

events that happen too quickly to see what's happening or too slowly to see the changes can be captured in a way that is both educational and engaging.

For example, using the time-lapse feature built into iOS or Android (you can use free apps like **Lapse It**, too!), students have captured shadows moving across a classroom floor or wall (as the Earth rotates), cloud movements, heliotropism, oxidation of steel wool, insect movements, egg hatching, condensation forming, and so on. Using the slow-motion feature, students have captured butterflies and birds flying, ice breaking on pavement, structures breaking and collapsing under a load or in response to natural forces, water drops hitting a surface, wires glowing in response to electrical current applied, a vibrating tuning fork applied to water, waves of all kinds, and so on. These captures can be used as part of inquiries to generate more questions and provoke further inquiries.



4. Rotating Cook Timers + Camera

Time lapse capture techniques with small devices and cameras can be expanded with rotating **egg or cook timers**. The goal

is to tinker and modify the cook timer to hold securely a smartphone or small camera so that events that move position slowly over the course of an hour or two (such as tides, sunrise/set, shadow movements) or events where it would be helpful for the video to pan as the recording takes place. There are also commercially available products that make it easier to attach a camera or smartphone with spring loaded clamps or standard SLR mount bolts.

5. Stop-Motion Animation

Because devices such as iPads are relatively common in schools, free apps, such as Stop Motion Studio for iOS and Android, make it easy for students to experiment with stop motion.

In digital storytelling, the benefit of stop motion for students is that there is time to think and plan a story, and it can feel less threatening (than a live recording of a performance). The act of collaboratively planning and rehearsing, recording, and re-recording digital stories, using stop motion and other non-live strategies, offers time to discuss and experiment, improve and reflect. In turn, this offers teachers the ability to observe, converse and note what's going on during the pre-production sessions. Valuable context-based evidence can be gathered to help assess learning in language arts.

Stop-motion is also an effective strategy to assess concept development. Students can apply this technique to explore and/or demonstrate their understanding of various concepts such as plant growth, life-cycles, planetary orbits, Bernoulli's principle, differential gears, growing patterns, science experiments, and so on. These animations can directly model the physical or biological phenomena or they might use simple papercut and word card techniques to explain the phenomena, or hybrid of both. Again, the pre-production requirements of any stop-motion project allows for time to think, reflect, plan and discuss.

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