Overview: The use of drones has dramatically increased in recent years. There is potential for use of drones in cultural relevant lessons, such as: citizen science projects, fish and wildlife monitoring, observing climate and weather changes, and infusing technology into our Elders traditional ecological knowledge and culture. This prompt is to provide ideas and resources to use a drone as an added component to enhance the cultural lessons in the classroom.

Please note the following important safety precautions:
- Check and follow any state and federal laws and rules in your area.
- Be aware of drone interactions with aircraft and personal privacy of community members.

Goal:
To integrate the use of drone for lessons in Chugachmiut's cultural curriculum, specifically *Traditional Place Names, Our Water, and Climate Change*

Objective(s): Students will:
- Research ways how drones are currently being used
  - Brainstorm additional ways drones can be utilized in the Chugach Region and enhance activity lessons within the cultural curriculum.
- Research the laws, rules and required certifications for flying drones before using.
- Learn about deploying, and flying techniques.
- Develop drone data collection and compile for specific cultural projects.

Materials/Resources Needed:
- Drone(s) for classroom use
  - Many options are available from mini kits to drones capable of carrying onboard scientific sensors, cameras and payloads.
- [Alaska Sea Grant: Drones for exploring the ocean and beyond](#)

Teacher Preparations:
- Review school district or agency policies on the use of drones with students and in your community.
  - If there is not a policy, collaborate with administration to discuss guidelines.
- Locate drone(s) to use for lessons.
- Research drones for specific classroom uses.

Links:
- [Alaska Sea Grant: Drone for Exploring the Ocean and Beyond](#)
- Federal Aviation Administration: https://www.faa.gov/
- Mini Drone Educational Kit: https://edu.parrot.com/
- [Alaska Aerial Education: http://advaerial.education/](http://advaerial.education/)

- Alaska Higher education: Teaching teachers with drones
  - http://greenandgold.uaa.alaska.edu/blog/63249/higher-education-teaching-teachers-drones/
- Video: The Alaska Native Science and Engineering Program (ANSEP) highlight the use of Drones (UAV's) with students.
  - https://www.youtube.com/watch?v=v34VXd7vhiE
  - https://www.youtube.com/watch?v=akMTfsGV81c
- Examples of Drone video footage from the Chugach Region:
  - Cordova: https://www.youtube.com/watch?v=mJ0fGoe2-hs
  - Valdez: https://www.youtube.com/watch?v=ccfCDWPMurM
  - Seward: https://www.youtube.com/watch?v=rHHqkzzxNck
  - Nanwalek: https://www.youtube.com/watch?v=p7bX7qdhWcM
  - Frontiers: Alaska Drone Pioneers (VIDEO): https://youtu.be/WKp2pqG9Rxo1: Drone Pioneers Opening
    - 2: St. Paul Island and Drone Training (1:36 min)
    - 3: St Paul Island Drone Applications (5:26 min)
    - 4: Round table discussion with Nick Kellie (K2 Dronotics) and Richard Webb (UAA Innovative Design Studio) (10:19 minute)
    - 5: Drone vocabulary (22:02 minute)

Activity Ideas:
- Salmon observation:
  - https://www.youtube.com/watch?v=CrO4gWkwCJA
- Wildlife Monitoring:
  - https://www.youtube.com/watch?v=LKDFw4Wsxao
- Water Monitoring
- Forest Surveys
- Community Virtual Field Trips
- Mapping
- Environmental changes

Additional Links and Lesson Ideas:

- Anchorage high school bringing drones into classroom https://www.adn.com/alaska-news/education/2016/05/22/this-anchorage-high-school-is-bringing-drones-into-the-classroom/
- Drone vocabulary information
  - https://www.directionsmag.com/article/1340
- The K-12 Internet Resource Center
  - https://www.k12irc.org/tools/drones.php
- Drone Curriculum.net
  - http://dronecurriculum.net
- What are Drones
- Drone flying exercises (takeoff and landing)
- Student designed drone flying course and practice https://youtu.be/l76LY2-g6R4