



Learning For A New World

Innovative Design-Build Enrichment For Creatively Gifted
and All Learners

Introducing the Panel



Ryan Gerber

Parent, Designer,
Founder



Sarah Shuster-Tucker

Studio Managing
Director



John Stipek

Principal



Maureen Goodwin

Assistant Principal,
Teacher



Dr. Sylvia Rimm

Studio Advisor

The Studio Model

Integrating the Studio into the School

**Benefits to
Gifted Learners**

Not with us today



Marnie Louis, Studio Coordinator

provides curriculum design and project facilitation. She was not able to join us today, but has contributed significantly to our symposium content.



Paul Krajniak, Advisor to the Studio

is a Scenographer, Exhibit Strategist, Experience Developer, Educational Utopian Educator, and the retired Executive Director of Discovery World Science and Technology Center in Milwaukee, Wisconsin.

“ Many schools have club rooms and places to extend learning, but **schools will win students with a space to learn and practice design and build; indeed, a space that is about transformation—**transformation of students, transformation of educational experiences, transformation of the world—**because design is about transformation.** ”

Background and Origin

RGI Creative business owner

Designer & Communicator



Background and Origin

Parent at Saint Joseph Parish School

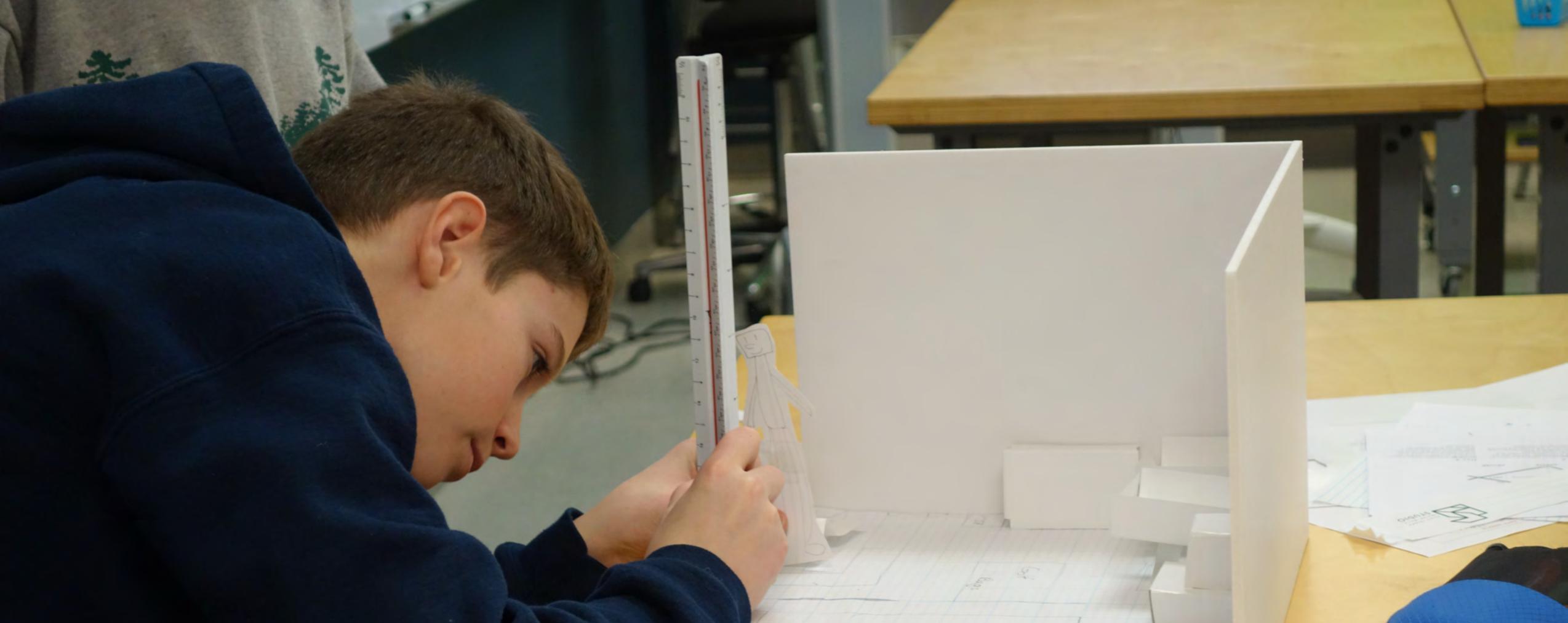




Giving Back :

Foster creativity in all students and create new opportunities for them to learn.

Grade 3 | Presenting invention prototypes
in front of the green screen



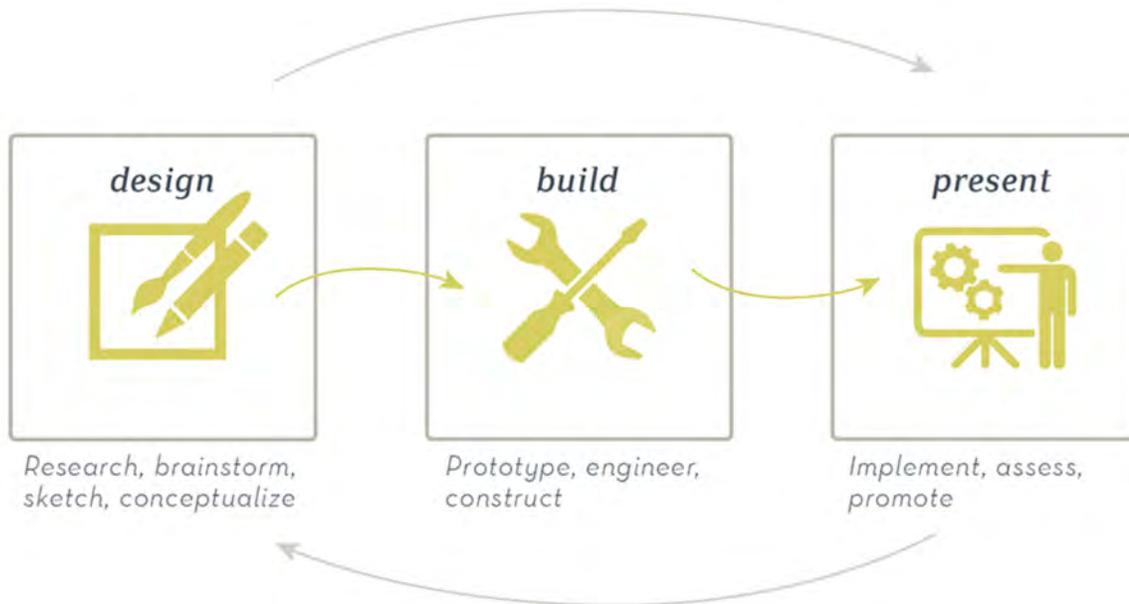
Giving Back:

Teach **skills to make students' ideas tangible** and **confidently communicate their ideas** to their fellow students, parents and families.

Grade 7 | Designing and building prototypes of personal studios, to scale

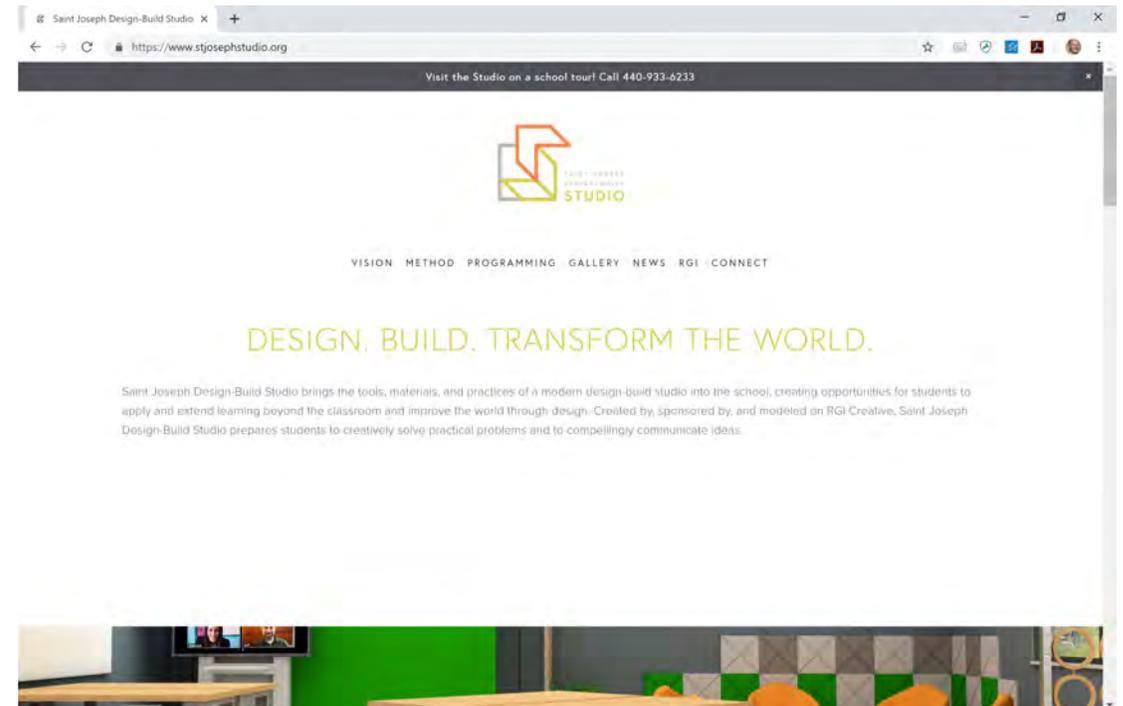
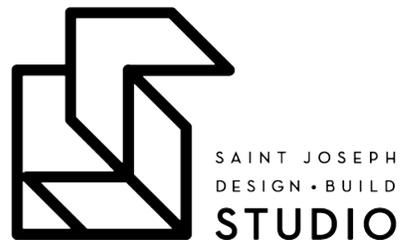
New World, New Model

A space that doesn't feel like school.
Designed by designers, with students' input.
A fresh environment for fresh thinking.



New World, New Model

A brand that feels like the real world, and aspirational for kids—cool, creative, modern. A fresh look and feel in the school.





The Learning Model

Sarah Shuster-Tucker

Studio Managing Director

New World, New Model

Curriculum aligned with learning standards, based on the processes and practices of RGI Creative, a commercial design-build firm

- Studio process → **rigorous creativity**
- Committed to **practical** design-build projects, grounded in the real world, and personal
- High level of **collaboration** with teachers
- **Not** a “Makerspace” – but making happens here
- **Not** a “STEAM lab” – but STEAM happens here



Our Coordinator

With a diverse professional and personal background that includes ***special education, design, entrepreneurship***, and being a ***parent*** of young children.



Marnie Louis, Saint Joseph Studio Coordinator

The Studio Curriculum =

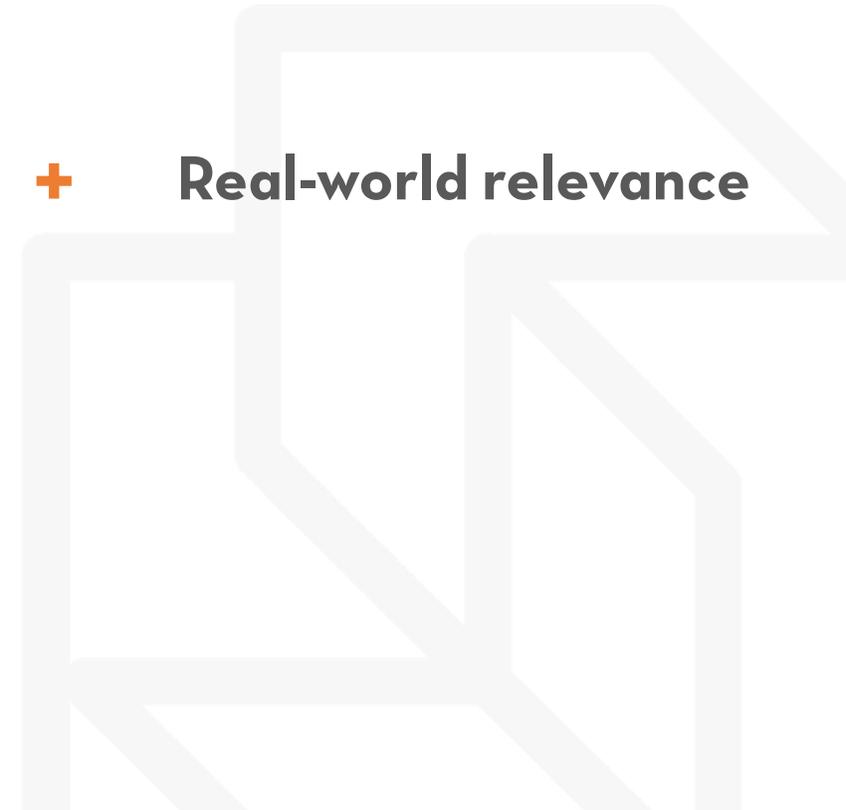
**Learning Standards
&
School Curriculum**

x

Design-Build Process

+

Real-world relevance



Designing Studio Projects

1. Collaboration with Teachers

- Teacher and Coordinator discuss learning content to be targeted
- Project is designed to be cross-curricular, incorporating **ELA, Math, Science, and/or Social Studies.**

2. Project Planning

- Coordinator develops a **detailed plan**, including schedule, resources, learning objectives, methods, and materials
- Teacher and coordinator review plan
- Teacher approves plan, with any necessary changes
- Coordinator **prepares materials** and Studio

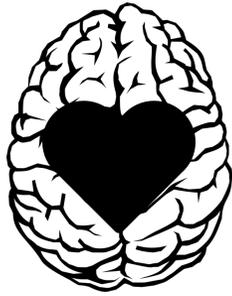
3. Additional projects during **recess** are developed by the coordinator, **leveled** by primary, intermediate, and middle school, and designed around student interests or other relevant themes. In 2020, we will also introduce a **student suggestion box** for student-initiated Studio projects.

The Design-Build Process

Guides project design. All projects incorporate all or some of these steps.



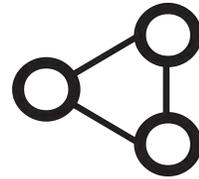
1.
Research



2.
Brainstorm
&
Empathize



3.
Conceptualize
&
Sketch



4.
Prototype



5.
Build



6.
Transform
&
Present

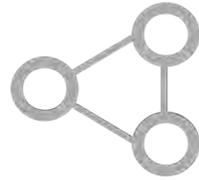


7.
Assess
&
Reflect

Or, more simply...



Design



Build



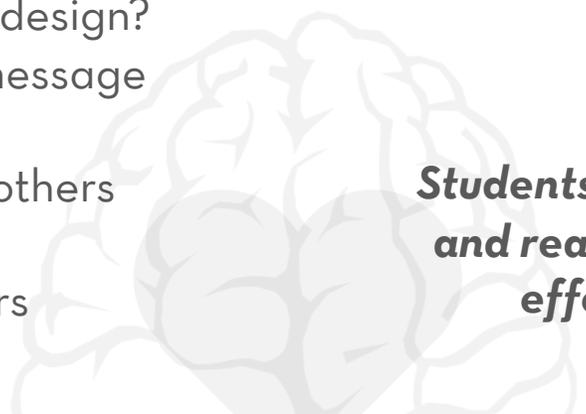
Present

Step 1: Research

- Becoming **content experts**
- Researching individually, in groups, or as a class
- **Interactive methods**, including
 - Fact scavenger hunt
 - Games
 - Peer, family, and expert interviews
 - Expert visits and presentations
 - Collaborative research between grades
 - Online research
- **Developmentally appropriate**

Step 2: Brainstorm & Empathize

- Brainstorm ideas, focus on generating many ideas - ***divergent thinking***
- Focus on anticipating user/audience needs - ***empathy***
- Explore the notion that design can improve lives - ***mission***
- ***Ask questions***, such as...
 - What colors will make an impactful and eye-catching design?
 - What fonts would be best used to communicate the message clearly and effectively?
 - How can we design a tool or space to accommodate others physical needs?
 - After we design, how can we present to educate others about our findings?



***Students see other perspectives
and realize that their ideas can
effect positive changes for
others and the world***

Step 3: Conceptualize & Sketch

- Focus on narrowing down to the most effective ideas - **convergent thinking**
- Sketch the selected concept(s)
- Refine **sketches** into a presentation format, when time permits
- Sketches become the **blueprint for next steps**



Step 4: Prototype

- Create a ***preliminary model***. Depending on the project, this may be the final step.
- Students learn
 - Prototyping allows you to ***test*** out engineering methods and ***identify problems*** before the final build
 - Prototype may not go to plan, and that's ok because it shows us how to ***adjust course***
 - ***Tenacity and resilience***



Step 5: Build & Engineer

- Build using novel, practical **materials**. Some materials include cardboard, wood, foam core, fabric, hot glue guns, duct tape, hammers, rulers, and hand crank drills
- Some projects come **partially pre-built** at RGI
- Students learn and practice
 - Math and physical science
 - Communication, safety awareness, self-discipline, and responsibility.
 - Tenacity and resilience



Building engages the visual, tactile, aural, and even olfactory senses. Building allows for sensory input and kinetic outlet, building can be a very fulfilling activity and an important opportunity for achievement.

Step 6: Transform & Present

- **Learning to present ideas in modern, real-world formats** is a primary goal of the Studio
- Transformation means **promoting, celebrating, and selling** creativity so that others can benefit from it
- Students present **professional** quality products; goal is to take pride and put in the practice to produce a polished presentation
- Some formats include:
 - **Zoom or greenscreen**, remotely presented to online audience
 - **Filmed** presentations displayed on **public screens**, such as in school hallway
 - **Museum-style** exhibit presentation; students becomes the docents

Step 7: Assess & Reflect

- Following each project, the **students take time to assess the impact of their design**. Depending on the grade level, we might **ask questions and reflect** on the following:
 - **What impact** has my design made on people and how could it be improved?
 - **Did I achieve** my goal?
 - **Did I teach** the audience something new?
 - **Did I learn** something new that I can use again?
 - **How do I feel** about what I created in the Studio?
 - **Was I able to make a difference** in some way?
 - Were there any **unexpected detours** in my process?
What can I learn from that?

Examples: Two Studio Projects from 2018-19

All projects start with Ohio State Learning Standards

Kindergarten Courtyard Museum of Natural History: Science/ELA

LIFE SCIENCE (LS) Topic: Physical and Behavioral Traits of Living Things: This topic focuses on observing, exploring, describing and comparing living things in Ohio.

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts that name what is being written about and supply some information about the topic.

Grade 7 Studio Designers: Mathematics/ELA (Speaking and Listening Standards)

7.G.1 Solve problems involving similar figures with right triangles, other triangles, and special quadrilaterals. **a.)** Compute actual lengths and areas from a scale drawing and reproduce a scale drawing at a different scale. **b.)** Represent proportional relationships within and between similar figures.

SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

EXAMPLE 1

Kindergarten Courtyard Museum of Natural History

Design-Build Learning Process



KINDERGARTEN COURTYARD MUSEUM

Step 1: Research



The students focused on animals they might see in Northeast Ohio. They selected one of eight animals to research by going on **a scavenger hunt to solve the animal puzzle.**



They **learned more about that animal with the assistance of older student helpers** who read them facts about the animal's physical description, habitat, and eating habits.

Step 2: Brainstorm & Empathize



The students were asked:

- What do you think your animal might eat?
- Where do you think they might live?
- What do you think your animal looks like?

They took some time to consider how they could realistically draw and color their animal to effectively educate their audience.



Step 3: Conceptualize & Sketch

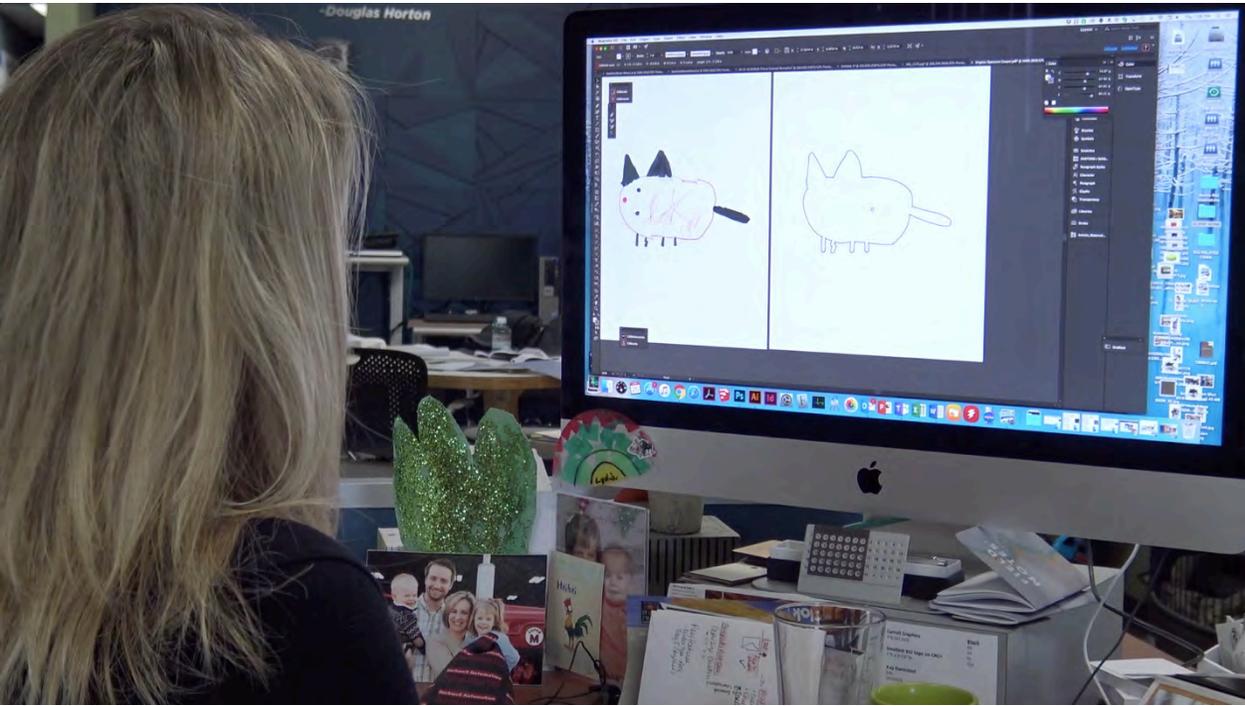


The students *spent two days sketching and coloring their animal* with picture references to assist with the animal form and color selection.

They drew on 11x14" paper and colored the drawings with crayons, markers, and/or colored pencils to match the true animal colors.



Step 4: Prototype



The kindergarteners **prototype drawings** were scanned **into a computer** at RGI.

They were **cut on a CNC machine** into the exact shape of their original drawing.

Students watched a video of this process to understand their role in prototyping and fabrication.



KINDERGARTEN COURTYARD MUSEUM

Step 5: Build & Engineer



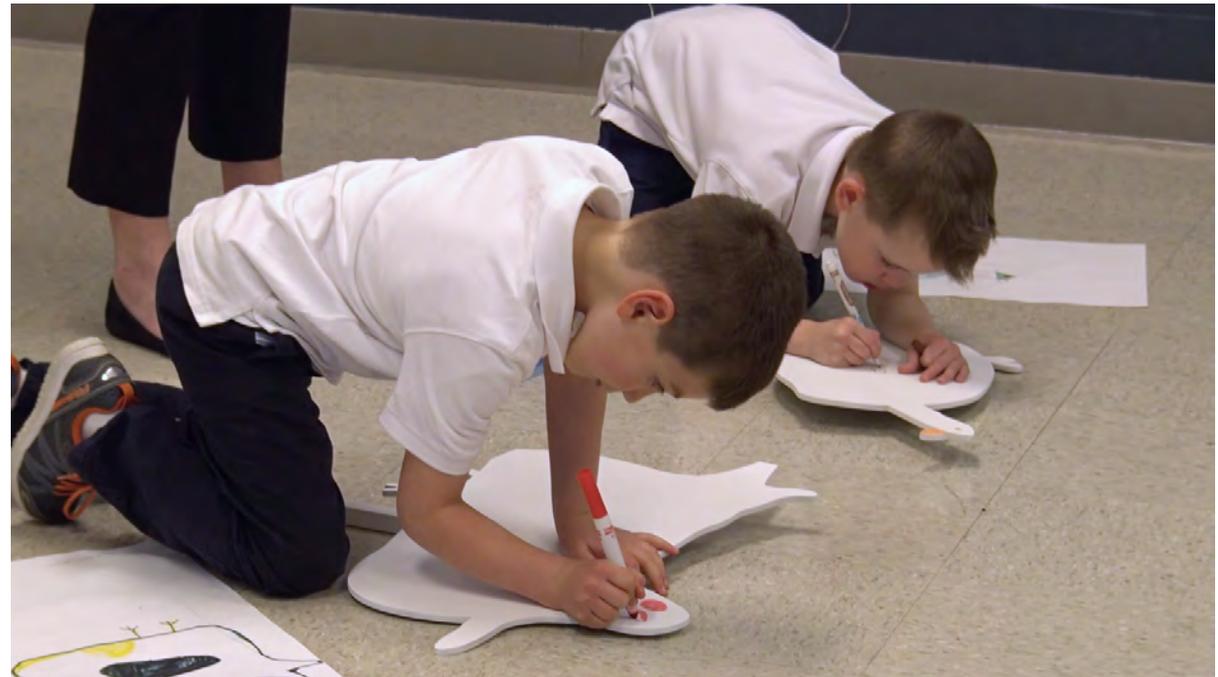
Students' original drawings were CNC cut into enlarged solid wood pieces, painted white, and made ready for the students to design.

Students watched a video of this process to understand their role in prototyping and fabrication.

Step 5: Build & Engineer



The *students received their cutouts and applied color with paint markers*. The cut-outs were returned to RGI and covered with a protective coating so that they may be placed outside on display.



Step 6: Transform & Present



- The kindergarteners' animals were prominently ***displayed in the school courtyard.***
- ***Students presented their animal facts on a video recording*** in front of a green screen displaying an image of their particular animal.
- Videos ***played on the hall multimedia players panel outside of the courtyard.***

KINDERGARTEN COURTYARD MUSEUM

Step 6: Transform & Present



Family, friends, and the parish community were welcomed to tour the “museum” and learn from the kindergarteners by pressing the button to hear them speak about the animals in the courtyard.



Step 7: Assess & Reflect



After the students completed their project, they ***had time to think about and discuss what they could teach others about the animals*** in their exhibit.

Students benefited from ***sharing their knowledge*** through their research, creative displays, and fact sharing videos.

EXAMPLE 2

Grade 7 Personal Studio Designers

Design-Build Learning Process



GRADE 7 PERSONAL STUDIO DESIGNERS

Step 1: Research



An environment designer introduced the project and presented ways to incorporate design elements into a scaled model. The students also became familiar with **ADA requirements** and ways to effectively incorporate all needs into their design.



Students became designers hired to create a studio space to meet a clients needs and desires. **Their clients (student peers) provided a list of criteria that they would like in their studio space. These criteria were based on individual and/or business needs and interests.**

Step 2: Brainstorm & Empathize



Students were asked to consider:

- What are your clients **needs**? What is important to them?
- **How will your client use their studio space?** What will they do in the space?
- Does your client have any **physical needs** that should be considered?
- What **color palette** will you use to suit your clients needs and desires? Think about the **look and feel** created by certain colors. What colors do they like? Dislike?
- **How does your client want the Studio to look?** What do they want to avoid in the design?

Step 3: Conceptualize & Sketch



Once students had thought out their clients needs and desires, **they began space planning and sketching on graph paper.** They needed to take into account a defined scale that would be used in drafting the model.

They found that they had to select the most meaningful aspects of the design, while **eliminating** any extraneous features that were not as necessary since they **had to design for a relatively small space that measured 12'x15' in perimeter.**

The assigned scale was 1 inch=1 foot.

Step 4: Prototype



Students built prototypes based on their drawings.

They each received a scaled model (cutaway of an empty room) made of **foam core** that was constructed at RGI to have two walls and a floor.

Students used provided materials to **construct scale models of furnishings and interior walls** for their client's dream studio. Building the furnishings and walls to scale was challenging at times and took several attempts. The students persisted to build the furnishings as requested by their clients and created very successful models that satisfied their needs.

GRADE 7 PERSONAL STUDIO DESIGNERS

Step 5: Build & Engineer

This project is an example of one in which the *Prototype phase also served as the Build & Engineer phase.*



GRADE 7 PERSONAL STUDIO DESIGNERS

Step 6: Transform & Present



Students' prototypes were displayed at a parish fish fry along with their original scaled blueprints and client notes. This allowed the viewers—family, friends, and community members—to see the work and planning behind each studio design.



Step 7: Assess & Reflect



After the process was complete...

- **Students met with their clients again** to determine if their criteria were satisfied and **receive feedback.**
- Several of students stated that it was a **challenging project.**
 - Having to design a **small space with very specific client needs** was not as easy as they had thought it would be.
 - **Scale measurement conversions were challenging** at times.
- Several students noted that they felt good about what they created and **enjoyed their design outcomes**, despite the rigid criteria.



Administering the Studio

John Stipek & Maureen Goodwin

Principal & Assistant Principal

Saint Joseph Administration

Our Path to Saint Joseph Parish School

John Stipek

Teacher

Principal

Asst. Superintendent

Principal

Maureen Goodwin

Teacher

Asst. Principal

Why the Design-Build Studio?

- The Studio is for students of all abilities
- Students with all types of personalities
- Students with all types of learning styles



A Grade 3 student measures a fabric sample he is using to build his product in the Invention Store.

Why the Design-Build Studio?

- Students who are gifted
- Students who are talented
- Students who have potential, and may not even know it



Why the Design-Build Studio?

- The Perfectionist
- Underachieving Individuals
- Highly Creative students
- Fearful Children
- Behavior/Concentration Challenged Students



Students display Christmas ornaments made with **wood and hand drills**.

Administration's Three Ps

Possibility

- How to implement?
- How would the students see it?
- How would the parents see it?
- How would the teachers see it?
- What did we want to accomplish?
- What would be the stumbling blocks?



Grade 4 students educate parents on U.S. destinations using **exhibits** they designed and built in the **Travel Agents** project.

Administration's Three Ps

- **Potential**

- Who should be involved?
- Where would it take us?
- What could we expect that first year?
- How would the second year play out?
- What we learned and what we expect for the third year?



Grade 7 students research content for their **environmental graphic design** project, **Pollution Posters**.

Administration's Three Ps

Practicality

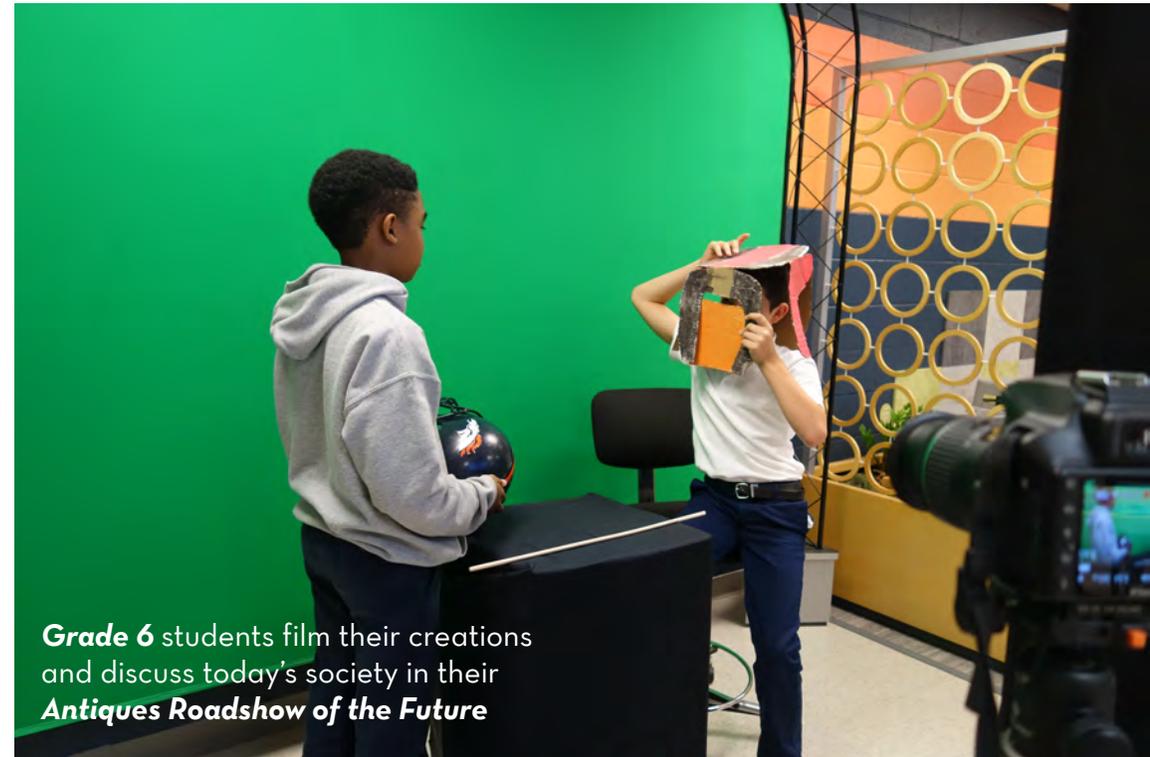
- What were we thinking?
- Could we find the time?
- How would we incorporate Design into our day?
- How do we achieve “teacher buy-in”?
- Will there be parent understanding of our goals?
- Will the students see it as a value?



Grade 1 students prepare to **build** flowers that will complement the kindergarten class' natural history **exhibits**.

School Culture - Where it Begins

- Administration's Belief - Buy-in
- Teacher Belief and Understanding
- Student Acceptance and Engagement
- Parental Understanding and Participation



School Culture - Where it Begins

Administration Embrace Outsiders

- Design Consultants
- Fabrication consultants
- Engineering consultants
- Technology professionals
- Parent Involvement as part of process

School Culture - Where it Begins



An **engineer parent** guides Grade 4 students in creating **electrical circuits** in the **Mood Lights** project

Parent Involvement as part of process

Professional Expertise

- Architects
- Engineers
- Craftsman

Hands-on Volunteers

- Assist with set-up/teardown
- Assist with tools, glue guns, etc.
- Recording of presentations

Year One - A Year of Birth

- Administration in flux
- Teachers unsure of their part in process
- Students were curious, but also not sure how it would work
- Parents saw upside but did not hear anything from their children

Year One - A Year of Birth

- ***Limited Teacher Involvement***
 - Not understanding what was expected
 - Not knowing how to incorporate into lessons
 - Not having “those type of skills”
 - Not having the time to give two-weeks up
 - Need to get ***through*** the curriculum, the book



Year One - A Year of Birth



In Year 1, teachers utilized the Studio space as a science lab extension of the classroom.

So what was accomplished Year One?

- Two grades did accomplish a project
- Teachers did begin to see how Design and the Studio could be used.
- The Possibility, Potential and Practicality of the Studio was being seen by more of the staff
- New Administration was put in place and the year was reviewed with RGI

Year Two - A Year of Growth



- Administration's commitment
- A well laid out plan
- Alignment of standards, curriculum and projects
- The understanding to continually review and adjust expectations
- Being realistic
- Teacher understanding and buy-in

Year Two - A Year of Growth

Building teacher understanding

- Staff meetings to explain and discuss process
- Listen to the teachers
- Additional planning with Studio Director
- Examining of standards and project alignment
- Adapt to individual grade level and students
- Quick example of project



Grade 5 students design and build to-scale dwellings in their ***Native American Villages exhibits.***

Year Two - A Year of Growth



A **kindergarten** student displays pet toys he designed and built in the **Pet Café** project.

- Review and Adjustments
- Continued to monitor and adjust as year went on
- Adjusted schedule to one project per grade, per semester
- Created a positive feeling for the Studio
- Identified a better starting point for next year

Year Three - A Year of Refinement

- Teacher participation will increase in planning
- Collaborate with Coordinator to plan projects
- Work with ALPHA teacher to incorporate with Enrichment Program
- Expand Recess Program to engage all students



Year Three - A Year of Refinement

Goal: Create a single project that includes multiple areas of curriculum that students can design and explain

Cross-curriculum project involving the following:

- Language Arts/Writing teacher
- Social Studies teacher
- Fine Art teacher
- Create a single project that includes means of assessment for all teachers

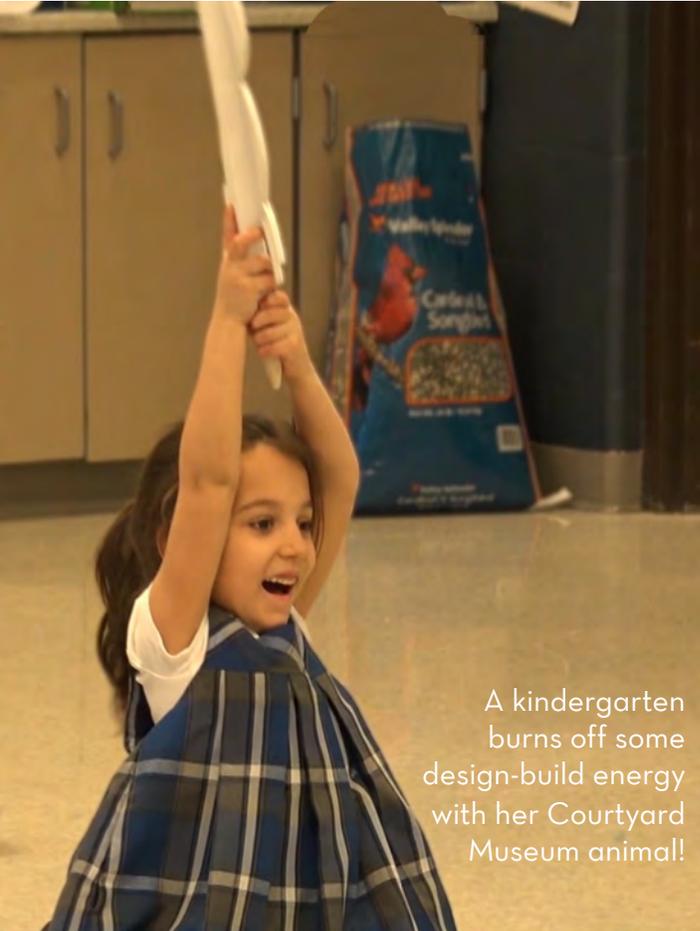


Grade 6 students **transform the Studio into a plant cell** and give their parents a **tour** to teach them about organelles in the Studio Cell project.

Year Three - A Year of Refinement

- Allow thinking “out-side the box” to take place
- Allow students to use their talents to express themselves and what they have learned
- Allow students to develop life-long skills that will serve them through life

Final Thoughts



A kindergarten burns off some design-build energy with her Courtyard Museum animal!

You see that the 3 Ps are achievable

- **Possibility:** not easy, but effort and dedication make it happen
- **Potential:** unlimited! Imagination and student creativity is all that is needed
- **Practicality:** skills that can be developed and used through life are possible

Final Thoughts

Ingredients needed for success

- Belief in process from all involved
- Willingness to adapt on the go
- Involvement of many parties

Be ready to invest

- Time
- Effort
- Money



A student *hammers and weaves* a Valentine heart during a recess *Tekton Challenge*.

Final Thoughts

- Thank you
- Introduction of Sylvia Rimm
 - Benefits to gifted learners



Benefits to Gifted Learners

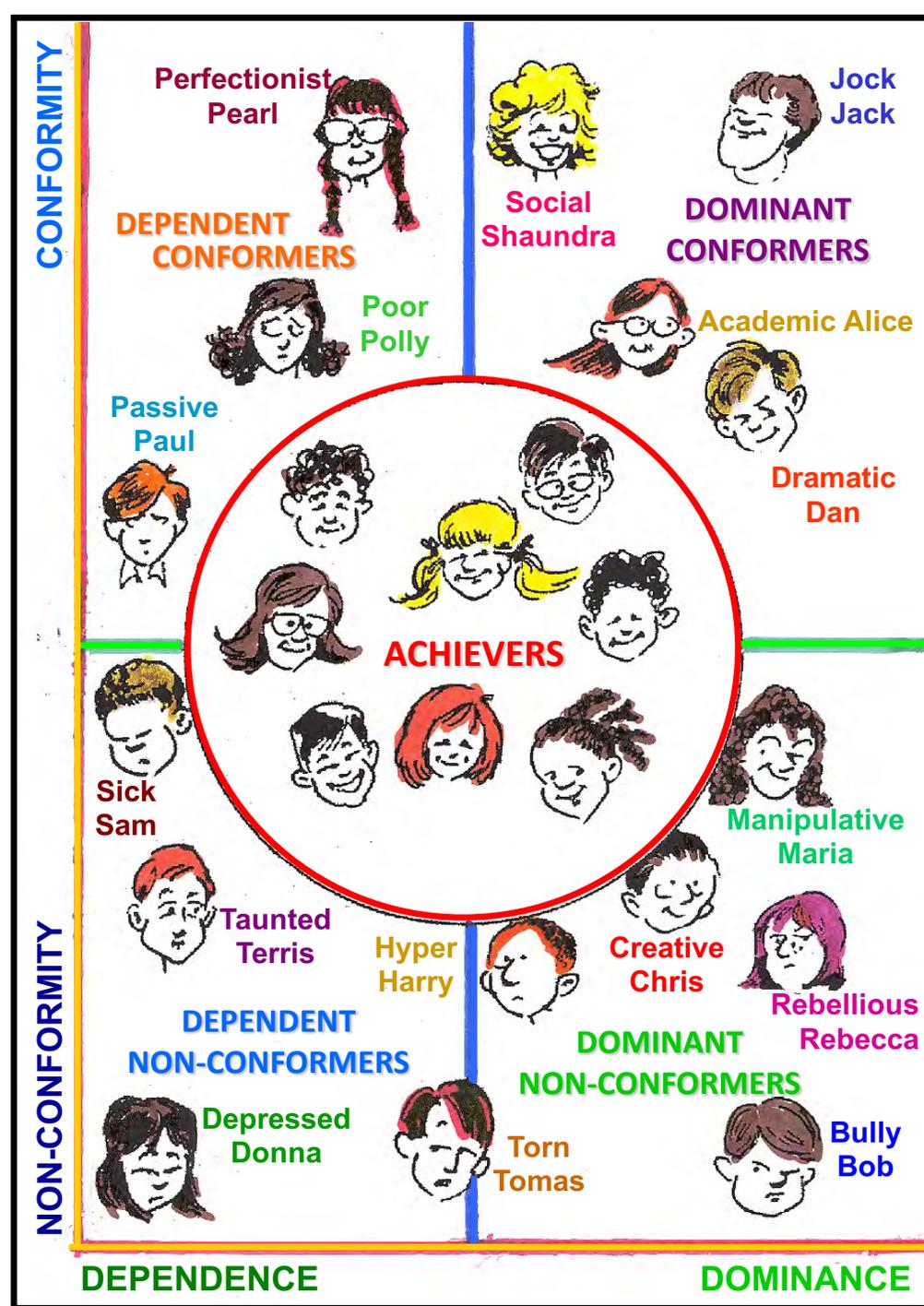
Dr. Sylvia Rimm

www.sylviarimm.com



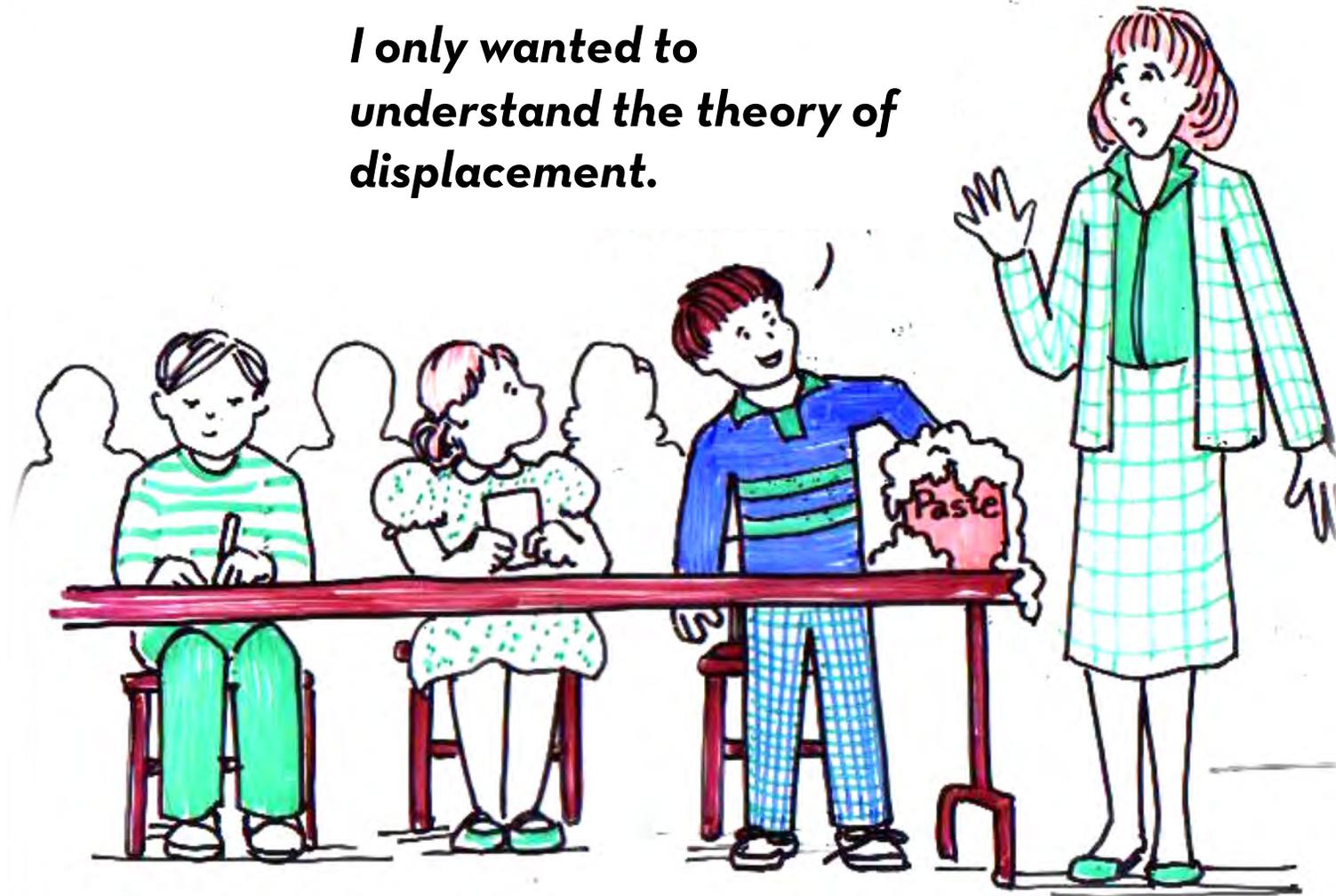
www.sylviarimm.com

Rimm Model of Achievement and Underachievement



Creative Underachievement

I only wanted to understand the theory of displacement.



Creative Underachievement



Twice Exceptional Student - IQ Scores

Name: Twice-Exceptional Student
 Date of Birth: 7/21/05
 Age at Testing: 13:9
 Grade at Testing: 8th
 Date Tested: 4/26/19

Assessment: Wechsler Intelligence Scale for Children - 5th Edition (WISC-V)

Results:	Verbal Comprehension	130	Very Superior
	Visual Spatial	135	Very Superior
	Fluid Reasoning	147	Profoundly Gifted
	Working Memory	76	Below Average
	Processing Speed	72	Below Average
	Full Scale IQ	126	Superior
	General Ability Index	143	Very Superior

Verbal Comprehension		
Similarities	18	VS
Vocabulary	13	AA

Fluid Reasoning		
Figure Weights	18	VS
Matrix Reasoning	18	VS

Visual Spatial		
Block Design	16	VS

Working Memory		
Digit Span	7	BA

Processing Speed		
Coding	5	BA



Grade 2 students design and prototype tools that could be used in two different professions in the **Totally Tool Designs** project.

Twice Exceptional Student - Achievement Test Scores

Summary of Assessment

Name: Twice-Exceptional Student
Date of Birth: 7/21/05
Age at Testing: 13:9
Grade at Testing: 8th
Date tested: 4/26/19

Assessment: Woodcock Johnson Achievement Test - IV

Results:	<u>Subtest</u>	Norms based on grade 8.8		
		<u>GE</u>	<u>SS</u>	<u>%-ile</u>
	BROAD READING	4.4	78	7
	Letter-Word Identification	7.0	94	34
	Passage Comprehension	7.7	96	41
	Sentence Reading Fluency	2.8	64	1
	BROAD MATH	5.5	85	15
	Calculation	6.1	89	23
	Applied Problems	17.9	118	89
	Math Facts Fluency	2.7	60	.4
	BROAD WRITTEN LANGUAGE	5.6	86	18
	Spelling	4.8	82	12
	Writing Samples	6.9	94	35
	Sentence Writing Fluency	6.3	92	29



Grade 2 students design and prototype tools that could be used in two different professions in the **Totally Tool Designs** project.





Panel Q&A



Contact Us

<http://stjosephstudio.org>

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