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|  *Running with the River – Keeping it Healthy*  |
| **Teachers: Kristina Camacho** | **Duration: 8 Days** |
| **Subject/Course: Biology** | **School: Petaluma High School** | **Grade Level: 10** |
| **Collaborating Organizations: -**  |
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| **Standards Met**(NGSS, CCSS, or otherwise) Please include full text of standards.  |  HS.LS2.7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. |
| **Project Summary**(include student role, issue, problem or challenge, action taken, and purpose/beneficiary) | Goal: In this exercise, we will be developing our field observation skill as we work toward understand what’s happening in an environment and identifying relationships. The students will apply their understanding as they make suggestions related to maintaining and or improving ecosystem health of the Petaluma River. Objectives: Students will do background research regarding the Petaluma River Watershed using the FOPR Atlas & timeline. They will do research, make & write observations, and develop a public service announcement related to our guiding question. |
| **Essential Question**Question students will explore throughout the course of the unit. | How can we advise change in the behavior of people around the Petaluma River to increase ecosystem health? |
| **Key Learning Objectives and Assessments**Concrete objectives for student skill building and comprehension and how these will be measured. | Learning Objective | Assessment |
| Students will do background research regarding the Petaluma River Watershed using the FOPR Atlas & timeline | Google doc assignment to guide use of watershed atlas & timeline research pre-visit  |
| Students will make & write observations | observation notes recorded during visit |
| Students assess & evaluate water quality using the watershed kits | Water quality data will be recorded & uploaded onto the FOPR site |
| Students will develop a public service announcement related to our guiding question: How can we advise change in the behavior of people around the Petaluma River to increase ecosystem health? |  Students will create public service announcement videos that can be shared with community members and will be presented to classmates during class.  |
| **Orientation** | In-Class Visit | 1 | Field Trip to River Heritage Center | 2 | Other |  | If other, describe in timeline how you will meet entry activity requirements |
| **Making Products Public**Include how student work will be shared with community members and/or organizations, who students will engage with during/at end of project, and which product(s) will be presented at the Watershed Classroom Student Showcase. | Students will create public service announcement videos that can be shared with community members at the Watershed Classroom Showcase and will be presented to classmates during class. |
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| PROJECT TIMELINE |
| Please list all activities which are part of the unit in the order they will be implemented. Timeline must include pre and post-assessments, other in-class assessments, an entry activity, at least three outdoor fieldwork activities, a plan for participation in the student showcase, and any other supporting activities and classwork. |
| **Activity** | **Type of Activity**(Field Work, In-Class, Presentation, Assessment) | **Description**  | **Resources Needed** | **Exact or** **Approximate Dates** |
| *Name the activity* | ***Field Work:*** *Any hands-on outdoor lesson or field trips****In-Class:*** *Any in-class activity or project* ***Presentation:*** *Any activity during which students share their work with each other or an outside audience****Assessment:*** *Any written or oral exams given to assess student understanding and knowledge*  | *A thorough outline of the activity.*  | *All reading materials, activity materials and equipment, transportation, third party help, or other resources needed to make the activity possible.*  | *Please be as specific as possible so that we best know when to reach out with resources and tools to aid in implementation. Exact dates will be emitted from publicly shared version to protect student privacy.* |
| Orientation  | In Class Learning |  | Access to internet & iPads/Chrome Books to do watershed pre-assessment |  Tuesday 4/9/19 |
| Background Research  |  In Class/Individual Activity | Do Petaluma River Prep Petaluma River Watershed Atlas & Timeline with Petaluma Wetlands Alliance https://goo.gl/mfqB2D |  Access to internet & iPads/Chrome Books |  Thursday 4/11/19 |
| Background Research – Using Equipment | In Class/Individual Activity and Field Work/Small Group Activity | Students will collect pond water from the PHS pond to take & evaluate water samples using the water testing kits | Water sampling kits/equipment, clipboards | Monday 4/15/19 |
| Field Observation Trip to McNear Landing | Field Work | Work on Petaluma River Field Study: https://goo.gl/xom0TL | Field Trip Chaperones for walking,FOPR docent for David Yearsly Center, Water sampling kits/equipment, clipboards | Wednesday 4/17/19 |
| Field Observation Trip to McNear Landing | Field Work | Work on Petaluma River Field Study: https://goo.gl/xom0TL | Field Trip Chaperones for walking,FOPR docent for David Yearsly Center, Water sampling kits/equipment, clipboards | Friday 4/19/19 |
| Project work time (creating public service announcements with teacher guidance) | Classwork | Students will plan and begin their public service announcements with teacher guidance.  |  Access to internet & iPads/Chrome Books | Tuesday 4/23/19 |
| Project work time (small group share out & peer review of projects) | Informal Presentations | Students will informally share with another small group to review and edit their presentations.  | Access to internet & iPads/Chrome Books | Thursday 4/25/19 |
| Students will share their public service announcement formally as they present to their classmates | Formal Project Presentations | Students will formally present their projects to their classmates and a project will be selected to be shared at the Watershed Classroom Showcase event.  | Access to internet & iPads/Chrome Books and presentation technologyAccess to internet & iPads/Chrome Books to do watershed post-assessment |  Monday 4/29/19 |

Please add more rows if needed. (Right click in last box, “Insert Row Below”)

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| **Other Notes:**I would like to increase engagement for the students related to their presentation – a few students will get to present at the Watershed Showcase but is there a way I could get some help developing a plan for more students to share their public service announcement videos with community members in another context (maybe present at city hall or upload them to a website or something like that?) |