

# Connected Library

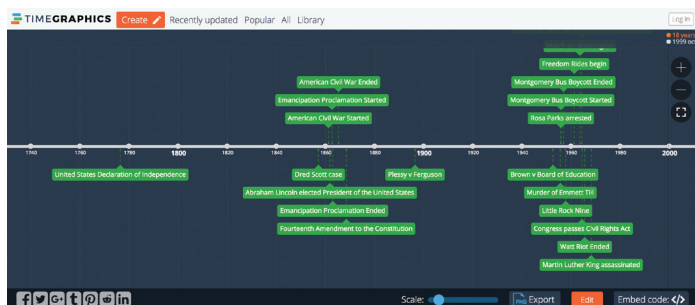
## It's About Time

I have used a variety of time-related tools with teachers and students in the course of our inquiries and project-based learning activities. What follows is an eclectic mix of resources and ideas that might be useful to teachers and students you support in your role as teacher-librarian.

### 1. Timelines

Timelines are often used within a historical context as a way of chronologically organizing past events. But the concept of a timeline can be applied to other domains. A timeline structure can be used in the analysis of social or physical phenomena that students might be studying such as plant or animal growth, biographies, visualizing demographic or statistical data, social justice and human rights events, and so forth. A timeline can provide structure for project planning or design-based thinking.

Probably one of the most powerful tools I have used recently is called **time.graphics** (and that's the URL, too). This is a free, web-based timeline creation tool that supports collaboration, embedding, and integration of other tools such as Google Sheets and YouTube. Be aware, though, that this tool takes a wiki approach by default: any timelines you create are publicly viewable and publicly editable by anyone. However, you can change the defaults and control the access (in a similar way to YouTube videos). Timelines can be public (viewable and editable), hidden (need to know the URL to view or edit) or fully private. Unlike YouTube, if someone else can access your timeline, they can edit it.



### 2. Slow-Motion Video Analysis

I was first inspired many years ago by an app called **Coach's Eye** to use slow-motion analysis but not in a sports related performance context. There are many physical phenomena that happen rapidly in our physical world and, to better understand them, apps that put students in control of video playback speed are useful. For example, students looking at everyday events such as a ball bouncing or an animal/person running can take control of such movements using apps like **Coach's Eye** (paid) or **Hudl Technique** (free, and formerly called Ubersense). Both of these apps work on iOS and Android.

For example, we borrowed a ladder from the school custodian and set it up outside next to a brick wall. A student managed to attach two metre sticks to the wall next to where I would be dropping a ball from standing on the ladder. Another student was ready with the Hudl Technique on her iPhone. It took about five attempts to record the basketball falling and bouncing several times in the same spot. The metre sticks also needed to be visible in the video (so we could take measurements). The result was that the students were able to create a table of values with two variables: time index (every 0.05 seconds) and height (in cm). This data was used to create a graph of the height of the ball over time as it bounced. We compared several kinds/sizes of balls, and their corresponding "bounce graphs" to see how they differed. We found patterns in the numbers and discussed all the factors that might be related to how a ball bounces. Then, we tried to describe some mathematical and/or computational method that would generate the patterns visible in the measurements. That was challenging but fun!

### 3. Time Lapse and Slow-Motion

The near ubiquitous availability of devices in and out of school makes for easy access to useful tools. Common school devices, such as iPads, come standard with a camera that has built-in slow-motion and time-lapse capabilities. This means that