

MAKE IT MOVE: FLIP BOOK ANIMATION



Kids draw a short flip book and learn how a stack of still pictures, shown fast, turns into motion. It's the same basic idea behind every movie.

Learning goal Kids will make a flip book and explain that still pictures shown quickly in order can look like they're moving.	Ages 6-11	Time 15-20 minutes
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Group: 1-12 kids, each making their own book

Materials

- A small sticky-note pad or 12-20 index cards per kid
- Pencils and erasers
- Fine-tip markers or colored pencils
- Binder clip or stapler (a grown-up does the stapling)
- Flip Book Worksheet printable (optional)

Before you start

- Make a quick sample flip book yourself, even a simple bouncing ball, so kids can see it before they start.
- If using index cards, stack and clip them ahead of time.
- Print the Flip Book Worksheet if you want kids to plan their frames first.

Step by step

- 1 Flip through your sample book. Ask: are the drawings actually moving? Let kids look at the pages one at a time to see that each one is a still picture.
- 2 Explain the idea: each page changes just a little. Flip them fast and your brain reads the small changes as movement. Movie film does the same thing with frames, usually 24 of them every second.
- 3 Pick a simple idea: a bouncing ball, a growing flower, a rocket taking off, or a smile appearing on a face.
- 4 Start on the last page of the pad or the bottom card. Draw the first picture near the loose edge, where your thumb will flip.
- 5 Move to the next page up. Trace what you can see through the paper and change the picture just a tiny bit.
- 6 Keep going for 12 to 20 pages. Small steps look smooth. Big jumps look jerky.
- 7 Flip it with your thumb from back to front and watch.
- 8 Fix it up: if the motion jumps, add an in-between drawing. If it feels slow, take a page out.
- 9 Talk about the brain part. Older books say this works because of 'persistence of vision,' the idea that each picture lingers in the eye. Researchers now say that doesn't explain it on its own. The brain has a motion sense that treats quick, small changes between pictures as real movement (scientists study this as beta movement and the phi phenomenon).
- 10 Count it up: a movie at 24 frames per second needs 24 drawings for just one second. How many would a 10-second cartoon need?

Safety

- A grown-up handles staplers and any cutting.
- If you make a zoetrope, a grown-up cuts the viewing slits.
- Use washable markers for younger kids.

Talk about it

- What happened when you flipped slowly? What about fast?
- Why do small changes between pages look smoother than big ones?
- If film shows 24 pictures every second, how many pictures are in one minute?
- Where does the 'moving' really happen: on the paper or in your brain?
- What would you animate next if you had 100 pages?

Make it easier

Make an 8-page book with one big, simple shape, like a circle that grows. A grown-up can draw the first and last page and let the kid fill in the middle.

Take it further

Make a zoetrope strip: draw 12 frames in a row on a long paper strip, tape it inside a paper cup or bowl, and spin it while peeking through slits cut in the side. Or do the math: how many drawings for a 30-second scene at 24 frames per second?

No screen? No problem

This one's already screen-free. If you don't have a sticky pad, draw in the bottom corners of an old notebook and flip the pages.

Sources

Two Kineograph Flicker Books, Science Museum Group Collection.

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