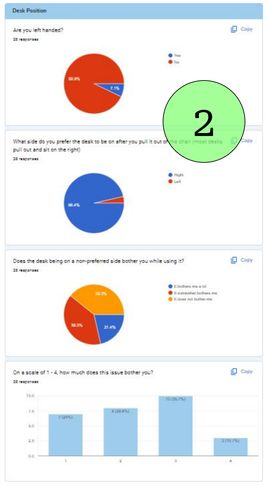


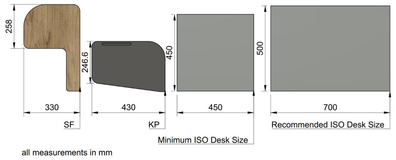
2

Although quite a rare occurrence during Praxis I, our team did get in touch with stakeholders.

We got a total of 28 responses regarding issues people had with the chairs in Sandford Fleming, 2 of which were left-handed people.

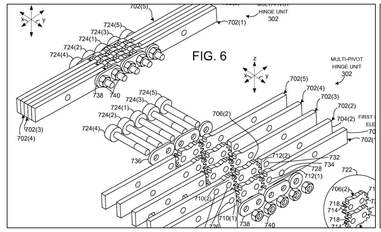
Despite having a lack of stakeholders, we did define our stakeholders properly in the Design Report.

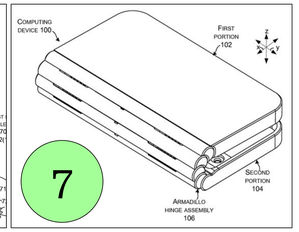
1



The opportunity that my Praxis I team tackled was regarding the inconveniences caused by the desk-chairs in Sandford Fleming 1105, namely their small size for comfortable note taking, especially for left-handed users. Our team justified its unideal size by comparing it to ideal sized defined in ISO standards.

Koffler House chairs were initially included by scoped out after Alpha





7

A patent for a type of hinge known as an “Armadillo Hinge”. This hinge idea unintentionally came up last-minute when I was browsing through old reference designs. It served as an improvement to our old “door hinge” idea due to its ability to stay up without support and flatter writing surface at the hinge connection.

8

The use of Pugh charts eventually lead the team to converge to the Armadillo Hinge design. A requirement verification table on the right shows that our recommended design meets the requirements

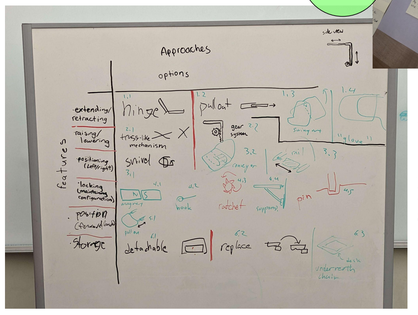
The Pugh chart on the left was created first, and based on conclusions drawn, the team proceeded to create the right one.

6.3. Requirement Verification

Requirement	Hinge Metrics	Constraints	
1.1. Provide enough space for ergonomic writing with either hand	Right: 57.3% Left: 57.3%	**Must** be able to provide coverage on both sides	**Meets requirement**
1.2. Have enough space to fit belongings and schoolwork comfortably	209400mm²	**Should** meet the minimum surface area (202500mm²), defined in [2] **Must** fit within available desk space.	**Meets requirement** **Meets requirement (as designed)**
			Meets requirement
		ect more netre of	**Close to soft constraint**

		Hinge	Pull-Out	Swing-Out (Reference)	Swivel
Provide enough space for ergonomic writing with either hand	Right	Same	Better	Datum	Worse
	Left	Better	Worse		Better
Have enough space to fit belongings comfortably		Better	Worse		Worse
Durability (cycles)		Same	Worse		Better
Stability, horizontal deflection	Horizontal	Worse	Worse		Better
	Vertical	Worse	Worse		Better
Stability, vertical deflection (mm)		Better	Better		Better
Light enough to prevent awkward motion during setup		Same	Worse		Better

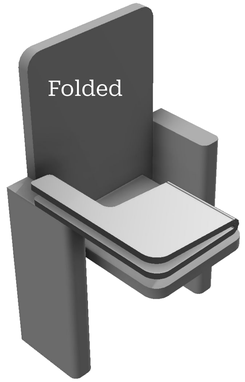
		Hinge (Reference)	Pull-Out	Swing-Out	Swivel
Provide enough space for ergonomic writing with either hand	Right	Datum	Better	Same	Worse
	Left		Worse	Worse	Worse
Have enough space to fit belongings comfortably			Worse	Worse	Worse
Durability (cycles)			Worse	Same	Better
Stability, horizontal deflection	Horizontal		Worse	Better	Better
	Vertical		Same	Better	Better
Stability, vertical deflection (mm)			Better	Worse	Better
Light enough to prevent awkward motion during setup			Worse	Same	Better

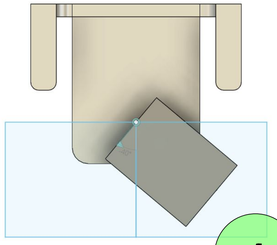


3

A couple of diverging tools that were done before Alpha - a morph chart and brainwriting 6-3-5.

Although not explicitly part of the Design Report, they were still important in setting us up to converge (which was what the Design Report focused more on).





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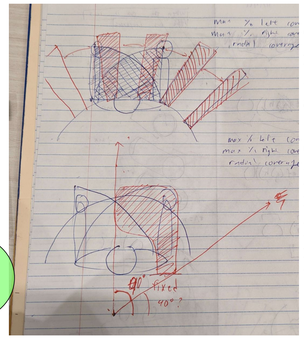
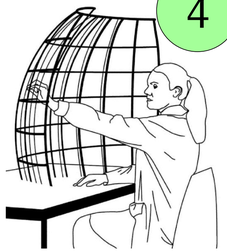




Effective area coverage ended up being quite tricky to quantify, but we ended up finding research that justified comfortable reaching distance. We used this to define the reaching bounds for our designs, and then approximated the desk orientation that would give the largest right and left area coverage (shown in CAD model), which was trickier to do if the solution had moving components

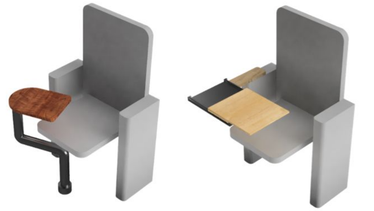
The design process for one of our most important requirements to test the accessibility and usability of our solutions - effective area coverage.

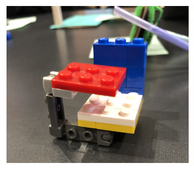
Shown on the left includes a sketch of a swingable desk sweeping across a person sitting in front of it, theoretically allowing writing to happen in any position. Some of our ideas were swingable while others were not.

The other candidate designs that we mentioned in the Design Report. For some of them, they were essentially upgrades to the prototypes brought into Alpha.

The bottom two prototypes were designed with Lego® and cardboard/wood by my teammates.

The final designs were all 3D models because it it was the format that enabled us to testing feasibly.

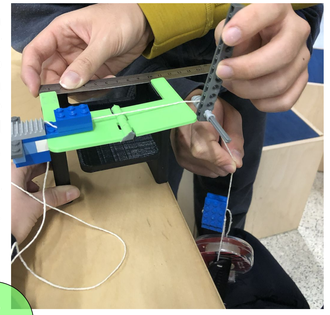




5

Proxy testing table deflection with a 3D-printed scale model. Some clever lego mechanisms were made to simulate a horizontal force. An assortment of random objects were bundled together to simulate a scaled down force.

We had testable 3D prints of all other concepts.



6