

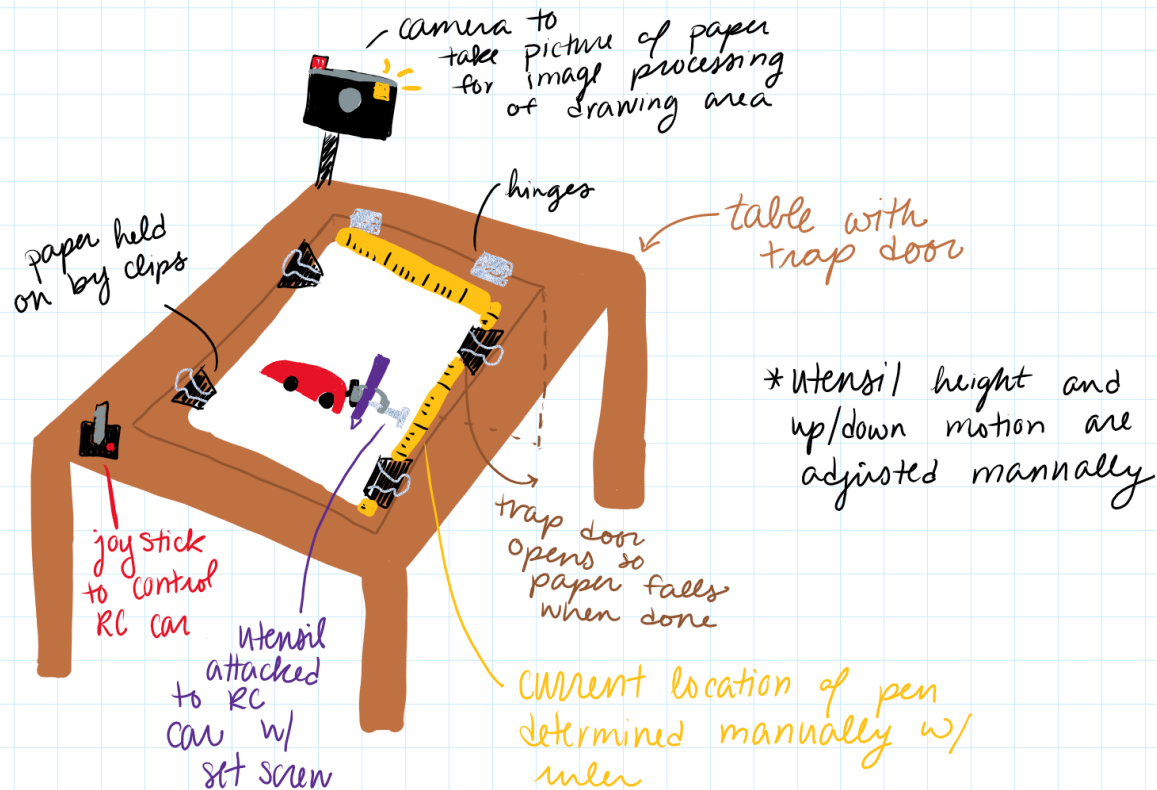
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P21068 – Concept Generation & Morphological Chart

Morphological Chart

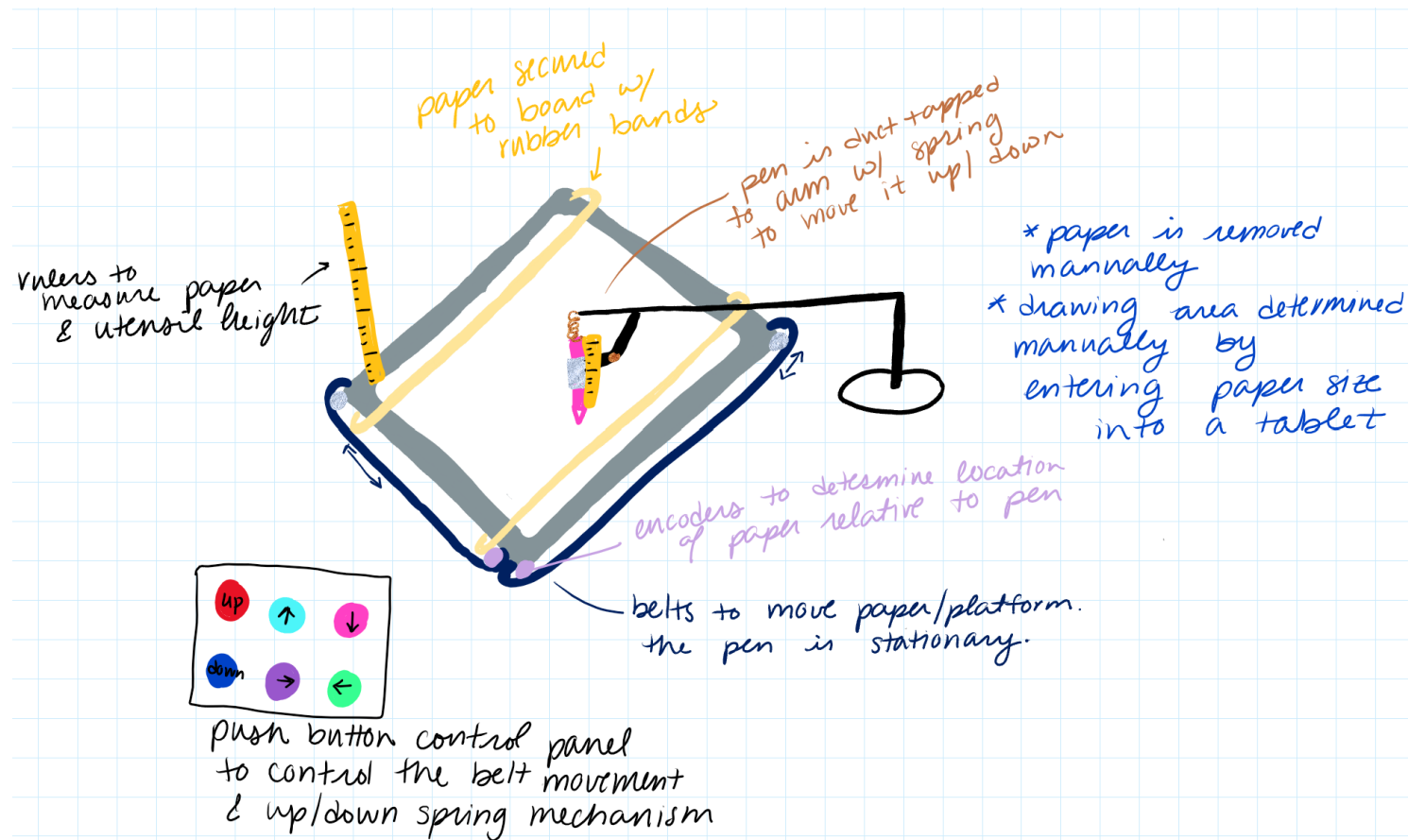
Solutions→ Sub-Functions ↓	1	2	3	4	5	6	7	8	9	10	11	12	13
Gather Input	Large Push Buttons	Joystick	Eye Gaze	Xbox Controller	Touch Screen	Keyboard	Drawing Tablet and Stylus	Mouse	Sliders	Piano Keys	Switches	Motion Controlled (wii)	Track ball
Secure Paper	Tape	Command Strips	Push Pins	Sticky Mat	Clamps	Magnets	Clips	Rubber Bands	Mounting Putty	Borders	Suction	Weights	Gripper
Identify Drawing Area	Camera	Laser	Manually	Conductivity Sensor	Pressure Sensor	Animals	GPS	Borders	Lidar				
Mark Paper	Move arm	Move paper	Custom Stamps	Line by Line	Laser	Embroidery	Carve	Dots	Stickers				
Move to Different Area	Rack and Pinion	Pulleys	Rubber Wheels	Servo with Arm	Robotic Arm	Worm Gear	Pneumatic Linear Actuator	Linear Servo	Magnetic Rail	RC Car	Fans	Belts	
Remove Used Paper	Hands	Roller	Rubber Wheels	Sliding	Sticky Hands	Fan	Lift	Stab it	Sling Shot	Pusher	Trap Door		
Move Utensil Up/Down	Pulleys	Rubber Wheels	Chain and Gear	Worm Gear	Pneumatic Linear Actuator	Solenoid	Linear Servo	RC Car	Manually	Belts	Rack and Pinion	Servo	
Determine Current Location	GPS	Camera	Slider	Encoders	Touch Screen	Manually	Laser	Ruler	Magnetic Sensor	Sonar			
Determine Paper Height	Ruler	Button	Micrometer	Sonar	Weight	Lasers	Manually	GPS					
Determine Utensil Height	Ruler	Button	Micrometer	Sonar	Weight	Lasers	Manually	GPS					

Concept 1



This solution has a common input choice of a joystick and incorporates some manual actions such as adjusting the utensil height manually that the aid could help with. Additionally, the way the paper is held on is not too complicated and it offers a fun trap door to remove the paper, but it could also be removed manually. Finally, the marker is moved around by an RC car, this would be very fun for the students and differs from the original idea of an x-y plotter expressed in the PRP.

Concept 2



In this concept, the pen is stationary, and the paper is moved using belts. This concept should be evaluated since moving the utensil is commonly thought of, but there is the option to move the paper as well. Additionally, this concept using large push buttons which have shown to be good for accessible devices and easy to push. Finally, this concept uses a more precise method of determining the location of the tool with encoders.