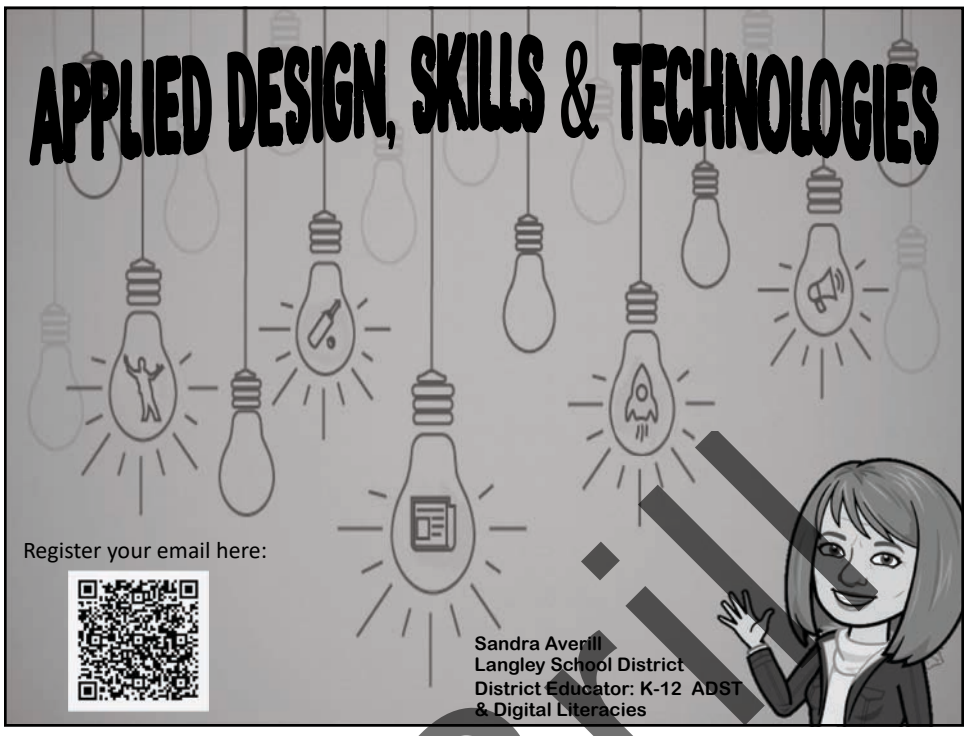


A3III

WHAT WE ARE LEARNING:
(OUR LEARNING INTENTIONS)

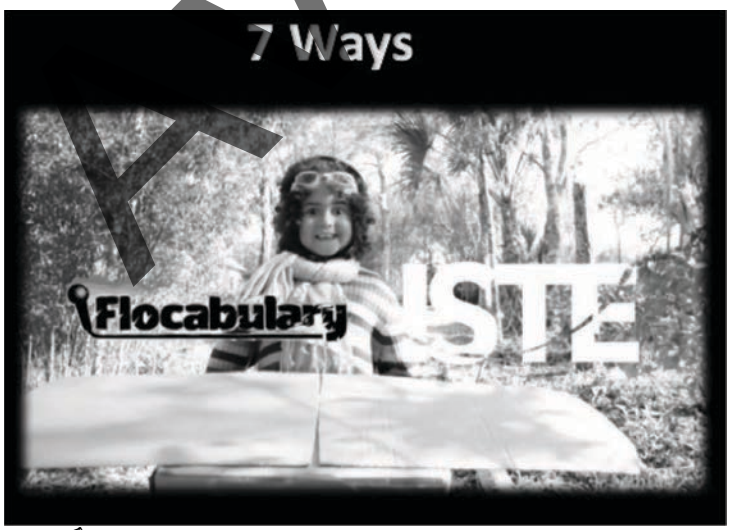
Overview of ADST K-12

1. Inspiration for the ADST curriculum
2. How the *Know, Can, Do* of the ADST curriculum evolves through the grade levels
3. The elements of *Design Thinking* & how *Maker* could fit into ADST
4. Important *conditions for learning: collaborative teams and formative assessment*

SUCCESS WILL LOOK LIKE:

- You will participate and engage in today's activities
- You will continue to explore how you can embrace ADST's Know-Can-Do

Draft



ISTE's Standards for Students

7 Ways

WHAT WE ARE LEARNING:

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Technology: Tools that can extend human capabilities

http://farm8.static.flickr.com/7324/10310176123_79de3a9760.jpg

(ADST)

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ADST BIG IDEAS

	K-3	4-5	6-8	9-10	11-12
APPLIED DESIGN	Designs grow out of natural curiosity.	Designs can be improved with prototyping & testing.	Design can be responsive to identified needs.	Social, ethical, & sustainability considerations impact design.	Products can be designed for lifecycle.
APPLIED SKILLS	Skills can be developed through play.	Skills are developed through practice, effort, & action.	Complex tasks require the acquisition of additional skills.	Complex tasks require the sequencing of skills.	Personal design interests require the evaluation & refinement of skills.
APPLIED TECHNOLOGIES	Technologies are tools that extend human capabilities.	The choice of technology & tools depends on the task.	Complex tasks may require multiple tools and technologies.	require different technologies & tools at different stages.	Tools & technologies can be adapted for specific purposes.

THINKING TO APPROACH A PROBLEM

SKILLS TO SOLVE A PROBLEM

TOOLS TO SOLVE A PROBLEM

TRADITIONAL (DIRECTED) THINKING	DESIGN (EMERGENT) THINKING
Planning of a flawless intellect	Enlightened trial & error
Avoid failure	Fail fast
Right answers	Right questions
Rigorous analysis	Rigorous testing & feedback
Presentations and meetings	Experiments & experiences
Telling	Showing
Laboratory	In the field
Subject expert	Process expert
Thinking and planning	Doing
If you build it, they will use it	If they inspire & input on it, they'll use it

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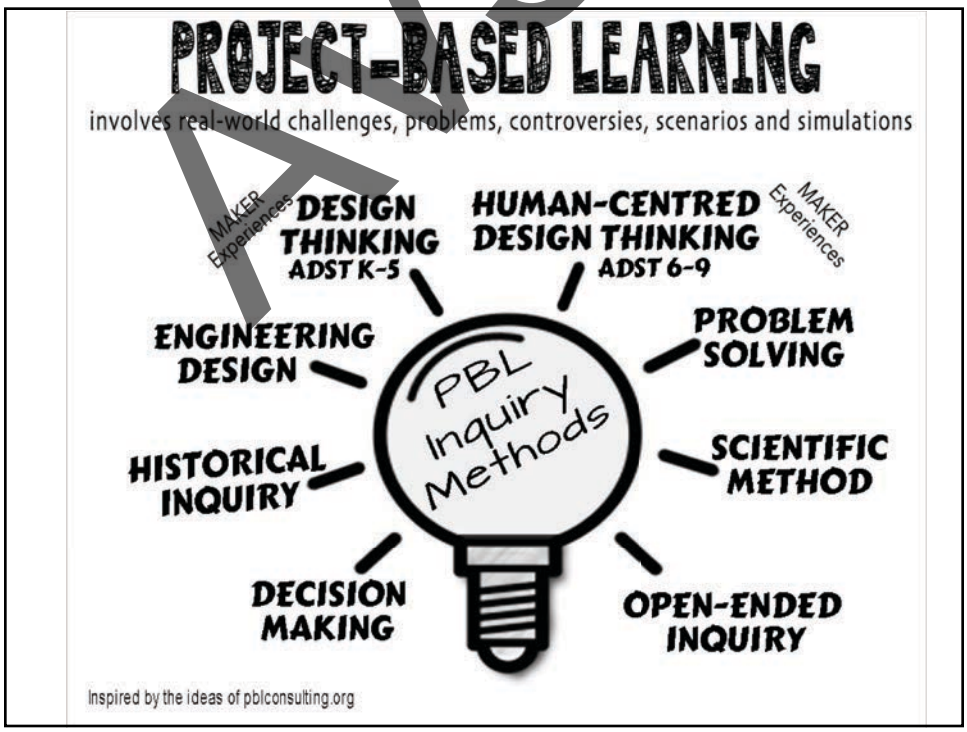
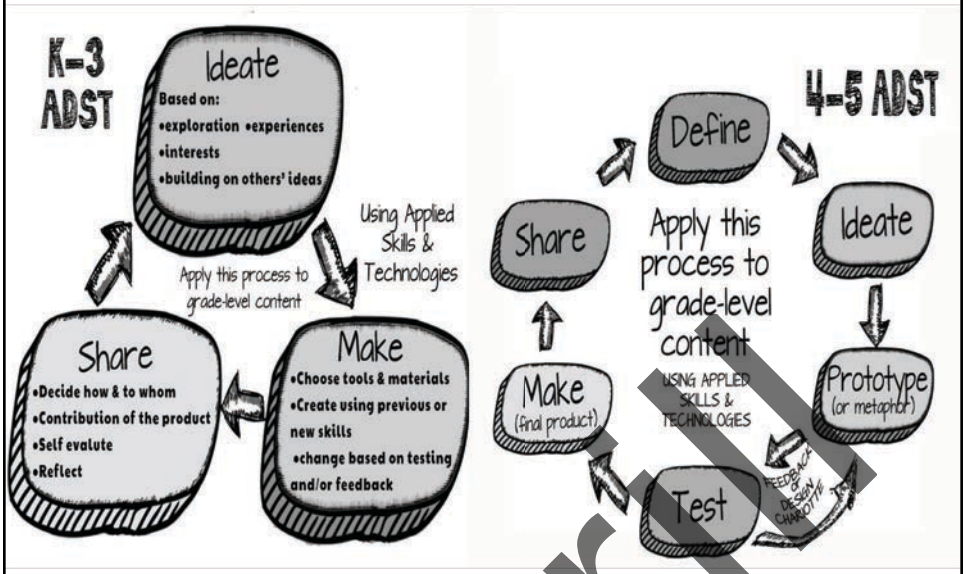


CURRICULAR COMPETENCIES



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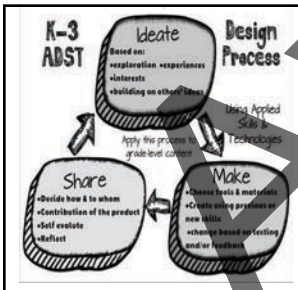
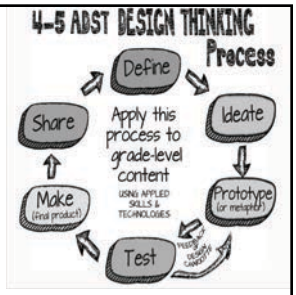
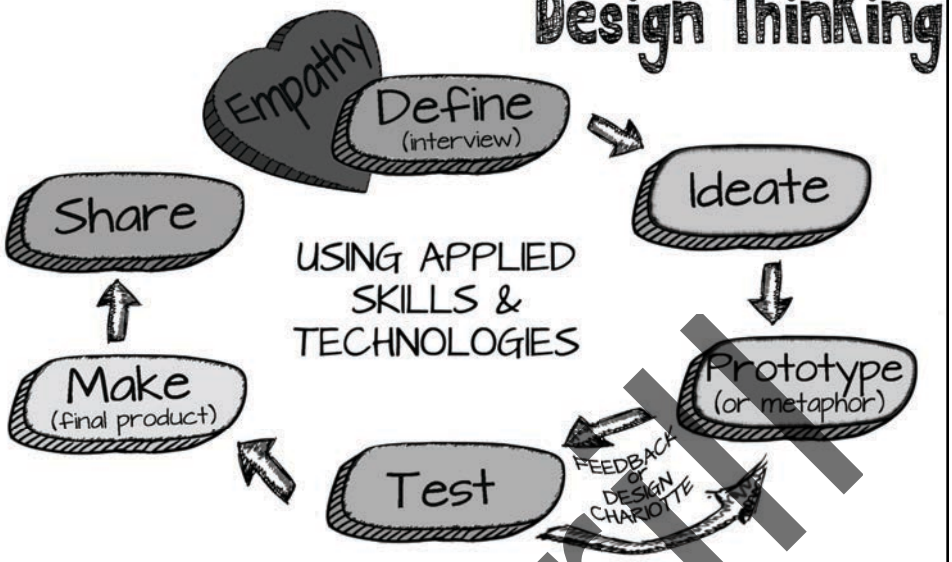


K-5 Design Challenge examples



- *"Create a musical instrument and use it to play a song."*
- *"Make a car that rolls exactly 20 feet and then stops."*
- *"Build the tallest structure you can from one sheet of newspaper."*
- *"Drop an egg from 3 meters without breaking it."*

6-12 ADST HUMAN-CENTRED Design Thinking



K-5 ADST CURRICULAR CONTENT

Av3rth

6–9 ADST CURRICULAR CONTENT

6–7	8	9
3 MODULES EACH YEAR	FULL YEAR COURSE OF 1+ MODULE	FULL YEAR COURSE OF 1+ MODULE
COMPUTATIONAL THINKING	COMPUTATIONAL THINKING	INFORMATION & COMMUNICATION TECHNOLOGIES
COMPUTERS & COMMUNICATION DEVICES	COMPUTERS & COMMUNICATION DEVICES	
DIGITAL LITERACY	DIGITAL LITERACY	
DRAFTING	DRAFTING	DRAFTING
ENTEPRENEURSHIP & MARKETING	ENTEPRENEURSHIP & MARKETING	ENTEPRENEURSHIP & MARKETING
FOOD STUDIES	FOOD STUDIES	FOOD STUDIES
MEDIA ARTS	MEDIA ARTS	MEDIA ARTS
METALWORK	METALWORK	METALWORK
POWER TECHNOLOGY	POWER TECHNOLOGY	POWER TECHNOLOGY
ROBOTICS	ROBOTICS	ELECTRONICS & ROBOTICS
TEXTILES	TEXTILES	TEXTILES
WOODWORK	WOODWORK	WOODWORK

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Concern – that we will take a traditional approach to a non-traditional curriculum!

3 MODULES EACH YEAR	FULL YEAR COURSE OF 1+ MODULE	FULL YEAR COURSE OF 1+ MODULE
COMPUTATIONAL THINKING	COMPUTATIONAL THINKING	INFORMATION & COMMUNICATION TECHNOLOGIES
COMPUTERS & COMMUNICATION DEVICES	COMPUTERS & COMMUNICATION DEVICES	
DIGITAL LITERACY	DIGITAL LITERACY	
DRAFTING	DRAFTING	DRAFTING
ENTEPRENEURSHIP & MARKETING	ENTEPRENEURSHIP & MARKETING	ENTEPRENEURSHIP & MARKETING
FOOD STUDIES	FOOD STUDIES	FOOD STUDIES
MEDIA ARTS	MEDIA ARTS	MEDIA ARTS
METALWORK	METALWORK	METALWORK
POWER TECHNOLOGY	POWER TECHNOLOGY	POWER TECHNOLOGY
ROBOTICS	ROBOTICS	ELECTRONICS & ROBOTICS
TEXTILES	TEXTILES	TEXTILES
WOODWORK	WOODWORK	WOODWORK

6–9 ADST CURRICULAR CONTENT

6–7	8	9
3 MODULES EACH YEAR	FULL YEAR COURSE OF 1+ MODULE	FULL YEAR COURSE OF 1+ MODULE

Digital Literacy:

- Internet safety
- digital self-image, relationships & communication
- creative credit and copyright
- personal media management
- search techniques
- personal learning networks

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10–12 ADST CURRICULAR CONTENT

BUSINESS EDUCATION

10	11	12
ENTREPRENEURSHIP & MARKETING	ACCOUNTING	ACCOUNTING
	MARKETING & PROMOTION	BUSINESS COMPUTER APPLICATIONS
	TOURISM	E-COMMERCE
		ECONOMICS
		ENTREPRENEURSHIP
		FINANCIAL ACCOUNTING
		TOURISM

HOME ECONOMICS AND CULINARY ARTS

10	11	12
CULINARY ARTS	CULINARY ARTS	CHILD DEVELOPMENT & CAREGIVING
FAMILY & SOCIETY	INTERPERSONAL & FAMILY RELATIONSHIPS	CULINARY ARTS
FOOD STUDIES	FOOD STUDIES	FASHION INDUSTRY
TEXTILES	TEXTILES	FOOD STUDIES
		HOUSING & LIVING ENVIRONMENTS
		SPECIALIZED STUDIES IN FOOD
		TEXTILES

INFORMATION AND COMMUNICATIONS TECHNOLOGY

10	11	12
COMPUTER STUDIES	COMPUTER INFORMATION SYSTEMS	COMPUTER INFORMATION SYSTEMS
MEDIA DESIGN	COMPUTER PROGRAMMING	CCOMPUTER PROGRAMMING
WEB DEVELOPMENT	DIGITAL COMMUNICATIONS	DIGITAL MEDIA DEVELOPMENT
	GRAPHIC PRODUCTION	GRAPHIC PRODUCTION
	MEDIA DESIGN	MEDIA DESIGN

TECHNOLOGY EDUCATION

10	11	12
DRAFTING	AUTOMOTIVE TECH	ART METAL & JEWELLERY
ELECTRONICS & ROBOTICS	DRAFTING	AUTOMOTIVE TECHNOLOGY
METALWORK	ELECTRONICS	DRAFTING
POWER TECHNOLOGY	ENGINEERING	ELECTRONICS
TECHNOLOGY EXPLORATIONS	METALWORK	ENGINE & DRIVETRAIN
WOODWORK	ROBOTICS	ENGINEERING
	WOODWORK	FURNITURE & CABINETRY
		INDUSTRIAL CODING & DESIGN
		MACHINING & WELDING
		MECHATRONICS
		METALWORK
		REMOTELY OPERATED VEHICLES AND DRONES
		ROBOTICS
		WOODWORK

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Design Thinking:

Substitue something
Combine it with something
Adapt something to it
Modify or magnify it
Put it to some other use
Eliminate something
Reserve or rearrange it

Inventor

Idea of
dental floss

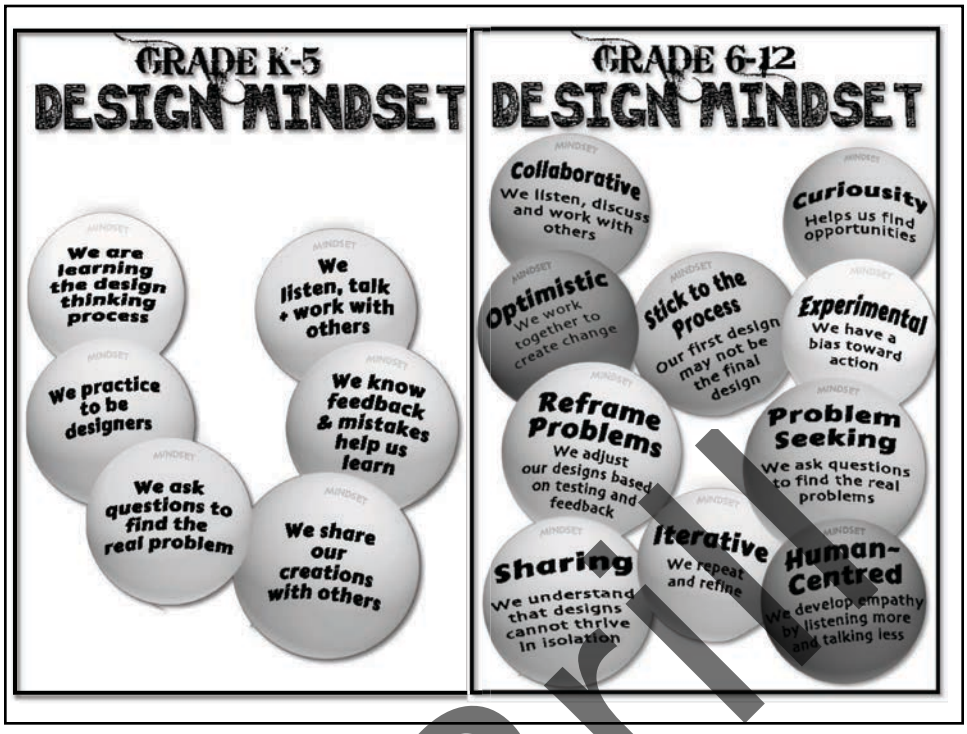
Av3rix

Inventor

Idea of
dental floss

Designer

Person/Team
who created the
dispenser


GRADE K-5
DESIGN MINDSET
We are learning the design thinking process
We practice to be designers
We ask questions to find the real problem
We listen, talk + work with others
We know feedback & mistakes help us learn
We share our creations with others
GRADE 6-12
DESIGN MINDSET
Collaborative
We listen, discuss and work with others
Curiousity
Helps us find opportunities
Optimistic
We work together to create change
Stick to the Process
Our first design may not be the final design
Experimental
We have a bias toward action
Reframe Problems
We adjust our designs based on testing and feedback
Problem Seeking
We ask questions to find the real problems
Sharing
We understand that designs cannot thrive in isolation
Iterative
We repeat and refine
Human-Centred
We develop empathy by listening more and talking less

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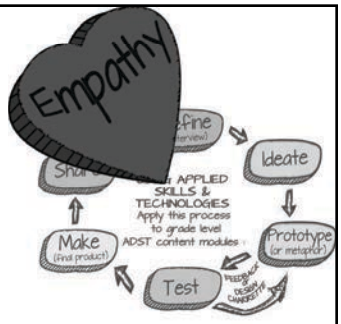
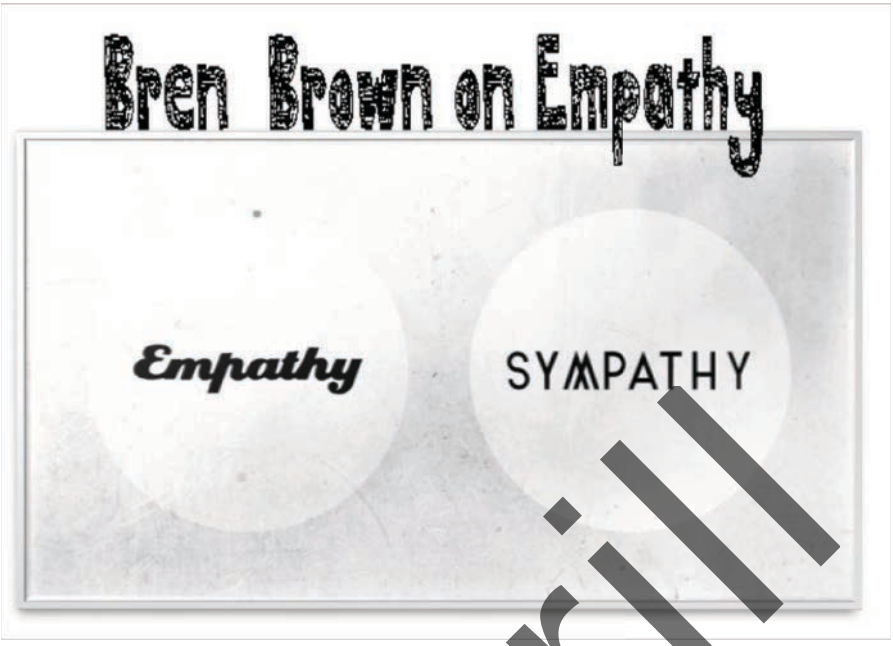
HUMAN-CENTRED Design Thinking



= focussing on the present


Bren Brown on Empathy
Empathy
SYMPATHY

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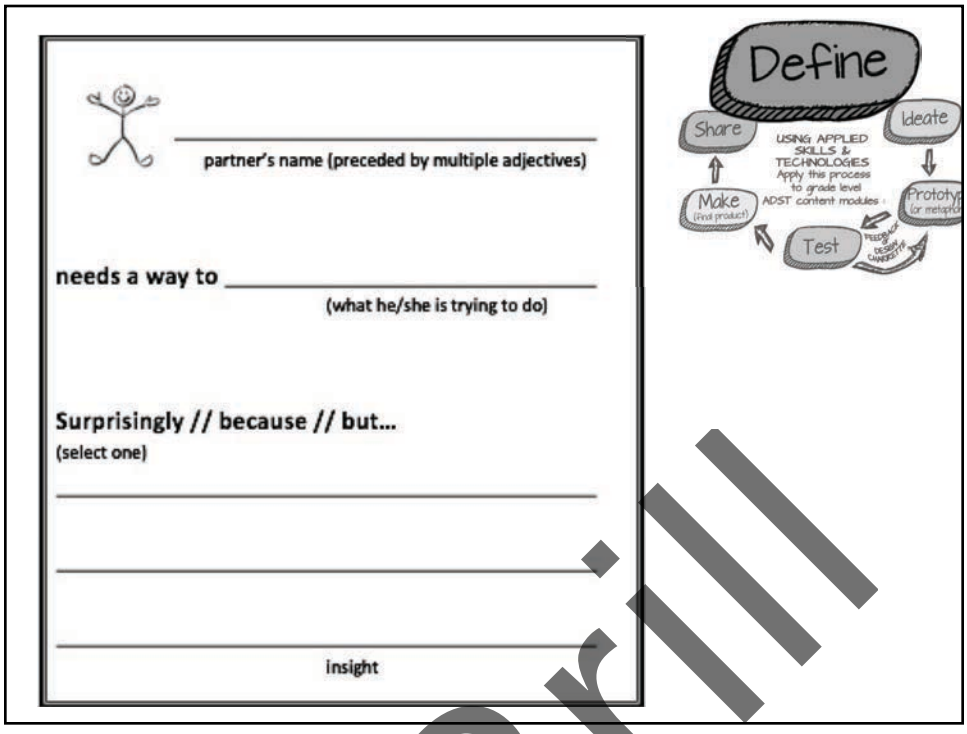
Bren Brown on Empathy
Empathy
SYMPATHY



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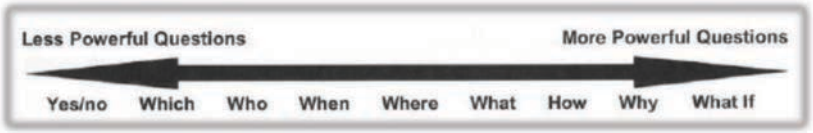
INTERVIEWING FOR UNDERSTANDING

- 1-2 team members ask the questions, listening for understanding
  - Aboriginal perspective of remembering: listen with 2 ears, 2 eyes, 1 brain, 1 heart
- 1 person records all the answers

- Uncover the needs someone has
- Never under estimate the power of why
- Have the questions ready before hand
- Build questions based on the answers



- Stand!
- This is not a LONG discussion
- Rapid ideas
- Upbeat music,
- different coloured pens

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Productive Brainstorming Needs GUIDELINES!

PRIME YOUR BRAIN

exercise your brain to get it ready

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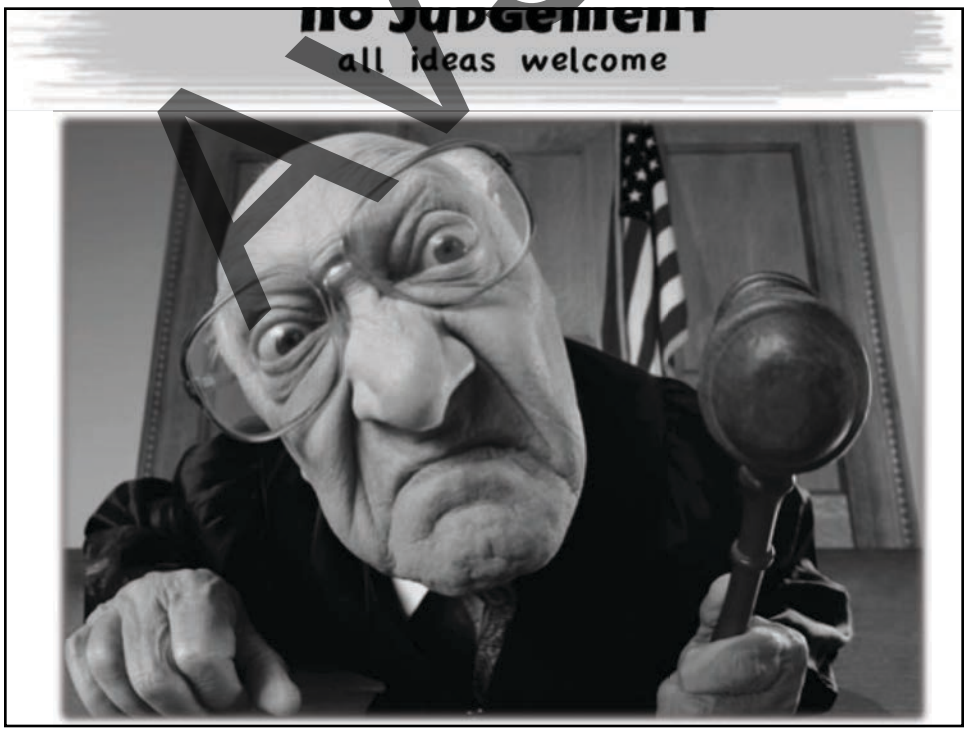
CREATIVITY AGILITY

GREAT
EALS ON
AINING
ODELS!
BEFORE
GONE!
Hi everybody, headline goes here please
Subhead is next
BY LORI A. MAYNE
TRANSCONTINENTAL MEDIA
SUMMERSIDE — People can now dis-
cover more about the
can
wa
ir
REVEL
eye,
dead
form
into
dea
lan
su
HEADLINE
simple & direct- no details


all ideas welcome

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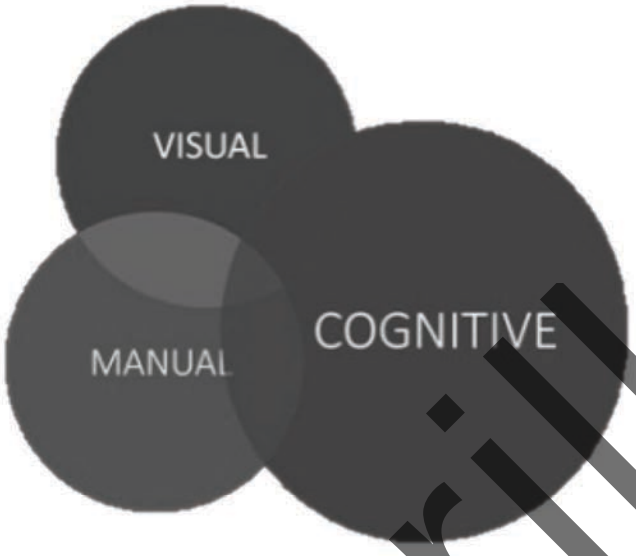
MASTER DISTRACTIONS
be creative but stay on topic



WACKY IDEAS
to spark the imagination

"If at first an idea doesn't sound absurd, then there's no hope for it" Albert Einstein

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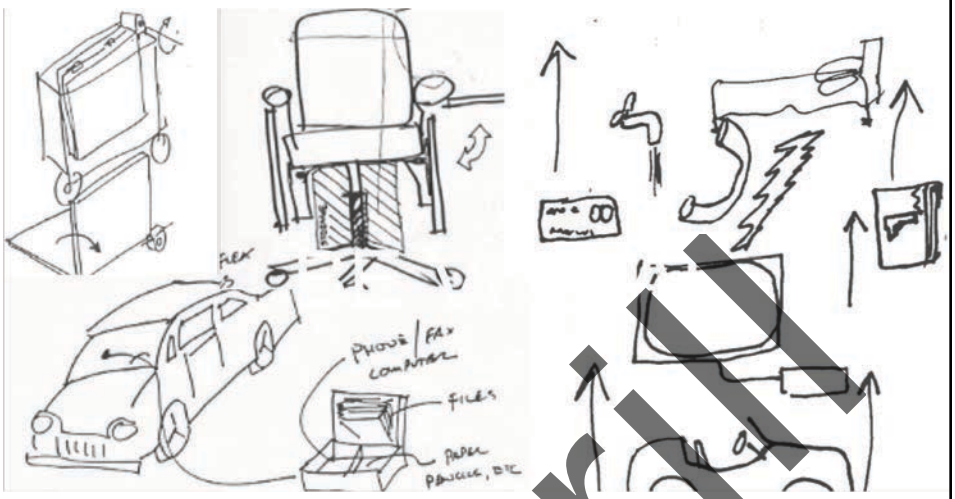
ONLY ONE
conversation at a time

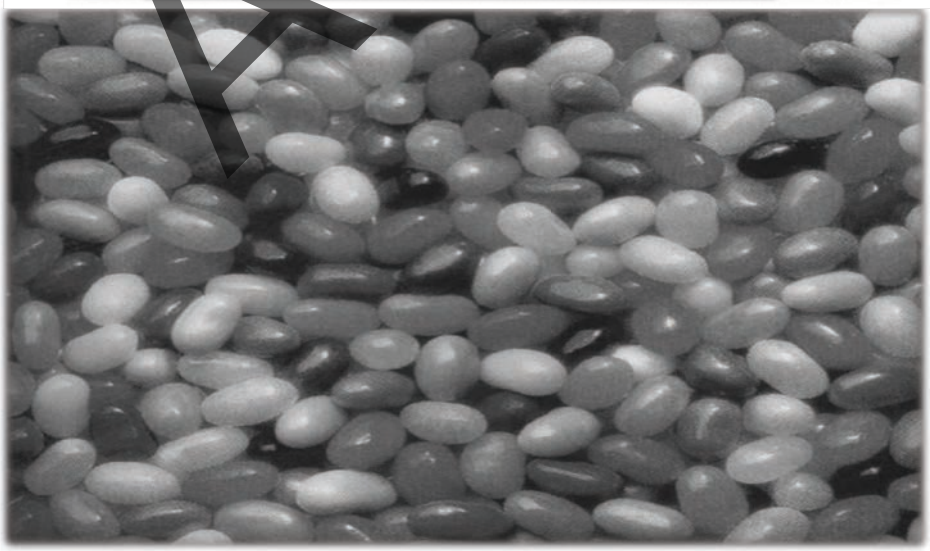
YES, AND...
build on the ideas of others

Av3rit

HIEROGLYPHICS
draw symbols & images with text



GAZILLION
create as many ideas as possible



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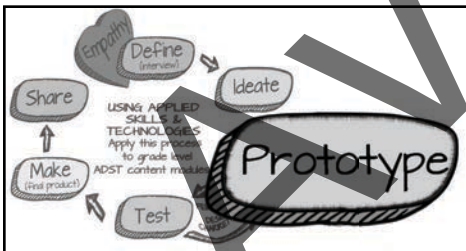
INDIVIDUAL BRAINSTORMING

Ideate



- Start Building
- Don't spend too long on one prototype
- ID a variable
- Build with the user in mind

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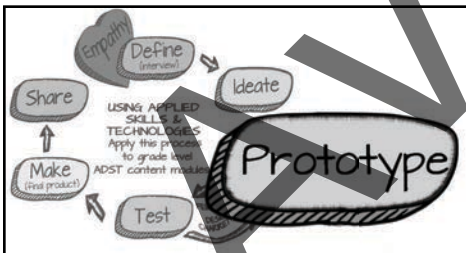

ROLE OF MAKERSPACE

AV3rtI

MAKER THINKING

- Builds important fluency around Design Thinking helping to see designs in a different way
- A Constructivist approach
- A result of the DIY (Do It Yourself) and DIWO (Do It With Others) movements
- May involve *tinkering*, and *thinkering*
- Sessions may, or may not, involve:
  - all aspects of the design process
  - a multidisciplinary approach

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Textiles

- range of *uses* of textiles

construction (e.g., sails at Canada Place), automotive, apparel, function (e.g., fire blanket), ceremonial (e.g., regalia)

Textiles

- range of *uses* of textiles
- variety of textile *materials*

for example, leather, cedar, wool, cotton, felt, embroidery thread, yarn, grasses and reeds, pine needles, sinew, plastic, used items and fabrics (e.g., food wrappers, old clothing)

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Textiles

- range of *uses* of textiles
- variety of textile *materials*
- *hand construction techniques* for producing and/or repairing textile items

for example, hand sewing, knitting (needles, arm, spool), crocheting, weaving, darning, up-cycling (e.g., turning an underused item into something else), embellishing existing items

Textiles

- range of *uses* of textiles
- variety of textile *materials*
- *hand construction techniques* for producing and/or repairing textile items
- consumer concerns that influence textile choices, including availability, cost, function (e.g., waterproof), and textile care

Prototype

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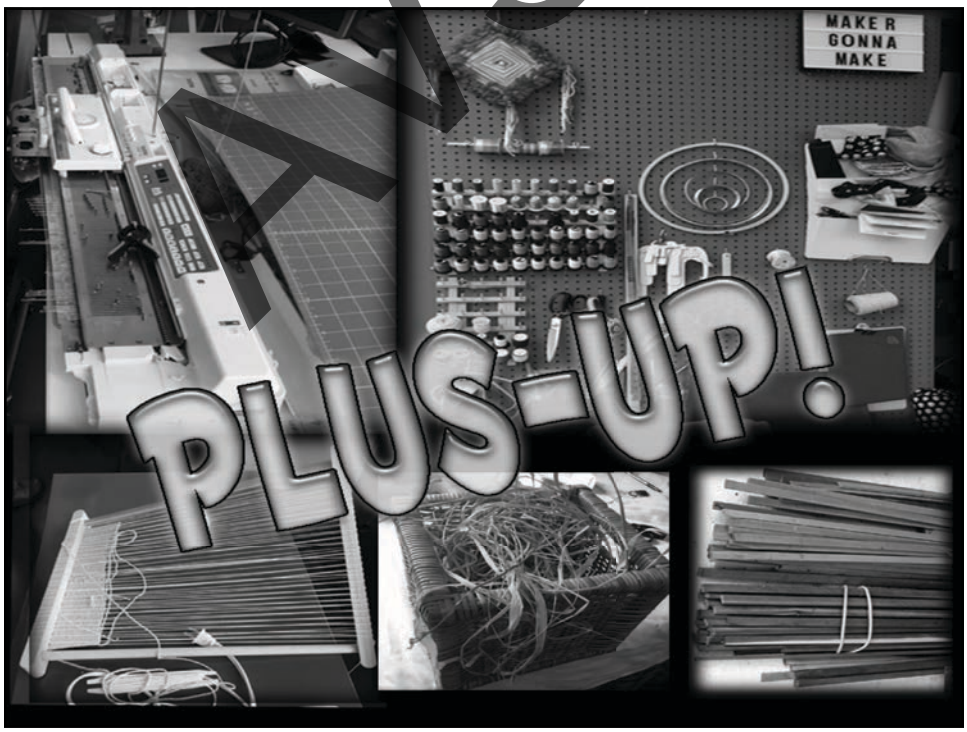
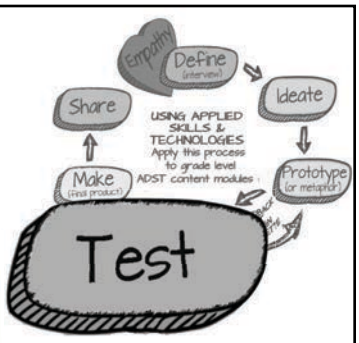


FEEDBACK



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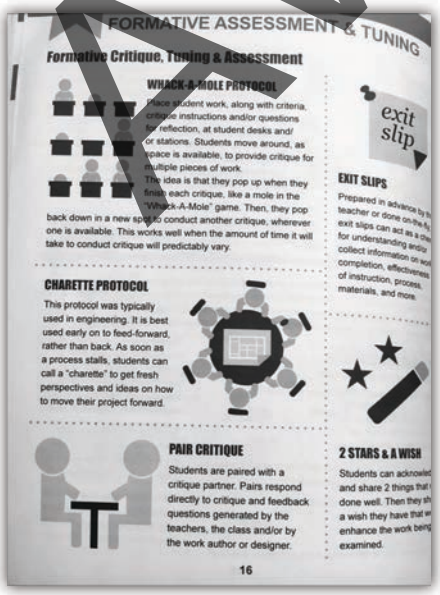
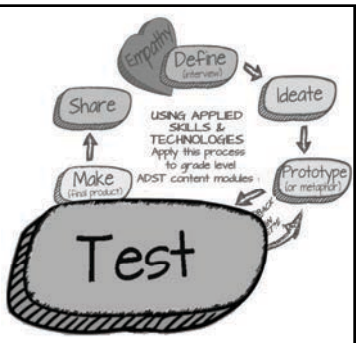
FEEDBACK





No 'U' in feedback

1,2,3
Celebrate
Mistakes!

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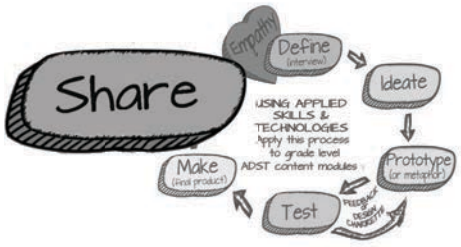
Empathy
Define
Ideate
Share
USING APPLIED SKILLS & TECHNOLOGIES
Make
(final product)
Test



- Presentations
- Skype
- Celebrations
- iTunesU
- …..

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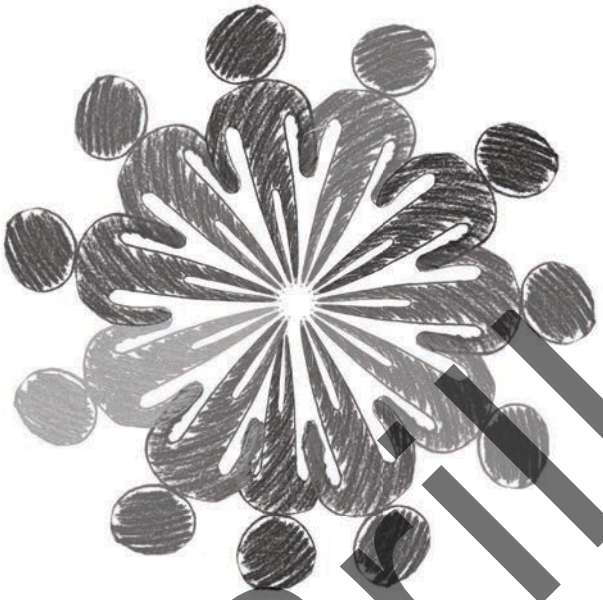
Collaborative Teams



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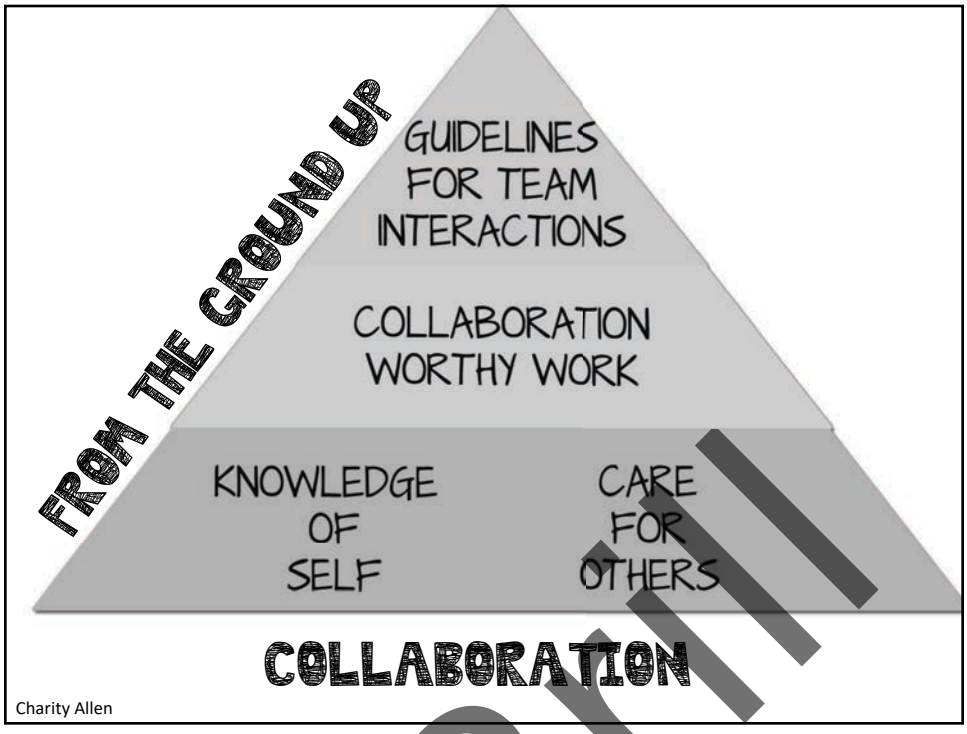
"Students are working in teams during this project, so that's collaboration"



Simplified Compass

1. **North: (Doing) "Let's get going"**
   - Likes to see things get done.
   - Plunge in and figure it out as you go.
2. **South: (Caring) "Let's get everyone involved"**
   - Likes to know that everyone's ideas have been taken into account and that all opinions are heard before acting.
   - Cares about the feelings / collaboration of the group.
3. **East: (Speculating) "I want to see the whole picture"**
   - Likes to look at the big picture and all the possibilities before taking action.
   - Takes time to process before speaking
4. **West: (Details) "I need to know the details"**
   - Likes to know the who, what, when, where, and why before acting
   - Details are very important

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Common Team Roles

TEAM LEADER	RESEARCH LEAD	ORGANIZATIONAL LEAD
• Establishes and runs team meetings • Sets and monitors goals & agreements and redirects team, as needed • Delegates tasks and divides work, as needed • Mediates conflict between team members • Encourager	• Goes outside of provided materials to gather and share useful information. • Focuses on "supporting on the sidelines" • Helps team overcome obstacles and roadblocks. • Collects, maintains and uses the Team Need to Know List to drive work	• Keeps time during activities and phases of design • Maintains a schedules and tracks progress toward goals and milestones • Keeps track of materials • Organizes and maintains team documents
Key Trait: Relationship-oriented	*Key Trait: Resourceful*	*Key Trait: Detail-oriented*
DESIGN LEAD	**ARCHIVIST**	**CURATOR**
• Directs team to use the design process. • Tracks team's use of each phase of design • Gathers team perspectives, makes key design decisions	• Archives team's work in progress, drafts and prototypes • Takes photos and videos of work in progress • Captures quotes, moments & process	• Focuses on how work will be displayed at the end • Pays attention to detail without losing sight of the big picture • Collaborates with other curators to ensure continuity of work curating at the end • Consults with team on during project
Key Trait: Process-oriented	*Key Trait: Reflective*	*Key Trait: Visionary*

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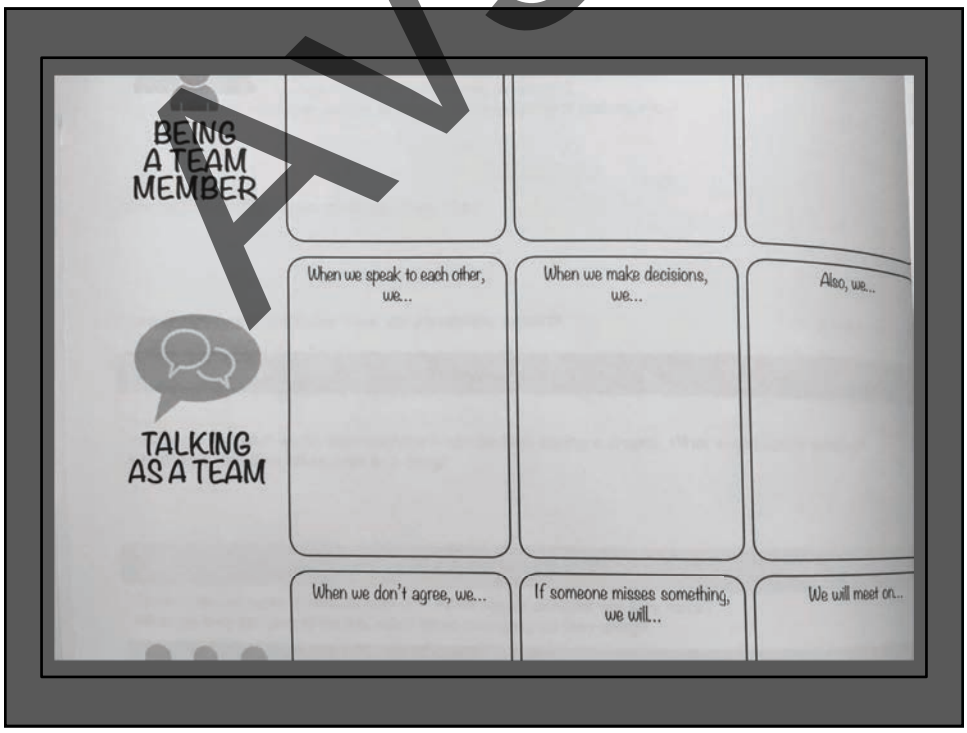
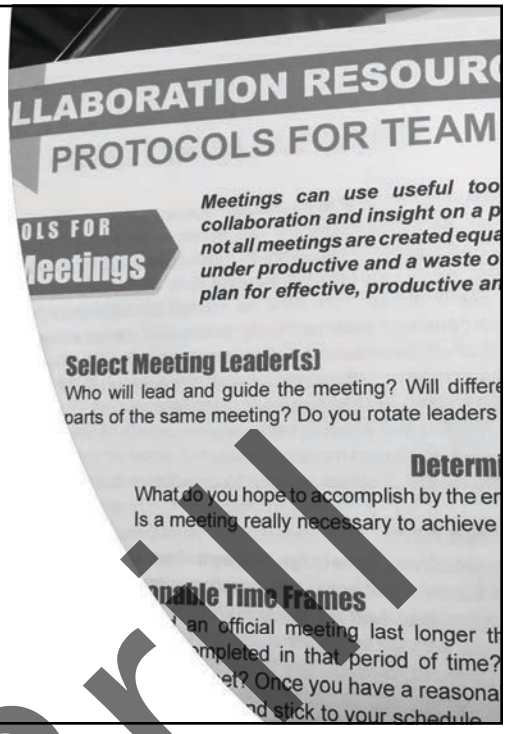


PROTOCOLS FOR TEAM MEETINGS



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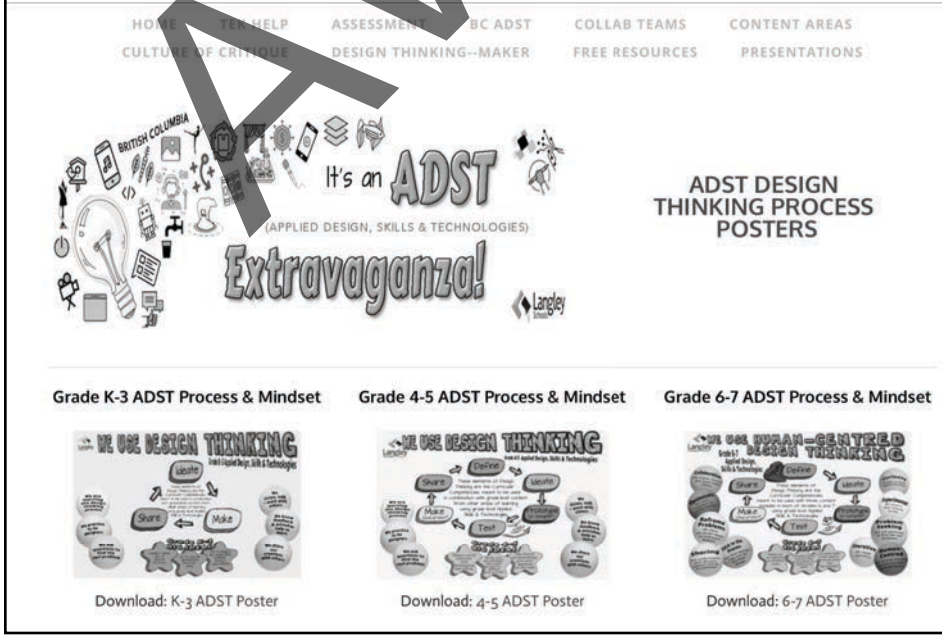

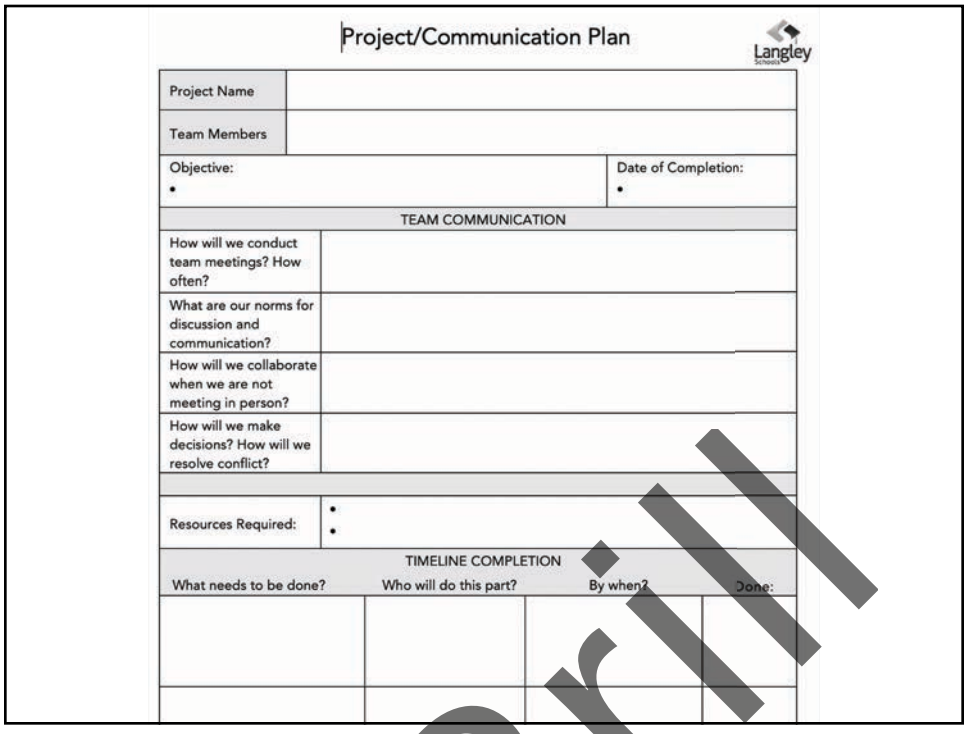

Project/Communication Plan

Langley Schools

Project Name	
Team Members	
Objective: •	Date of Completion: •

TEAM COMMUNICATION	
How will we conduct team meetings? How often?	
What are our norms for discussion and communication?	
How will we collaborate when we are not meeting in person?	
How will we make decisions? How will we resolve conflict?	
Resources Required:	• •

TIMELINE COMPLETION			
What needs to be done?	Who will do this part?	By when?	Done:

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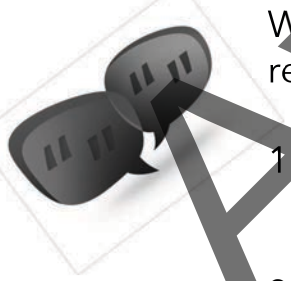

With a shoulder partner, discuss in reference to the work you do:

1. How you build collaborative teams when working with teachers? With students?
2. What tools you use when building collaborative teams?

One person from each shoulder partner capture the discussion in Teams:
1. Staff Meeting Discussions Channel Conversations
2. Responding to the appropriate thread starter by Sandra

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