Spatial Skills
The Untapped Means to Opening
STEAM Potential of Girls
Linda Swarlis, Julie Biswas, and Hollis Wood
Water Level Test
Answers
Spatial Ability/Spatial Intelligence

Consists of many abilities:

• Visualizing
• Creating
• Manipulating
• Rotating
• Perceiving and remembering information in nonverbal/symbolic forms
Spatial Intelligence Examples

- Surgery
- Chemistry
- Meteorology
- Ultrasound
- Engineering
- Geology
- Physics
- Computer Science
Gender research results can be used to examine characteristics of groups, not to predict success or failure of individuals. Ability levels can and do overlap between the sexes.

(Halpern, 2000)
Sheryl Sorby

- Retention of female students who opted not to enroll in the course = 48%

- Spatial Visualization Course after failure on PSVT:R = 77% retention female engineering students
Statistics from the U.S.

• 90% of STEM doctorate holders scored in the top quartile of spatial ability during adolescence

• Current verbal and mathematical assessments would miss 70% of students scoring in the top 1% of spatial ability
Where do you live?
What’s the Difference?
“Water Thingy”

The water barrel is where the sand field almost is.
Frankie
The treehouse needs to be here in the middle between the rock path I drew and the gate. Sam

We need to change the sand field to be close to the willow tunnel. Emmie

I think the Moveable Parts should be here instead. (pointing next to the monkey bars) It’s near the monkey bars, not the PYC building. Quinn
PYC Playscape Map
Created by the 3/4 Class, 2017

1. Gate
2. Squirrel House
3. Treehouse
4. Rock Path
5. Chalkboard
6. Hidden Bush House
7. Bird House
8. Water Thingy
9. Big Bush
10. Willow Tunnel
11. Sand Field
12. Mountain
13. The Garden
14. The Bridge
15. Movable Parts Area
16. Monkey Bars
17. Porcupine Tree
18. Bush House
19. The Barrels
20. Tire Swing
21. Giraffe
Lower School

- Spatial language (to the right of, to the left of)
- Golly Gee Blocks Program, Legos, Puzzles, Magna Tiles, Goldiblox
- Use Google Earth to study Asia
- Google Tour Builder
- Robotics (Building Robots)
- Coding
Middle School

• Drama: blocking and set design
• Math/PE: graphing “The Big Race”
• Humanities: using maps and timelines
• Science: reading and creating diagrams
• Art: One-point perspective
The Big Race

Runner A
You run three meters every two seconds and start at the starting line. The race is 25 meters long.

Runner B
You get a six meter head start and run twice as fast as Susan.

Runner C

Runner D
Start at the starting line and catch up to Susan in four minutes.
STEM Cars
Upper School

- Languages: directional/spatial vocabulary in maps
- History: using atlases and geographical dictionaries
- Chemistry: Molecular models
- Physics: photo contest
Block Rotations

1.  
   2  1
   2  2
   1  1

   A  B  C  D

2.  
   3  1
   2  1
   1  1

   A  B  C  D

3.  
   3  2
   1  2
   1  1

   A  B  C  D
Coded Plans
What are you already doing?

• Using maps
• Directional language
• Graphing
• Games
• Model building
  • goo.gl/HxvWyg