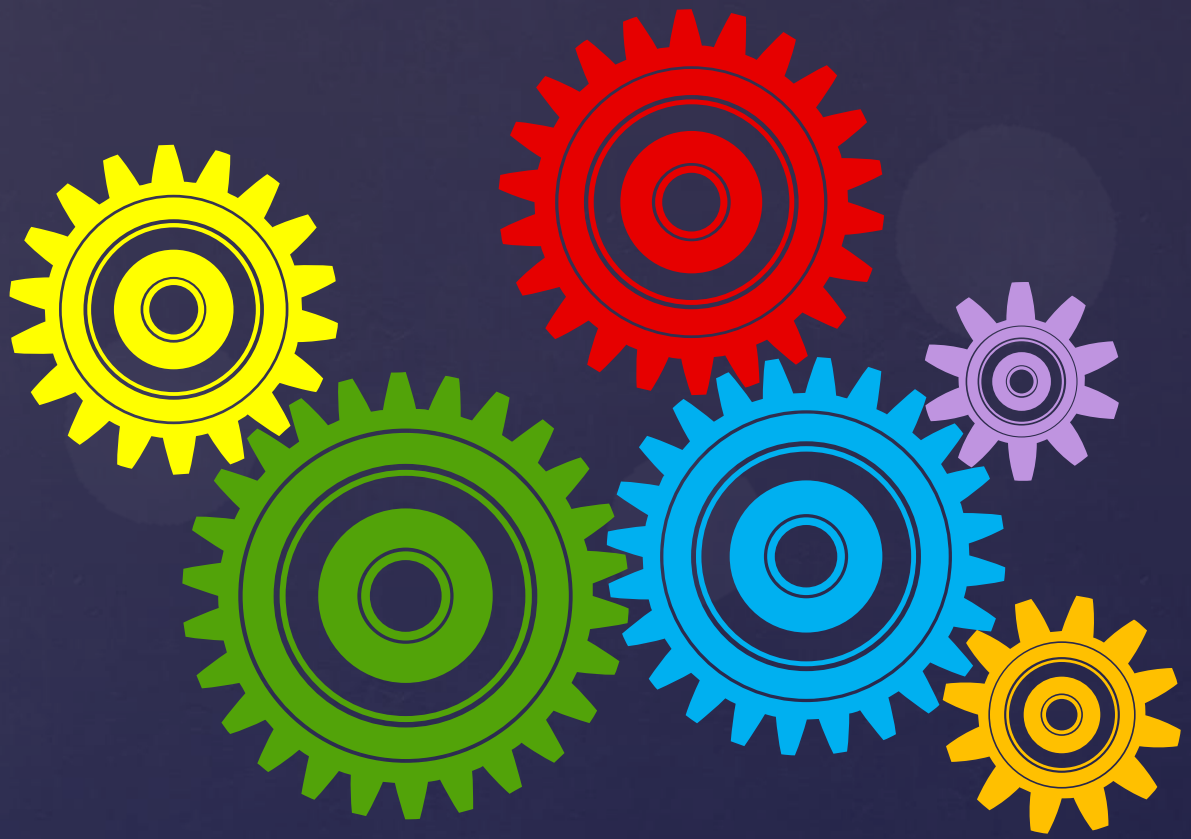
FOOD + MATERIALS.6

"A Collaborative Project for a School" YouTube:
https://youtu.be/3uZwRFkTVWI



Questions

Thank You

Colorado League of Charter Schools

Charrette Generously Funded with a CLCS: Phase 1 Planning Grant

The Best Way to Predict Your Future is to Create It!

For Additional Information

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303.520.1153

References:

- Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race and Ethnicity in Education, 8*(1), 69-91.