EPro8 Challenge
Engineer   Problem Solve   Innovate

Flying Fox

You live on the bank of the Whanganui River –
on the other side of the river to the road.

To get to your house from the road (and back to the road again)
you need to build a flying fox to cross the river.

⚡ This challenge contains optional activities using the EPro8 Electronics
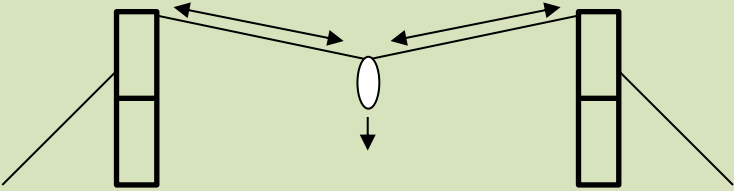Starter Kit.

Construction
Criteria	A structure is on either side of an imaginary 2m wide "river". Each structure is at least 1.2m tall. A rope spans the two structures. Nothing may touch the river.

Strength Test
Criteria	Hang a 500g weight from the rope halfway between the two towers. Observe what happens. Working as a team, try and explain why the towers act the way they do.

Stable Towers
Criteria	A 500g weight hangs from the rope halfway between the towers. The towers are stable and don't tip over.

| Hint | A force on a rope is always in the direction of the rope. When an object hangs from a rope spanning two towers gravity will try to pull the weight straight down and the rope will sag.

Depending on the angle of the sag in the rope the horizontal force can be larger than the weight. This will attempt to tip the towers over.
You could use a guy rope to counteract this and to attach to a desk or chair. |
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One Way Flight

| Criteria | A seat is suspended from the rope.
When the seat is released it "flies" down the length of the rope from one tower to the other. |
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| Hint | Attach pulleys to the seat so they it can glide along the rope. |

Two Direction

| Criteria | Because you come and go from your house the cart must travel in both directions.

With your team at one side of the river the cart must travel the full span of the river and then return to where it started. |
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| Hint | Add second rope that can be used to pull the cart back and forward across the river. |

Crank Handle Operated

| Criteria | A crank handle is mounted on one of the towers.
Using only the crank handle, the carts position can be controlled in both directions. |
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| Hint | Use a reel to feed the second rope in and out. |

Motorised Flying Fox

| Criteria | Two push buttons are on one side of the river.
The position of the cart can be controlled using the push buttons.
It must travel the full span of the river in both directions. |
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Motorised Flying Fox (Simulator)	
Criteria	Use the online electronics simulator, code **FLFX**.
	Two push buttons are on one side of the river and another two push buttons on the other side of the river.
	The position of the cart can be controlled using the push buttons. It must travel the full span of the river in both directions.

After you have attempted this challenge watch the tutorial to see our solution at www.EPro8Challenge.co.nz/Tutorial and enter the Challenge Code **FLFX**.