# WeDo 2

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# Introduction

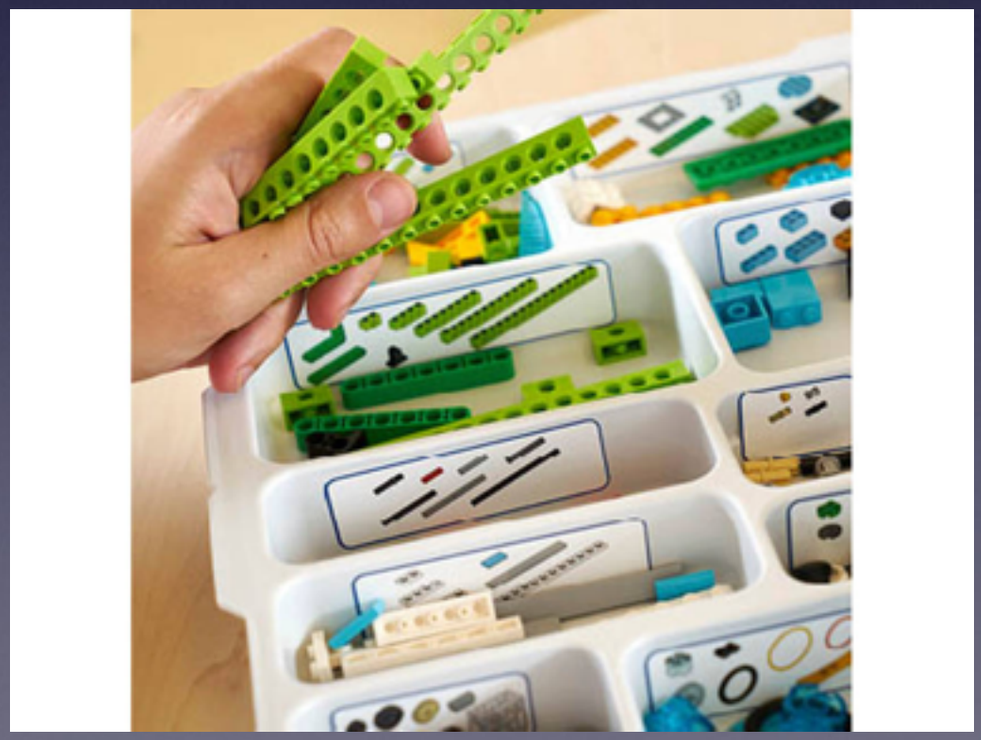
- Jobs: software engineer, classroom teacher, ed tech consultant, author, tech teacher, perpetual student
- Teaching LEGO robotics over 10 years
- Mix of structured and open ended challenges including Amusement Park Challenge (PhD research task)
- Does WeDo 2 allow more possibilities for open-ended challenges?

# WeDo 2 Basics

- Bluetooth connection to tablet or computer
- Untethered
- New pieces
- New NGSS curriculum (50-70% grades 2-4)

# What Does WeDo 2 Get Us?

- What are the advantages of WeDo 2 over WeDo in terms of:
  - Built in curriculum?
  - Inherent power of pieces?
  - New sensors and motor?
  - Being untethered?
  - Being tablet enabled?
  - Other?



# Software Differences

- Tablet based
- Very similar to WeDo 1 except:
- Click and hold may not be intuitive on computers
- Time in seconds
- New backgrounds and sounds
- Motion (distance) sensor changes (closer, farther, any change)

# Lobby and Content Editor

- New Lobby, content editor, help  (quick tour)

# Curriculum

- Different levels of support:  getting started, guided, open, base models (quick tour)

# Free Explore

- Look at kit pieces, connect bluetooth, try software, check out curriculum, help, lobby, Teacher’s Guide (click Info icon)

# Amusement Park Ride

- Design a safe and interesting amusement park ride that uses a motor.  You may wish to add sensors.  Create a poster that advertises your ride and shows important parts of your ride. See handout.

# Example G2 Planning

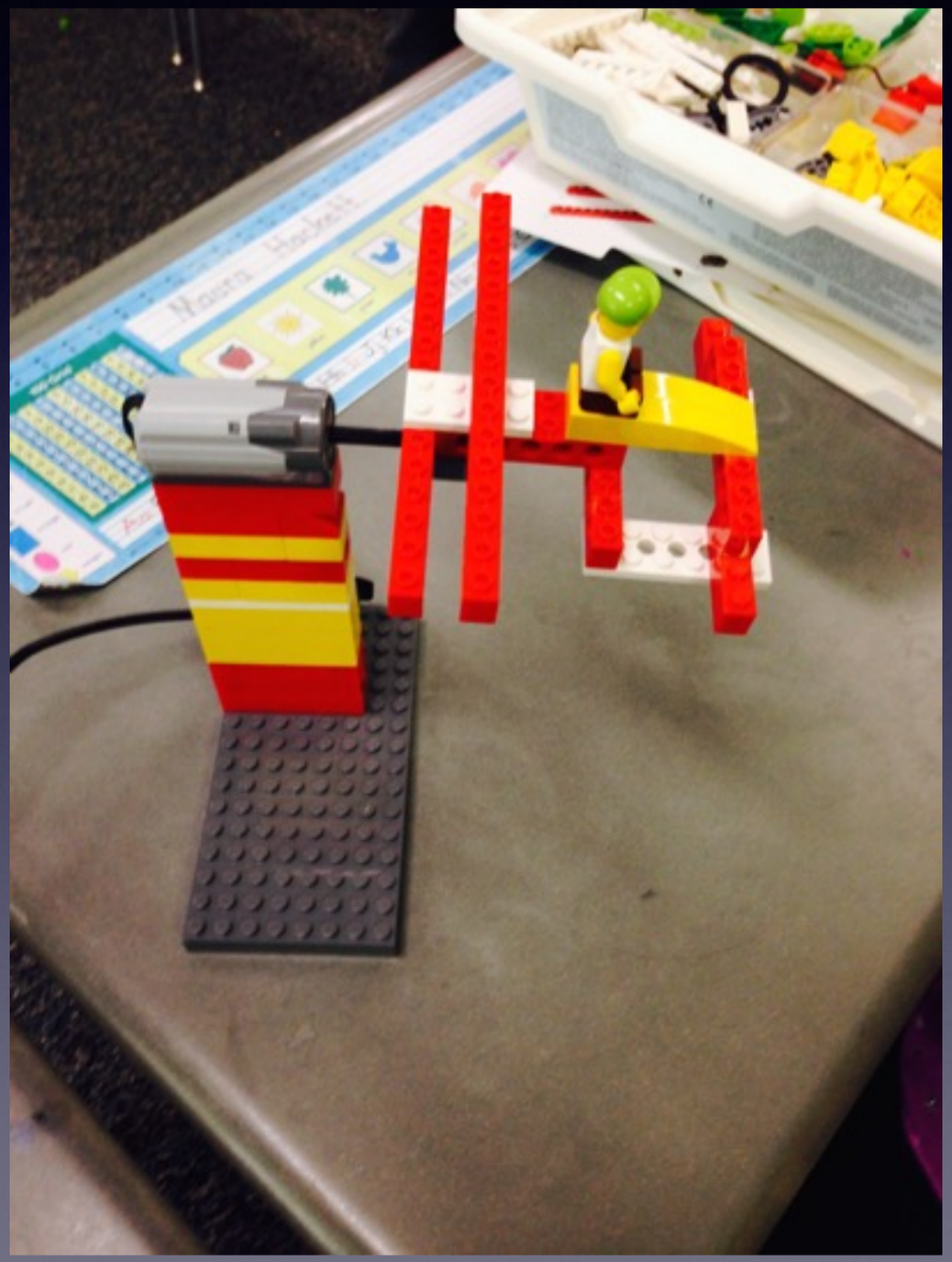
# Fair

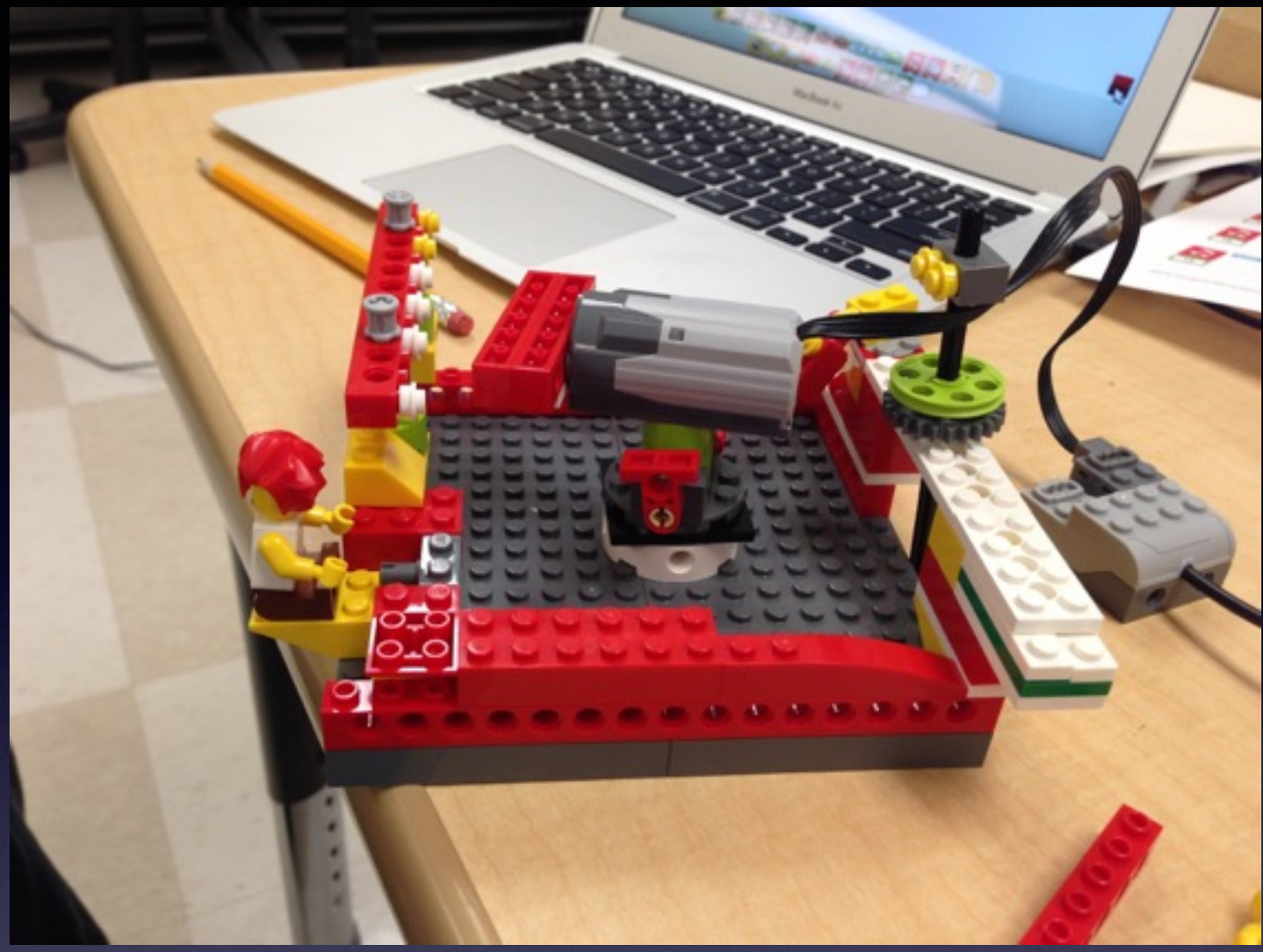
- Show poster and demonstrate ride

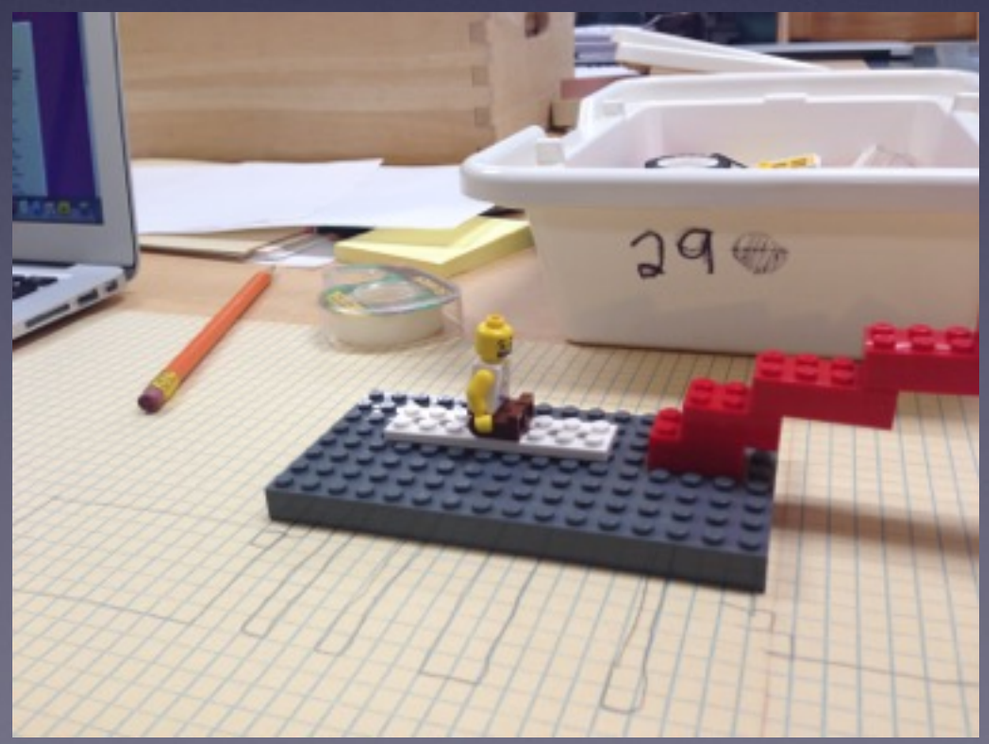
# Observations of Challenge from Research

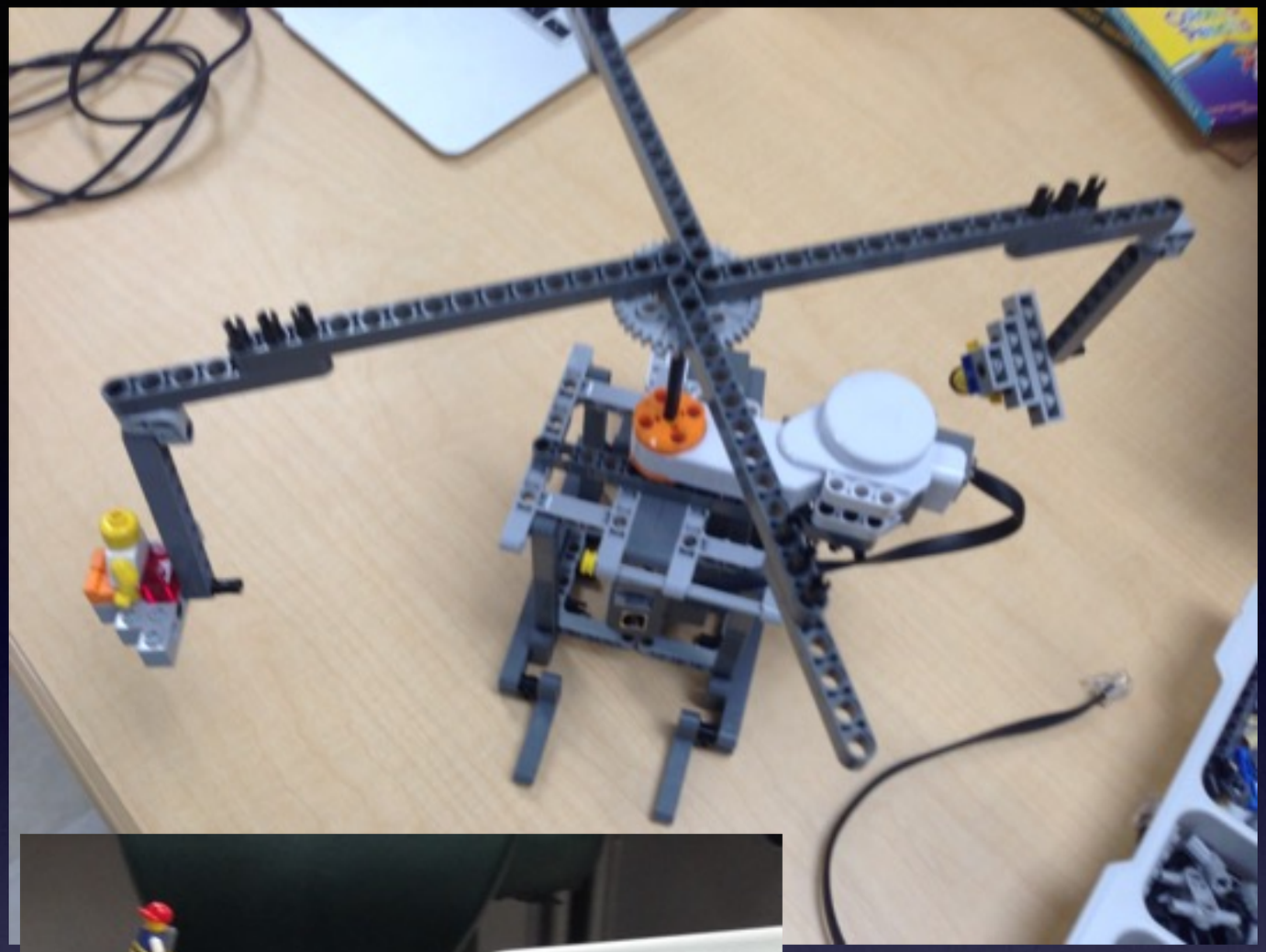
- Many students will not animate ride unless required
- Little effective traditional planning occurs at G2
- Programing a small part of creations
- Almost all G2 students use direct coupling and build some kind of tower.  G6 students build base, tower, and spinning structure.
- Other common rides: vehicles, rides that hang off table

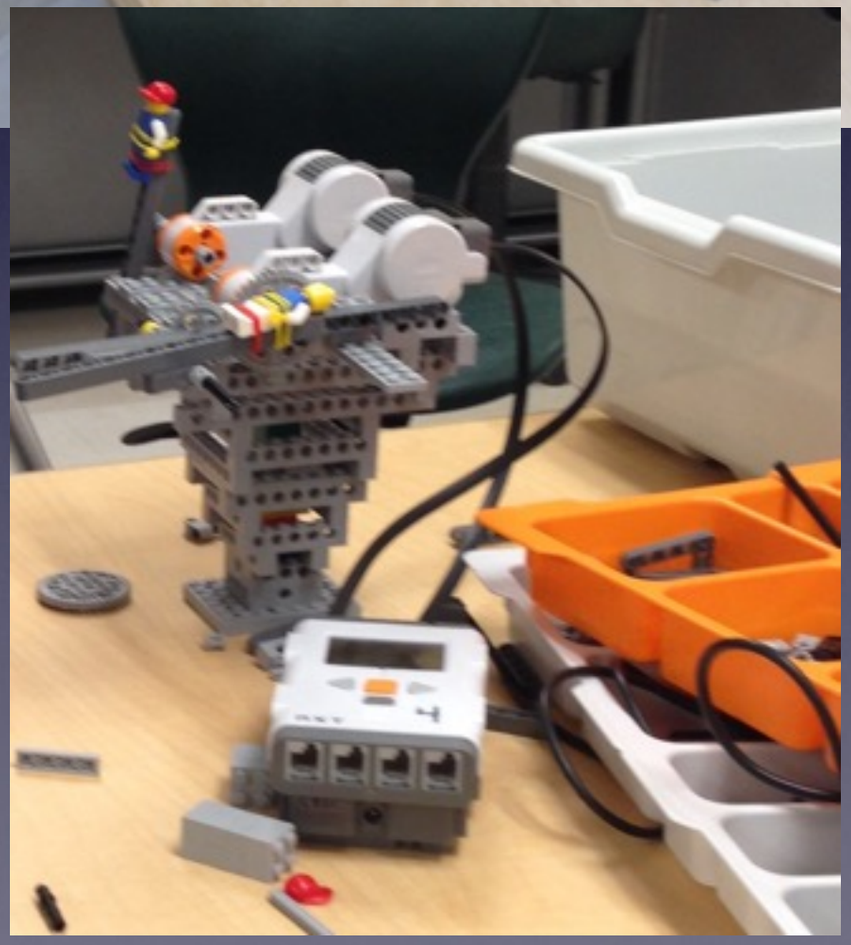
# Example G2 Rides





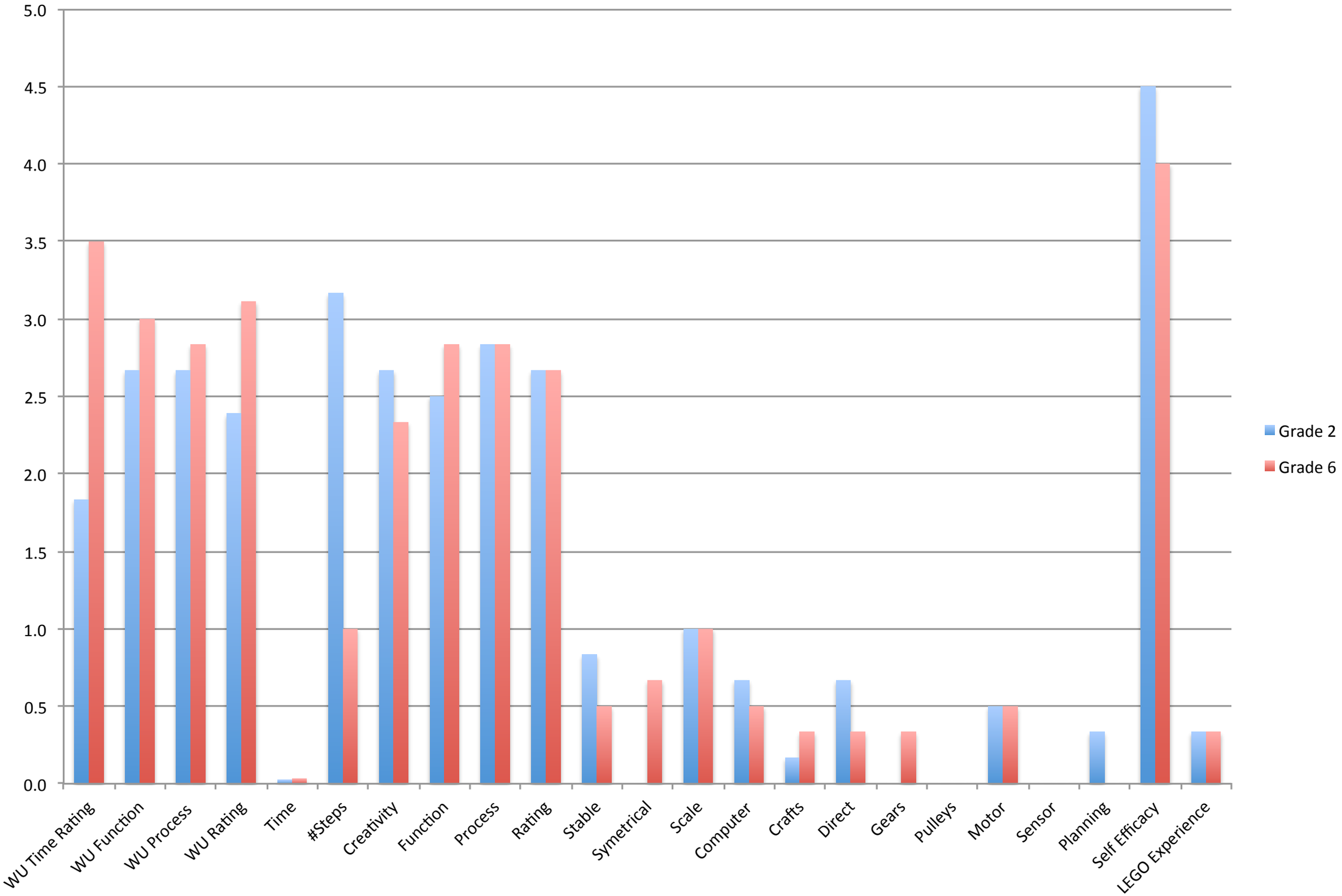




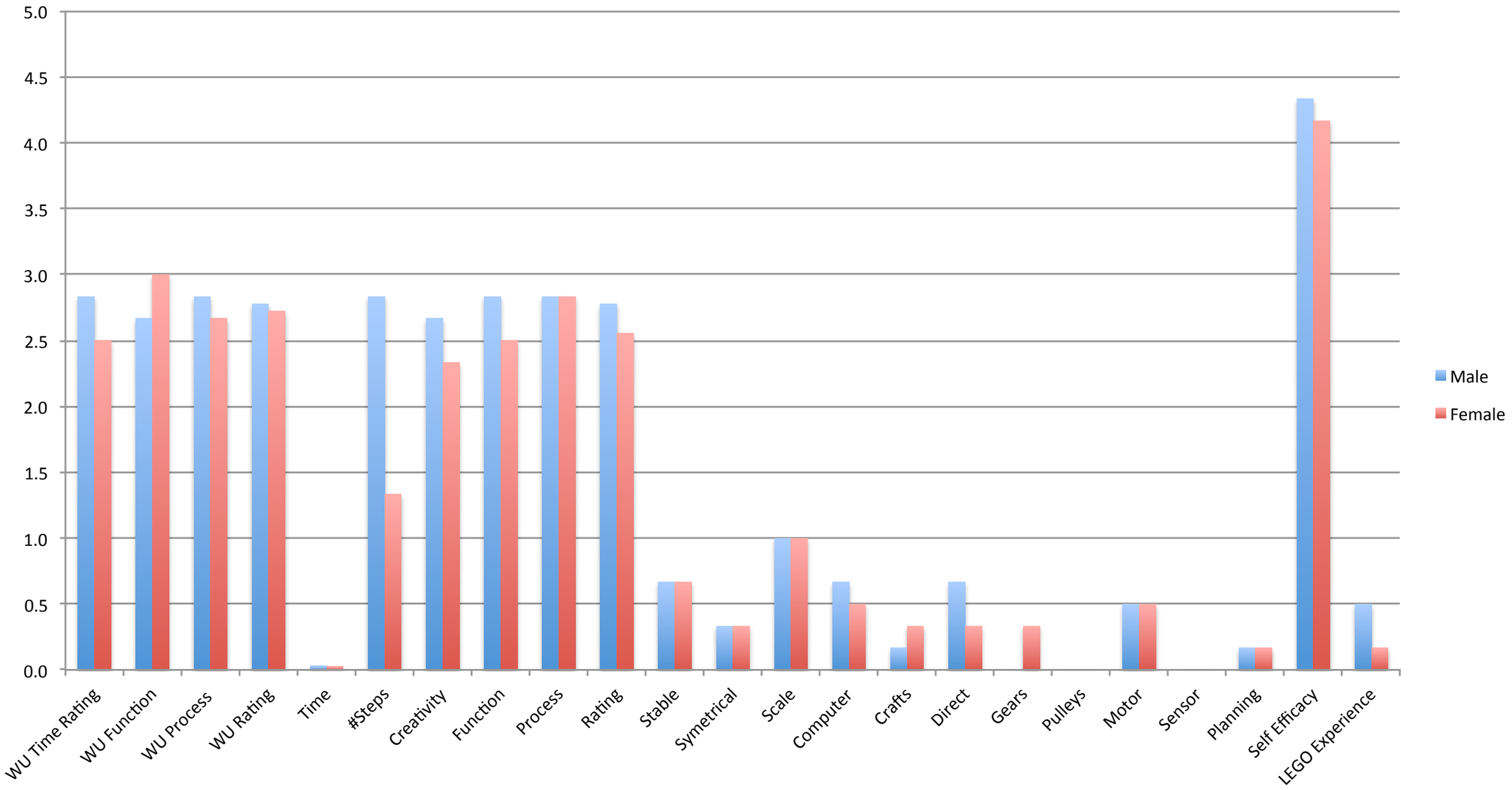


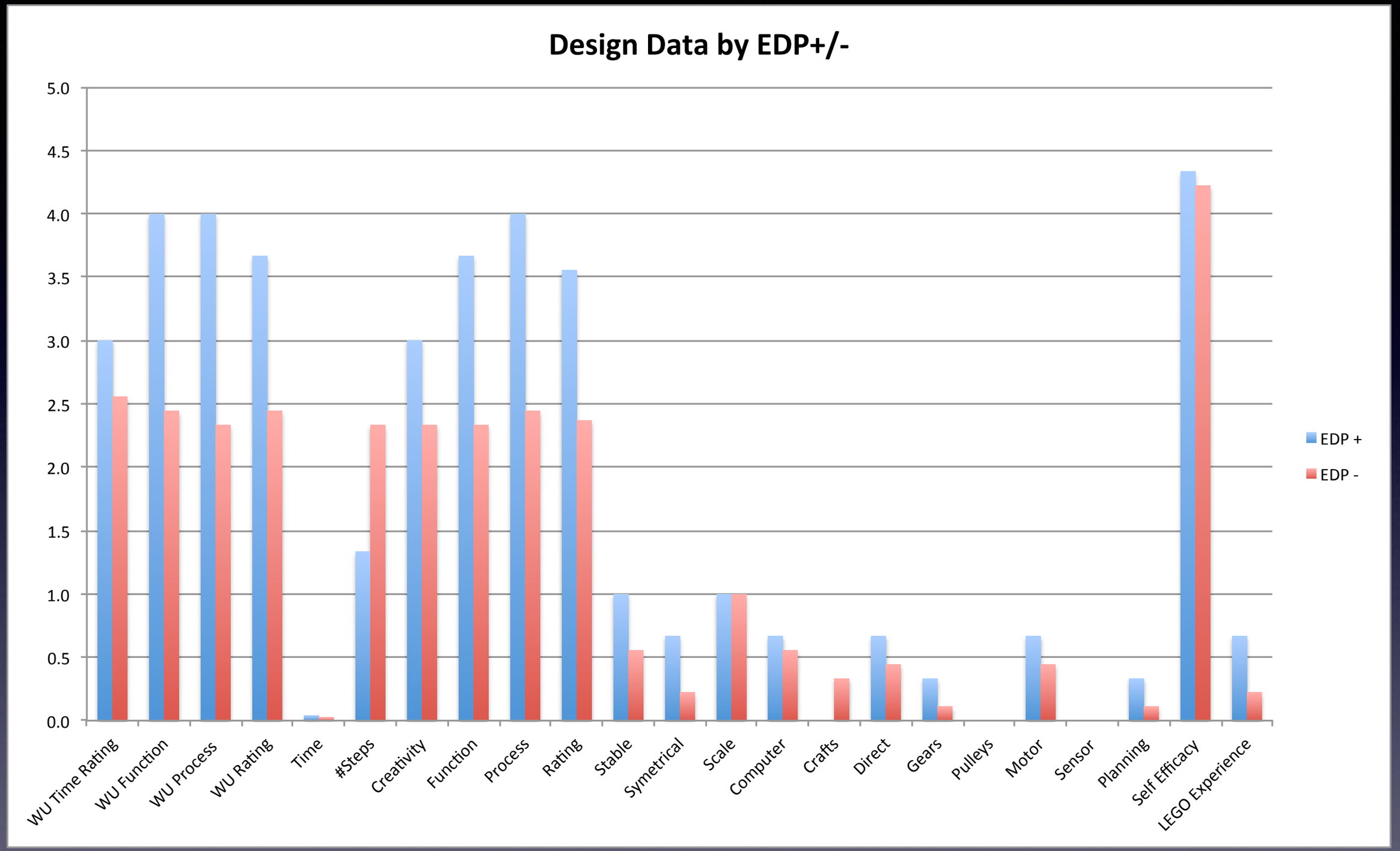
# G6 Examples

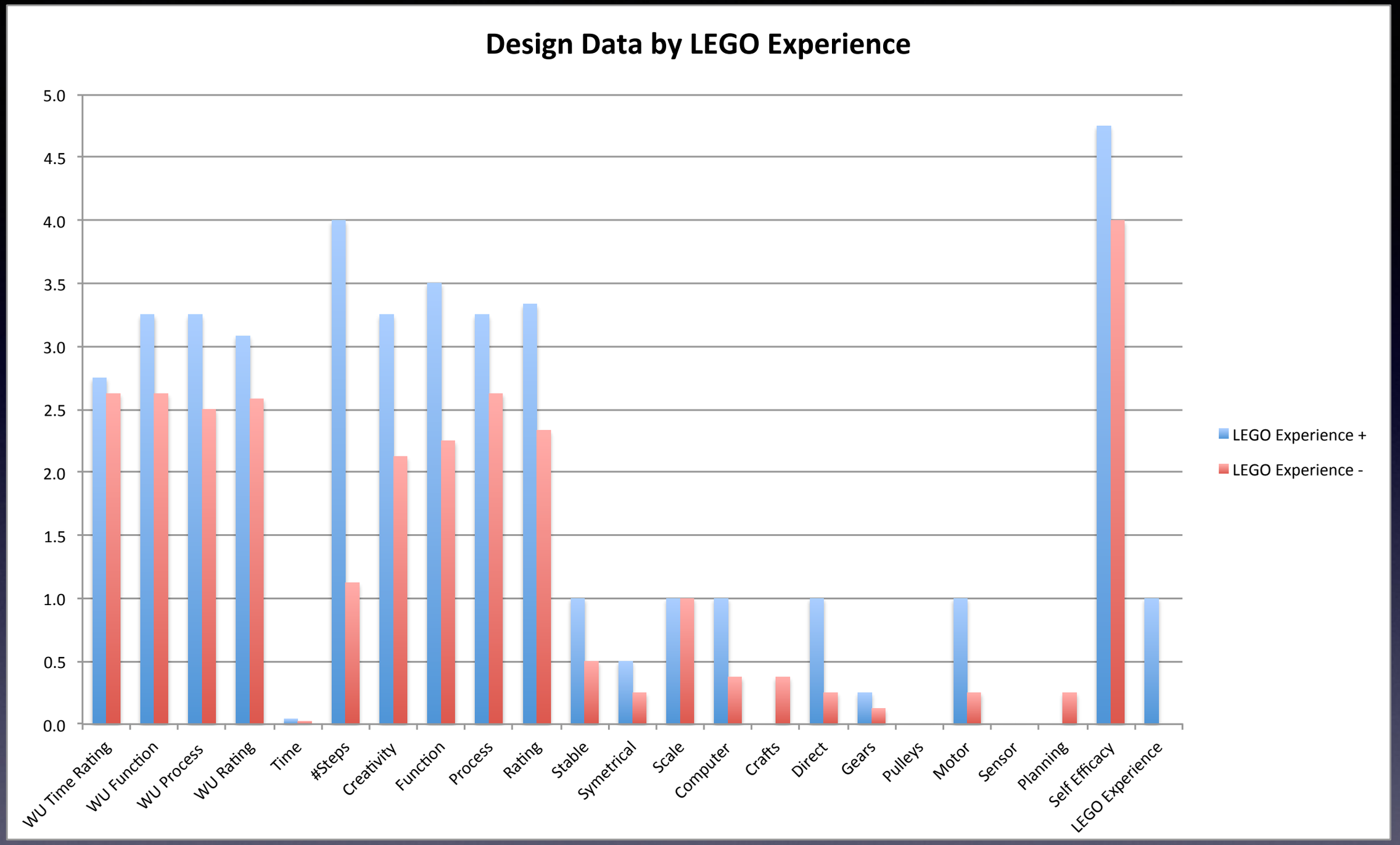
# Design Data by Grade Level



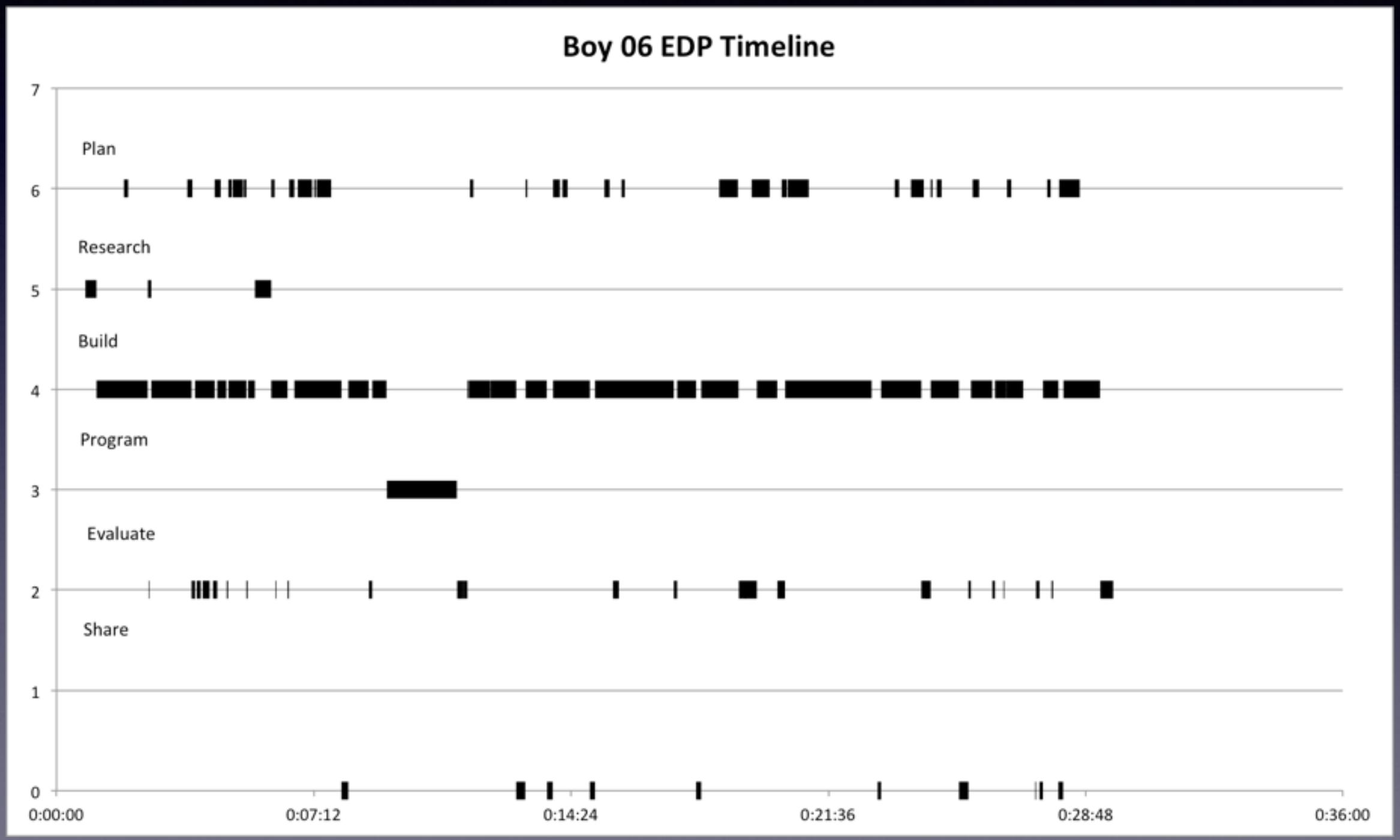
# Design Data by Gender




Design Data by EDP+/-
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
EDP +
EDP -
WU Time Rating
WU Function
WU Process
WU Rating
Time
#Steps
Creativity
Function
Process
Rating
Stable
Symetrical
Scale
Computer
Crafts
Direct
Gears
Pulleys
Motor
Sensor
Planning
Self Efficacy
LEGO Experience


Design Data by LEGO Experience
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
WU Time Rating
WU Function
WU Process
WU Rating
Time
#Steps
Creativity
Function
Process
Rating
Stable
Symetrical
Scale
Computer
Crafts
Direct
Gears
Pulleys
Motor
Sensor
Planning
Self Efficacy
LEGO Experience
LEGO Experience +
LEGO Experience -

# Example G2 Process



# Conclusion

- We have tried WeDo 2 and compared it to WeDo for an open-ended engineering tasks

- What are your thoughts?

# Resources

- johnheffernan@verizon.net
- Kids Engineer - http://www.kidsengineer.com/
- Elementary Engineering - Sustaining the Natural Engineering Instincts of Children
- Tufts CEEO - http://ceeo.tufts.edu/
- LEGO Education - https://education.lego.com/

- Materials:  Laptop, Kit, Dongle, Teacher's Guide hardcopy, research graphs, worksheets, books
- TO DO:
- Differences research (SW also HW) x
- Sample transcript and video clip (how to extract?)
- Figure out how to show/switch (command tab) x