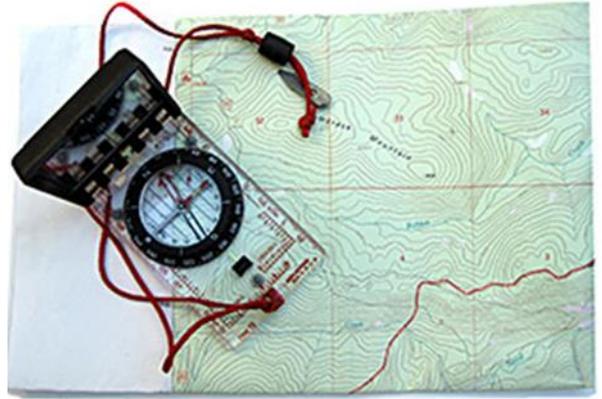


Objective: Develop a curriculum and skill-set for instructors to teach map and compass reading to K-12 students: a successful and practical outdoor/indoor route to increasing student interest and involvement in STEM and the environment



Proposal from the Geologic Maps Foundation, a Ventura County based, nonprofit organization (www.geologicmapsfoundation.org)

Introduction: Map and compass reading (MCR) is considered a skill acquired by adult-age hikers, backpackers, etc. Little appreciated is MCR has been successfully taught to K-12 students and, in turn, they gain technical confidence, a gateway to STEM, and enthusiasm for the outdoors and the environment (Watters, 1997). Humans are innately connected to map making and reading and the skill may pre-date the written word (Norman, 2017). We should utilize this unappreciated and very human connection in STEM education.

Needed: Integration of MCR with STEM guidelines and requirements, develop a MCR curriculum, while increasing the number of MCR instructors (use school's in-house, experienced talent pool).

Benefits of MCR:

- Proven method that generates excitement in students for science and the outdoors (Watters, 1996).
- Inclusive: open and appealing to all (mostly non-quantitative), provides disadvantaged students an alternative entree to STEM and the outdoors.
- Inexpensive: paper maps, and a compass for older students.
- Will provide students with a life-time skill and an appreciation of the outdoors and environment.
- MCR introduces students to STEM subjects, such as earth science, environmental sciences, geographical information systems and sciences, math, etc., in an innate and gradual manner.

Proposed MCR teaching setting:

- Taught at two levels: 1-6 grades (without compass) and 7-12 (with compass and possibly a GPS).
- Can be taught indoors and outdoors at almost any location.
- One to two-hour class at school (should be repeated several times during the year).
- Half to one-day field trip to add topographic map reading skills plus the outdoors experience.

References:

Watters, R. (1997). The art of teaching map and compass: Instructional techniques, curricular formats and practical field exercises. In Guthrie S., Macke J. & Watters R. (Eds.), *Proceedings of 1996 International Conference on Outdoor Recreation and Education*. (pp. 177-185). Boulder, CO: Association of Outdoor Recreation and Education.

Norman, J. (2017), History of information: <http://www.historyofinformation.com/expanded.php?id=6>