

# MATHEMATICAL THINKING: DIVERGENT PATHS FROM A SINGLE EVENT

POSITIVE/INCREASES THINKING

NEGATIVE/DECREASES THINKING

Mathematical thinking required for creation of formulas and deeper understanding of process - and spreadsheets are used increasingly in K-12

People are engaging more in map-reading and interpreting (e.g., running apps, travel) with technology more readily available

Mathematical thinking incorporated into many banking/finance platforms - e.g., data visualization - and fraud should be prevented by checking digital data

The STEM/STEAM framework inherently supports math education. Advocating for curricular connections and integrating technology engages students in math (Larson, 2017)

Games claim to improve math-based skills like memory, attention and problem solving - many apps involve interaction with numbers and data (i.e., more exposure).

**Spreadsheets**

**Maps/GPS**

**Banking**

**STEM Education**

**Brain Games & Apps**

Automation for basic calculations removes need for humans to compute

GPS and automation (e.g., directions, location services) removes need for sense of scale, inhibits mathematical thinking (McMullan, 2014)

Digital banking has removed need for many math-based tasks once done by hand (Lyons, 2017) - removes need for calculations

Foundational and basic conceptual knowledge may not be as strong in STEM programs (citation needed) Math and STEM principles conflict - STEM is too project-oriented for certain math (e.g., algebra)

Does not support deepening mathematical thinking - supports increased skill at using or playing the game (Jhaveri, 2016). With apps, do we really understand the functionality or just see data?