



Reporting Year	School State Rating
(2002-03	F)

How do you go from here?



1st Annual K5 STEAM Conference December 9, 2016



Reporting Year	School State Rating
(2002-03	F)
How do you go from here to here?	
(2011-16	A)



For D.L. Jamerson

2004 D.L. Jamerson Commitments



(a) Jamerson administration and instructional related staff will always strive to demonstrate expertise in their assigned duties.



AND



(b) Jamerson administration and instructional related staff must have more content, perspective, and knowledge at a level higher than what is taught to our 5th graders.



2004 D.L.J' s performance Mission

D.L.Jamerson Elementary School will be the nationally recognized expert for the creation delivery, and student performance demonstrated results of an integrated elementary education platform that utilizes engineering science, technology, and design constructs every day in every subject in every classroom at every instructional level.



2004 For D.L.J:

Its not the pieces, it's the puzzle!

It's ALL or Nothing!

Stay if you agree, enjoy your
career elsewhere if you don't.



2004 For D.L.J's we started with:

- whatever the teachers think is important!!!!!!
- wherever the students are "scoring the poorest !!!!
-



2004 For D.L.J's we started with:

- whatever the teachers think is important!!!!!! **Reading**
- wherever the students are "scoring the poorest !!!! **Science**
- Use engineering design process to integrate these two with math, performing arts, and physical education.



Essential Element Examples of Elementary Engineering in Elementary Education

For more information about Douglas L. Jamerson, Jr. Elementary School in St. Petersburg, FL, visit DLJ's website at www.jamerson-es.pinellas.k12.fl.us, or contact Lukas Hefty, Hefty Lukas [HEFTYL@pcsb.org], Engineering Program Coordinator, Center for Mathematics & Engineering, Douglas L. Jamerson Jr. Elementary School

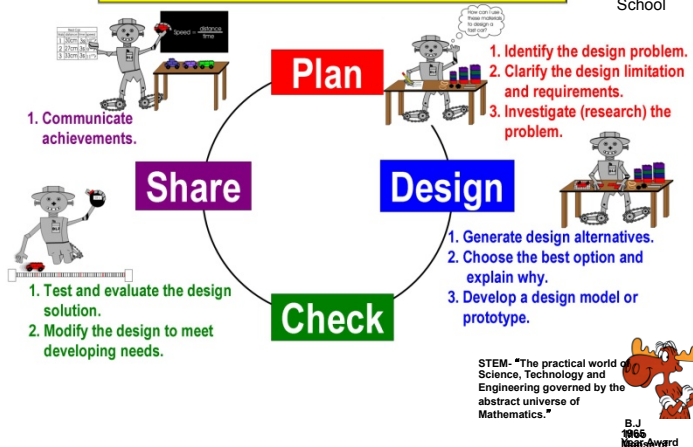
Florida State Science Assessment

2016	L1	L2	L3	L4	L5
Jamerson	6%	15%	18%	23%	38%
Pinellas	21%	24%	27%	14%	13%
Florida	23%	26%	27%	13%	11%

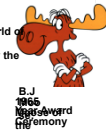
61% of students exceeded expectations, #1 in Pinellas County!



Jamerson Engineering Design Process



STEM: "The practical world of Science, Technology and Engineering governed by the abstract universe of Mathematics."



Kindergarten through 5th grade classroom teachers integrate the state mandated elementary curriculum using engineering science principles and engineering design practices appropriate for each grade level and spirally connecting these principles and practices upward through all grade levels in the school.

	Physical Science		Earth Science		Life Science	
Nature of Science and Engineering Interactions	Gravitational Forces and Resultant Motion	Electromagnetic Forces and Resultant Motions	Natural Resources	Space Exploration	Life Processes	Ecosystems

In kindergarten through 2nd grade, the focus is to set images and ideas regarding engineering. In the Gravitational Force and Resultant Motion Unit, the students learn what forces are and what effects they can have. The concepts of work and energy are explored.



Students start here



In 2nd grade, measuring scalars takes center stage. In this case, an elephant's trunk is not baggage.

Elephant Trunks and Dolphin Tails
Page 56, December 2014
Science and Children

By 3rd grade qualitative relationships such as direct proportionality, are developed. This time it is students exploring and calculating mechanical advantage.



...the Secret of Suspended...

Although not marked incorrect the learning experience was about the ~~relationship~~ ~~of~~ ~~not~~ ~~youngsters~~, scalars, and ~~relationships~~.

In 4th grade
Reality and math models for that reality are connected.



Mathematical models for developing engineering applications are the focus in 4th. In the Gravitational Force and Resultant Motion Unit, the students are calculating work, energy and power as well as buoyant force.

4th Grade Lugout Cances (live load)

$\sum Forces = 0$

UP DOWN

F_0 F_3

$F_2 = 4$

$F_B = V_d D_g$
(Volume Displaced)(Density)

5th Grade Bridges

Free body diagram

live load UP DOWN

F_2 F_3 (live load)

$F_2 + 3$

In 5th grade, the students perform a complete engineering analysis, including free body/force diagrams as well as cost analysis. In this unit, bridge loads are calculated to failure. The students work with the concepts of tension, compression, and torsion.

Conclusion: Douglas L. Jamerson, Jr. Elementary School attains its outstanding assessment scores above District and State averages because of its "All or Nothing" approach. There is no language arts, no mathematics, no science, no fine arts. They are all merged together with every teacher contributing to each of these traditional topic areas and that is what puts the positive edge on the DLJ student.

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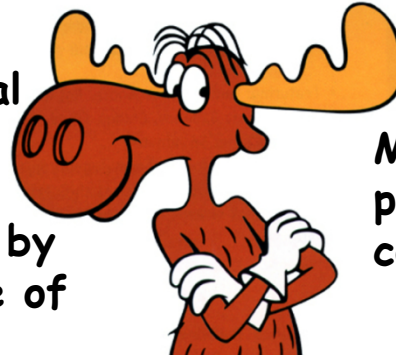


B.J Moose:
1965 Moose of the
Year Award Ceremony



DLJ' s STREAM of Learning
gets its STEAM from STEM

STEM- “The practical world of Science, Technology and Engineering governed by the abstract universe of Mathematics.”



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Mathematics- “The secret partner and permanent companion of music and art”



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DLJ' s STREAM of Learning
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Professional Development is Critical for Program Success

A tangible, valuable, and useful lifetime gift to students is a continuous development of mathematics as an integral part of their education in all subjects.



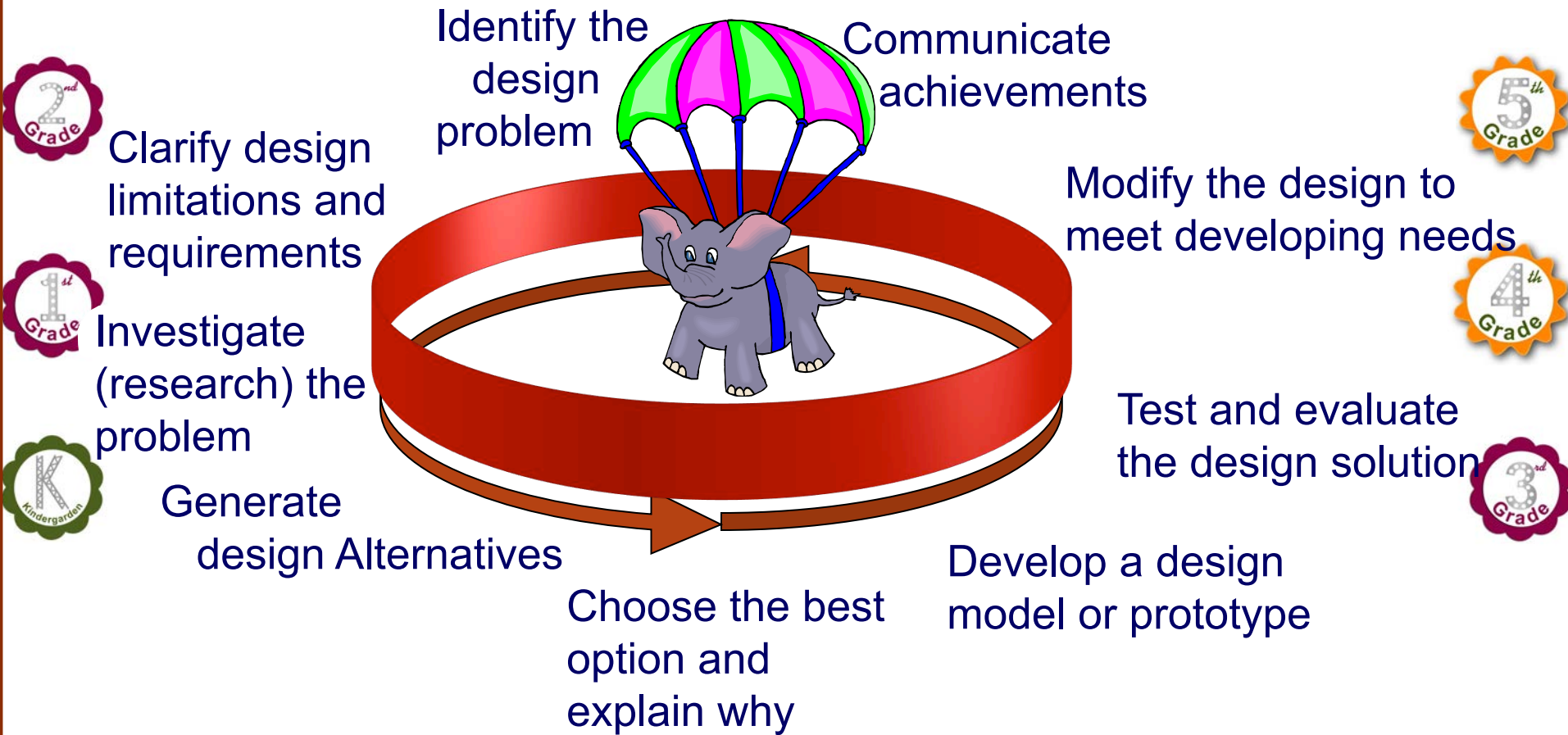
Mathematics

Our 2nd set of workshops

The mathematics building block as utilized within an integrated STEM perspective is the manipulate of:

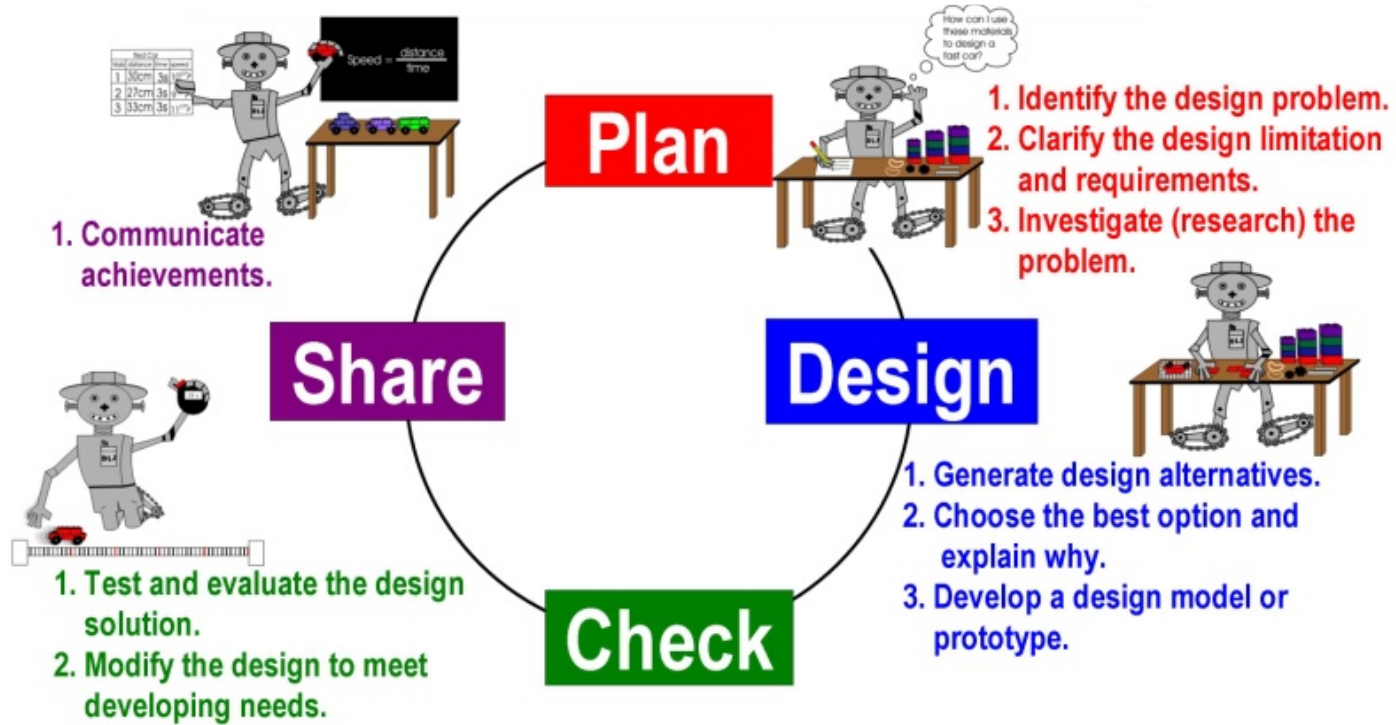
NUMBERS,
SCALERS, and
VECTORS.

Dropping into the Design Process



An engineer's perspective of the Engineering Design Process

Jamerson Design Process

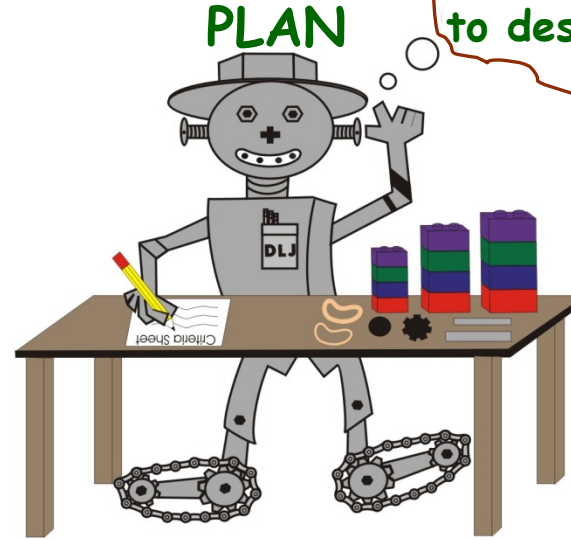


DLJ's perspective of the Engineering Design Process

Jamerson Design Process

PLAN

How can I use these materials to design a car

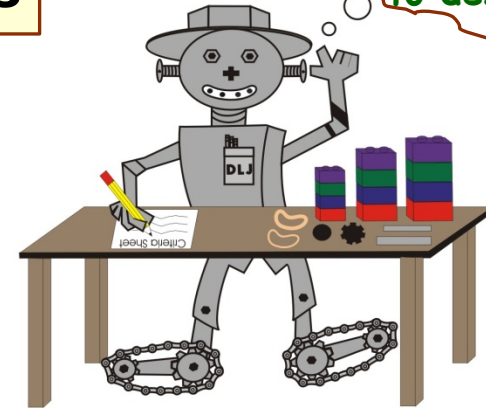


DLJ's perspective of the Engineering Design Process

Jamerson Design Process

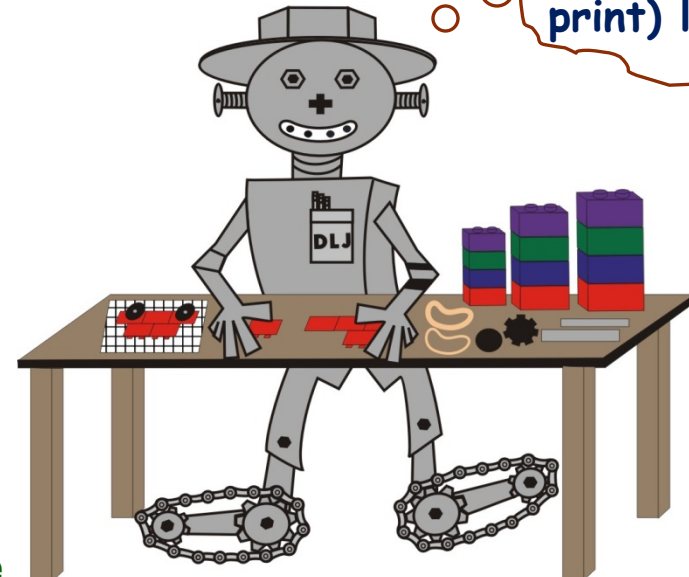
PLAN

How can I use these materials to design a car?



Design

What does the drawing (blue print) look like?



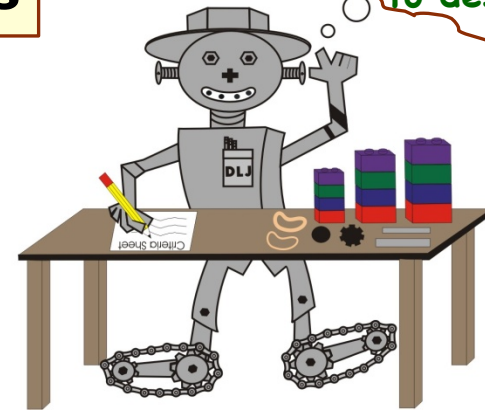
DLJ's perspective of the Engineering Design Process



Jamerson Design Process

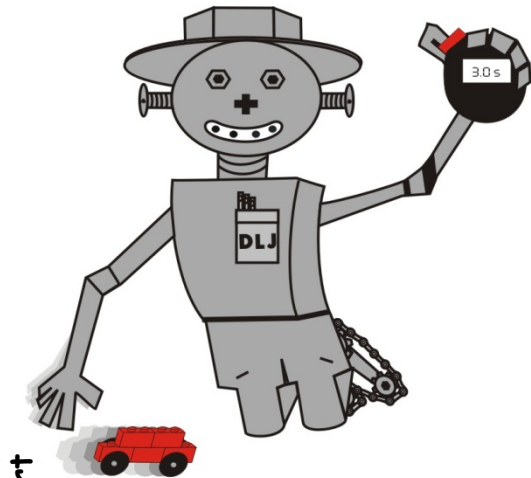
PLAN

How can I use these materials to design a car?



Check

What measurements should I make?



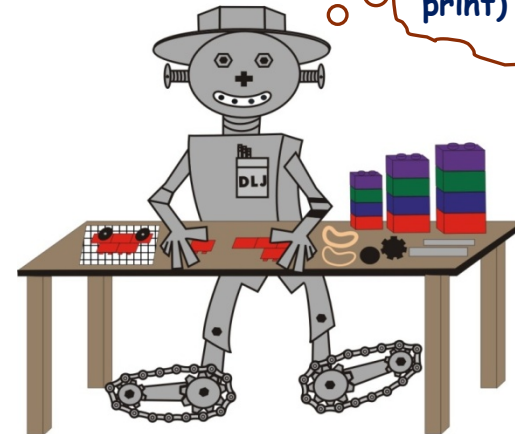
Start



50 cm

Design

What does the drawing (blue print) look like?



DLJ's perspective of the Engineering Design Process



Jamerson Design Process

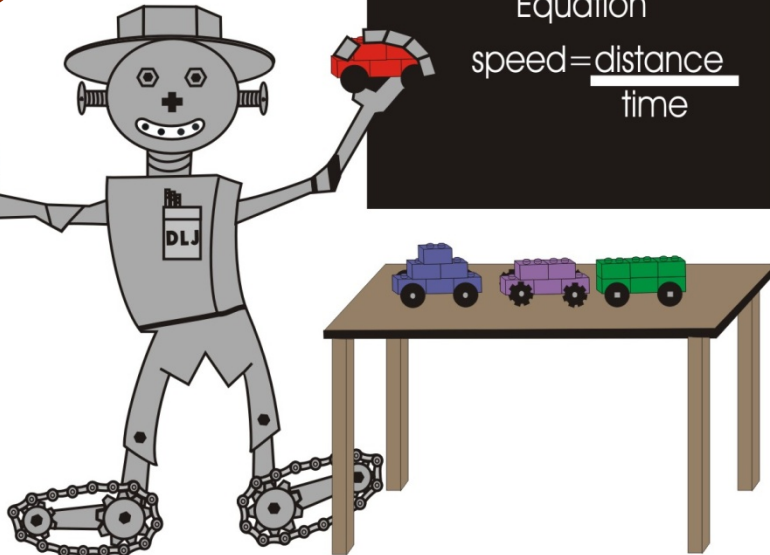
What should the presentation be?

Share

Red Car	stance	time	speed
0cm	3s	10	$\frac{cm}{s}$
7cm	3s	9	$\frac{cm}{s}$
3cm	3s	11	$\frac{cm}{s}$

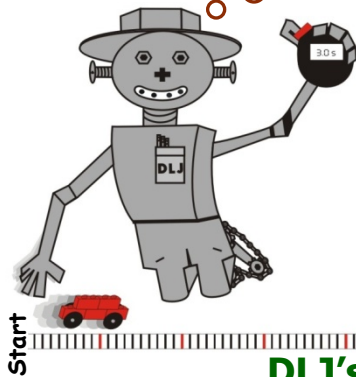
Equation

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$



Check

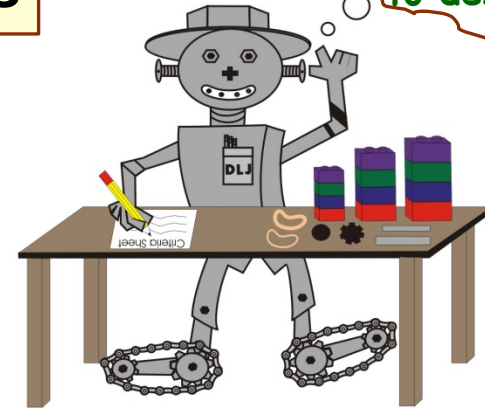
What measurements should I make?



DLJ's perspective of the Engineering Design Process

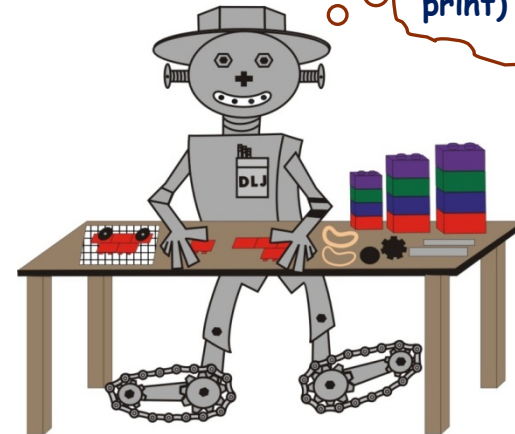
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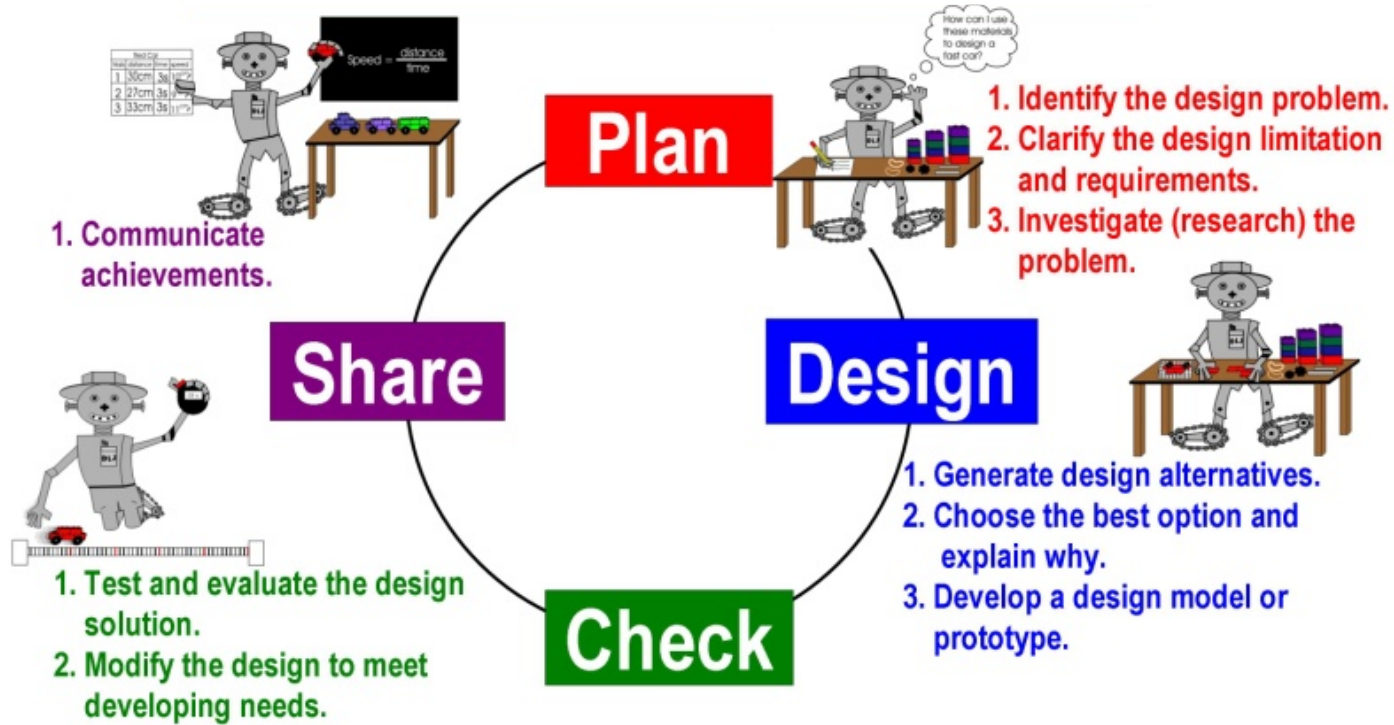


Design

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Jamerson Design Process



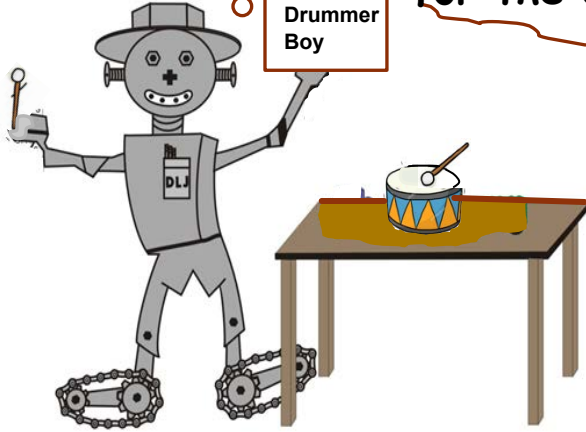
It's ALL or
Every ~~Nothing~~ Every Class, Every Time

DLJ's perspective of the
Engineering Design Process

Share

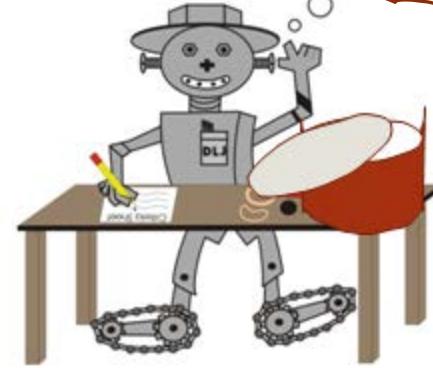
Little Drummer Boy

What should I play for the class?



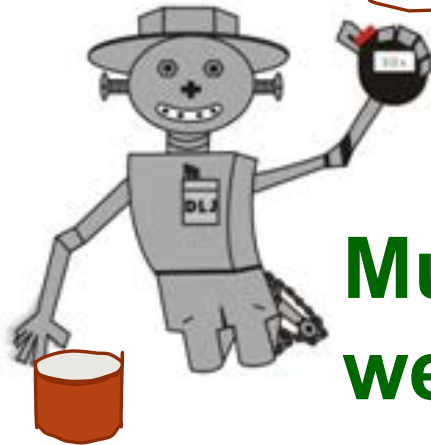
PLAN

How can I use these materials to design a drum?



Check

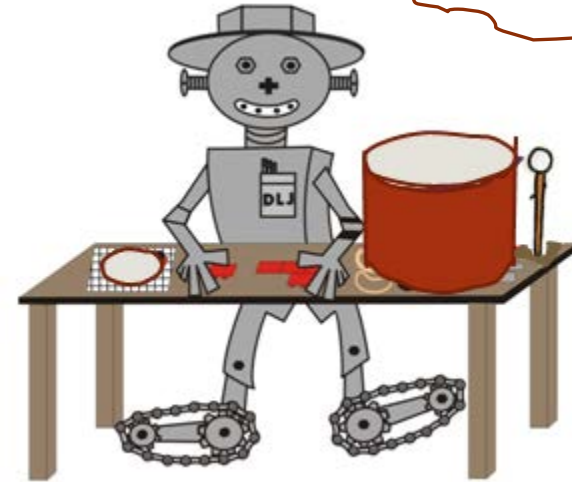
How do I check tension on the skin?



Music as well!

Design

What does the drawing (blue print) look like?

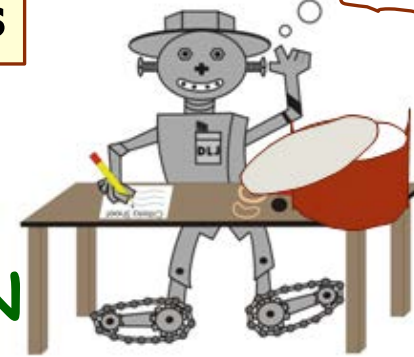


DLJ's perspective of the Engineering Design Process



Jamerson Design Process

How can I use these materials to design a drum



PLAN

Little Drummer Boy



Share



Everything all the time

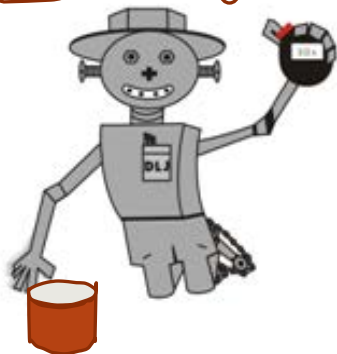
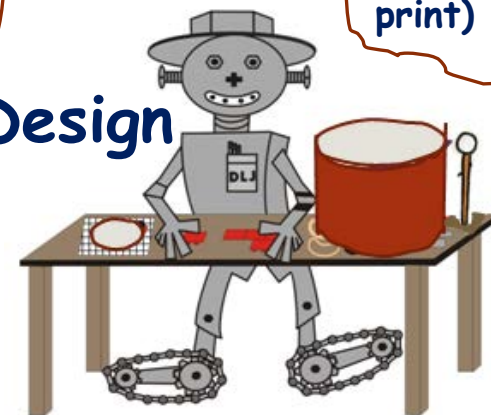
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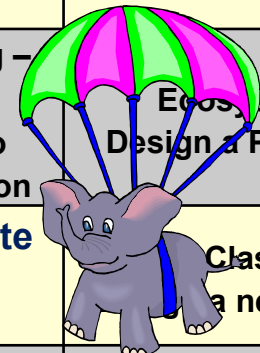
DLJ's perspective of the Engineering Design Process

DLJ's Curriculum Follows this Science Subject Matrix

Grade	<u>Nature of Science & Engineering</u>	<u>Physical Science</u>	<u>Earth Science</u>	<u>Life Science</u>
K	What is an Engineer? Animals as Engineers	Goldilocks Just Right Chairs 3 Billy Goats Gruff (Bridges)	<i>The North Wind & the Sun</i> Weather & Climate 3 Little Pigs (Houses)	Visual Life Cycle Models Animal Mascots
1	What is an Engineer? Lego Tower Challenge	Light & Sound Waves Design a drum to communicate over a distance	Cycles in Space Design a Magnification Tool	Animals as Engineers Design a Tool
2	Engineering for Animals Design an Elephant Trunk	Design a Lego Tower/ Bridge Scale Drawing	Mapping & Modeling – 2D to 3D Design a system to prevent beach erosion	Ecosystems Design a Pollinator
3	Creating Models Boom Town Communities	Measuring Light Laser Light Maze Design	Design a parachute Solar Cooker Investigations	Animal Classification Design a new animal
4	Compare Scientists & Engineers Design a Totem Pole	K'Nex Car Investigations & Design	Build a Dugout (Native Americans) Design and Test a Boat Florida History	Garden Design Design a Water Filter
5	Fields of Engineering 3D Printed Catapult Investigations & Design	Bridge Testing & Design Design a Home Lighting System	Hurricane Preparedness Plan Design a Lunar Mission (Kennedy Space Center)	Medical Engineering for the Body Design a Lunar Habitat

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For D.L.J from 2004 to today, its
always about Reading Writing and
Arithmetic done with:

Focus

Fun

Success



(Comments & Questions?)

