



WPI

Reduction in Classroom Distractions Through Silently Actuated Pens

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Problem Statement

- Many students click pens to release stress and pent up energy
- Distractions from pen clicking correlates to decreased academic performance for the entire class¹

What we built



What's inside

Attempt 1: Pencil Shavings



Attempt 2: Eraser Shreds



Costs vs. Benefits

Costs

- Estimated production cost of \$2-\$3
- Goal for cost to consumer is under \$5

Benefits

- Provides students with a way to release stress and pent up energy
- Removes a classroom distractor

Distraction

Average Level of Distraction (1-7)

Distraction	Average Level of Distraction (1-7)
Students Talking amongst Themselves	5.3
Pen Clicking	4.5
Students Arriving Late	3.6
Students Using Laptops	3.2
Student Response Devices	3.0
Students Sleeping	2.6

Future Plans

Assessment

Patent

License

Mass Produce

Testimonials

"It's so quiet."

"It feels good to use."

"It's so cool how it clicks with no sound."

-WPI Undergraduates

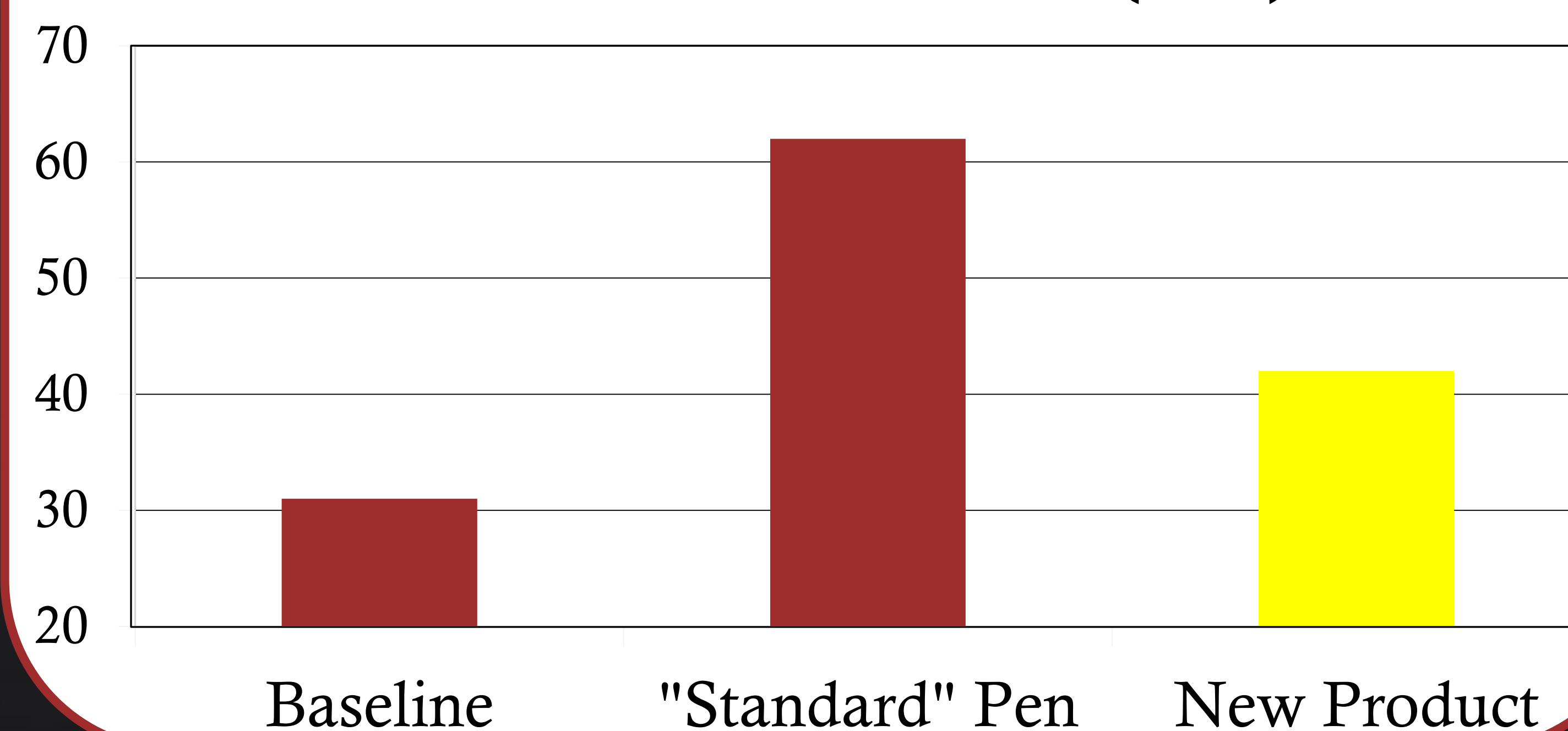
Desired Properties

- Quiet (goal of a least 50% sound reduction over "standard" pen)
- Still a functional pen
- **Provides satisfactory tactile feedback**

Approach

- Line the pen's actuator with a dampening material
- Absorbs energy

Noise Level Comparison of New Product (dB)



Future Product Assessment

- Group 1: Control
- Group 2: Loud Clicking Pen
- Group 3: Quiet Clicking Pen
- Goal: Higher performance in group 3 than 2

[1] Tesch, F., Donna, C., & Ronald, D. (2011). THE RELATIVE POTENCY OF CLASSROOM DISTRACTORS ON STUDENT CONCENTRATION: WE HAVE MET THE ENEMY AND HE IS US*. ASBBS Annual Conference: Las Vegas, 18(1), 886-894. Retrieved from <http://asbbs.org/files/2011/ASBBS2011v1/PDF/T/TeschF.pdf>