| **NAME OF PROJECT:** Stronger Together - Communication and Collaboration  GRADE LEVEL: 9-14 |
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| SUBJECT AREAS: Biology, Economics, Gaming, Collaboration |

| Project Summary | For this project, high school students (9-12) will gain insight on how they work together when solving problems. Students will play a population dynamics game called *Little Fish Lagoon*. In it, players make a series of fishing choices to maximize profits while maintaining enough biodiversity in a shared sea.  Players will identify a variety of communication patterns through visualizations of their in-game communication and discussions of their chat logs. Afterwards, we will use the same chat tool with another content-aligned lesson and reflect on our collaboration. |
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| Essential Question | How do we communicate effectively when solving problems together?  How do we communicate effectively in teams? |
| Learning Objectives | * Students will analyze population dynamics in the 3-player game *Little Fish Lagoon* to take reasonable game actions. * Students will reflect on effective communication in the game context. * Students will reflect on effective communication in a content-aligned lesson context. |
| Lessons | **Game Lesson** - Introduce the larger question, “How do we communicate effectively when solving problems together?” Students create a list of criteria, form teams, and play *Little Fish Lagoon*. Teacher leads a discussion of game actions, communication patterns, and/or population dynamics. Students reflect on the visualization of their group’s gameplay and self-assess around collaboration skills. If possible, connect communication patterns from visualizations to game performance.  **Chat Lesson** - Reintroduce the student-generated list of criteria and associated question, “How do we communicate effectively in teams?” Students engage in a content-aligned collaborative activity using the chat system. Along with the activity synthesis, ask students to reflect on the visualization of their group’s communication and self-assess around collaboration skills. If possible, connect communication patterns from visualizations to group performance.  **Moderation Session** - As a means to establish shared performance expectations around a rubric or rating system for collaboration, students participate in a moderation session. This is where student self-assessment ratings from the game lesson and/or the collaborative activity with chat lesson are analyzed along with chat logs and other evidence to support claims about collaboration skills. This helps to establish and maintain norms for communication when working in groups. |
| Standards | **Biology** 1) Movement of energy in ecosystem [HS-LS2-4](https://www.nextgenscience.org/pe/hs-ls2-4-ecosystems-interactions-energy-and-dynamics)  2) Interdependence of species within ecosystem [HS-LS4-5](https://www.nextgenscience.org/pe/hs-ls4-5-biological-evolution-unity-and-diversity)  3)Biodiversity [HS-LS4-6](https://www.nextgenscience.org/pe/hs-ls4-6-biological-evolution-unity-and-diversity)  **English Language Arts**  CCSS.ELA-LITERACY.CCRA.W.6  Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.  **Collaboration**  1) Establishing and maintaining shared understanding  2) Taking appropriate action to solve the problem  3) Establishing and maintaining team organization  **Problem Solving**  1) Exploring and understanding  2) Representing and formulating  3) Planning and executing  4) Monitoring and reflecting |

| **GAME LESSON** | |
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| Preparation | We recommend you develop a tool for student self- or peer-assessment ratings like the Process of Learning (POL) Tracker.   * Develop collaboration criteria with your students either during this lesson or prior to this lesson and have a POL Tracker prepared for students to self-assess with. * Generate game codes in the Little Fish Lagoon Teacher Dashboard for a multiple of three larger than your class size. Prepare to distribute room codes to small groups and have the dashboard open before players start to play. |
| Guiding Question | How do we win at *Little Fish Lagoon*?  How do we communicate effectively in teams?  What patterns of communication do you notice?  What are my strengths and weaknesses when working in groups? |
| Learning Goal | * Students will learn the outcomes of different game actions in *Little Fish Lagoon* * Students will experience a need to work together in order to accomplish a shared goal * Students will describe patterns of communication when collaborating with competitors |
| Lesson Flow  (65 min) | 1. (2 min) [Hook](https://vimeo.com/417368718): Explain that in this lesson, students will be trying to win at the game *Little Fish Lagoon*. Share the teaser to engage students.      1. (2 min) Essential Question: Share the guiding question with students, “How do we communicate effectively in teams?” and explain that we will think-pair-share a list of Dos and Donts before playing the game.      1. (6 min) Think-Pair-Share:  * Give students 2 minutes to individually list their “Do Needs” and “Don’t Wants”. Display questions:  | *What DO teams NEED when trying to communicate?* | *What DON’T teams WANT when trying to communicate?* | | --- | --- | |  |  |  * Give 90 seconds for pairs of students to share their lists with each other. * Have students share ideas with the whole group as you chart up a class list for another 2 minutes.   4. (4 min if needed) Create a class list of collaboration criteria to be used for self-assessment. Ask students to describe 1-2 actions or behaviors that would serve as evidence for each criterion. Add the criterion to a Process of Learning tracker for collaboration.  5. (30 min) Play Game: Distribute devices and create teams of 3. Provide them with their class codes and direct them to the URL using Chrome. Circulate and make note of communication patterns, gameplay strategies, or conversations that you’d like to share with the whole class.  6. (5 min) Have students individually retell the story of gameplay. What do they notice and wonder about the game?  7. (10 min) Discussion of game actions, communication patterns, and/or population dynamics.  8. (5 min) Two possible closing activities: (1) Ask students to reflect on the visualization of their group’s communication during the game. Connect communication motifs from visualizations to patterns of behavior. (2) Ask students to reflect on the collaboration criteria today with a POL tracker. |
| Vocabulary | Biology: Ecology, Population, Food Web, Sustainability  Economics: Common-pool resource, Renewable resource, Revenue, Income, Expense  Math: Visualization, Pattern, Optimization |
| Assessments, Reflection and Evidence of Student Learning | By the end of the lesson, students will have completed multiple rounds of *Little Fish Lagoon*. They will be able to participate in a discussion around game actions and reflect on possible winning strategies.  Students will be exposed to multiple communication patterns and have the opportunity to discuss their group communication visualization as it relates to the game context. |
| Resources | **Lesson resources: Student Handouts:**   * [Test Game Link](https://pisces-s3.s3.amazonaws.com/playtest/index.html) ([prod](https://pisces-s3.s3.amazonaws.com/prod/index.html)) - [Dos / Don’ts](https://docs.google.com/document/d/1WAfoDKC8loKG5w1Bxy53GWuCe9x2g9mxBNcNB0qk_Xo/edit?usp=sharing) * [Test Teacher Dashboard](https://pisces-s3.s3.amazonaws.com/playtest/teacherBuild/index.html) ([prod](https://pisces-s3.s3.amazonaws.com/prod/teacherBuild/index.html)) - [Story of Gameplay](https://docs.google.com/document/d/1dYK1Pq7OxjSWRodIiiRgJFucbm6hhCftn4oW1mnp0o8/edit?usp=sharing) * [Slides](https://docs.google.com/presentation/d/1nDyrDAp4U18LLfHG9kHUp1YaTPW-fX9RYzacxe0DGk8/edit?usp=sharing) - [Game UI](https://drive.google.com/file/d/1WDynQ9Y-zb_wNIwOTxU-tE_AAL_gvDIQ/view?usp=sharing) * [Dashboard Guide](https://drive.google.com/file/d/1l5fm5kaXQMqeccSROd6YrZ4ovHl0Dp5O/view?usp=sharing) **Rubrics** * [**Technical FAQ**](https://docs.google.com/document/d/1W_hDruykIdBmO1nzLkcsYzjAWY4i_3u-pQK3UoQ6mvU/edit?usp=sharing)  - [21st Century Rubric](https://drive.google.com/file/d/1zzpwfP2sj5at2aeEofVXlqPy-wVoftl7/view?usp=sharing)   - [PISA 2015](https://drive.google.com/file/d/11e9QH0peHvT6oqjHoz9OkCAjCU-JtA8A/view?usp=sharing) ([factors](https://drive.google.com/file/d/1gfODOOVw7JRMek-7UctfGLXZkn2hqTOE/view?usp=sharing), [framework](https://drive.google.com/file/d/15mG3yNvg7z_hPobS3nOZzFWiBlv8LSCt/view?usp=sharing))  **Process of Learning Tracker:**   * [Google form](https://docs.google.com/forms/d/11Dl8B6XLuEX_hyW6cr07B4gxBnU0SsAO1IaMzCAfJAc/edit?usp=sharing) ([doc](https://docs.google.com/document/d/1BKweZfNy0qwFVLxu7DBVLaUAPWUvdbPye1zmQOM1Q78/edit?usp=sharing), [sheet](https://docs.google.com/spreadsheets/d/1y-Ds-tY_SDloTt50_pC33HyufWLqWLeHP5GuuJIUQCY/edit?usp=sharing)) |

| **CHAT LESSON - Rainbow Logic** | |
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| Preparation | We recommend you develop a tool for student self- or peer-assessment ratings like the Process of Learning (POL) Tracker.   * Develop collaboration criteria with your students either during this lesson or prior to this lesson and have a POL Tracker prepared for students to self-assess with. * The Rainbow Logic lesson is an example of a groupworthy task to use with Libra. You may use Libra with any groupworthy task for groups of 3. * Generate room codes in the Libra Teacher Dashboard for a multiple of three larger than your class size. Prepare to distribute room codes to small groups. |
| Guiding Question(s) | How do we communicate effectively in teams?  What patterns of communication do you notice?  What are my strengths and weaknesses when working in groups? |
| Learning Goal | * Students will experience a need to work together in order to accomplish a shared goal * Students will describe some patterns of behavior in teams |
| Lesson Flow  (30 min) | 1. (2 min) [Hook](https://www.youtube.com/watch?v=8Ox5LhIJSBE): Explain that in this lesson, students will be working in small groups toward a shared goal. Share a hook related to communication needs. 2. (1 min) Essential Question: Share the guiding question with students, “How do we communicate effectively in teams?” and explain that we will brainstorm a list of collaboration criteria before the main activity.      1. (3 min) Group chat:  * Give students 20 seconds to compose a response to “identify the qualities of an effective teammate.” Copy/paste their responses to reference later. * Give students 20 seconds to compose a response to “identify the attitudes and behaviors of an effective teammate.” Copy/paste their responses to reference later.  | *Qualities of an effective teammate* | *Attitudes & Behaviors of an ineffective teammate* | | --- | --- | |  |  |   4. (4 min if needed) Create a class list of collaboration criteria to be used for self-assessment. Ask students to describe 1-2 actions or behaviors that would serve as evidence for each criterion. Add the criterion to a Process of Learning tracker for collaboration.  5. (10 min) Introduce Rainbow Logic: Share the rules of Rainbow Logic as well as positive and negative examples of grids. Model an example by acting as grid designer and letting a pair of students serve as the partners who need to agree on what question to ask next.  6. (20 min) Play Rainbow Logic: Distribute Libra room codes to students. Keep everyone together as a whole-group so they are forced to communicate through Libra.  #. (5 min) Closing Activity: Ask students to reflect on the visualization of their group’s communication during the game. Connect communication motifs from visualizations to patterns of behavior. (2) Ask students to reflect on their collaboration today with a POL tracker. |
| Vocabulary | Communication, pattern, |
| Assessments, Reflection and Evidence of Student Learning | **----[TBD]-----**  Students will be exposed to multiple communication patterns and have the opportunity to discuss their group communication visualization as it relates to the lesson context. |
| Resources | **Lesson resources: Student Handouts:**   * [Test Libra Link](http://libra-hewlett.s3.us-east-2.amazonaws.com/test/index.html) ([prod](https://libra-hewlett.s3.us-east-2.amazonaws.com/prod/client/index.html)) - [Effective/Ineffective Teammates](https://docs.google.com/document/d/18AyGv-LiKzmyt7FIcfYxpe5GOvkETa74VMWvoO46QQI/edit?usp=sharing) * [Test Teacher Dashboard](http://libra-hewlett.s3.us-east-2.amazonaws.com/test/dashboard/index.html) ([prod](https://libra-hewlett.s3.us-east-2.amazonaws.com/prod/dashboard/index.html)) - Libra UI * [Slides](https://docs.google.com/presentation/d/1s_S7_Q-qOUnkeX6hAZiDTbcNSL485aIh_6i9xaDa9R4/edit?usp=sharing) * Dashboard Guide **Rubrics** * **Technical FAQ** - [21st Century Rubric](https://drive.google.com/file/d/1zzpwfP2sj5at2aeEofVXlqPy-wVoftl7/view?usp=sharing)   - [PISA 2015](https://drive.google.com/file/d/11e9QH0peHvT6oqjHoz9OkCAjCU-JtA8A/view?usp=sharing) ([factors](https://drive.google.com/file/d/1gfODOOVw7JRMek-7UctfGLXZkn2hqTOE/view?usp=sharing), [framework](https://drive.google.com/file/d/15mG3yNvg7z_hPobS3nOZzFWiBlv8LSCt/view?usp=sharing))  **Process of Learning Tracker:**   * [Google form](https://docs.google.com/forms/d/11Dl8B6XLuEX_hyW6cr07B4gxBnU0SsAO1IaMzCAfJAc/edit?usp=sharing) ([doc](https://docs.google.com/document/d/1BKweZfNy0qwFVLxu7DBVLaUAPWUvdbPye1zmQOM1Q78/edit?usp=sharing), [sheet](https://docs.google.com/spreadsheets/d/1y-Ds-tY_SDloTt50_pC33HyufWLqWLeHP5GuuJIUQCY/edit?usp=sharing)) |

| **CHAT LESSON - Angle Relationships** | |
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| Preparation | We recommend you develop a tool for student self- or peer-assessment ratings like the Process of Learning (POL) Tracker.   * Develop collaboration criteria with your students either during this lesson or prior to this lesson and have a POL Tracker prepared for students to self-assess with. * The Angle Relationships lesson is an example of a groupworthy task to use with Libra. You may use Libra with any groupworthy task for groups of 3. |
| Guiding Question(s) | How do we communicate effectively in teams?  What patterns of communication do you notice?  What are my strengths and weaknesses when working in groups? |
| Learning Goal | * Students will experience a need to work together in order to accomplish a shared goal * Students will describe some patterns of behavior in teams * Students will support claims about angle measures with evidence from angle relationships and definitions |
| Lesson Flow  (30 min) | 1. (2 min) [Hook](https://www.youtube.com/watch?v=8Ox5LhIJSBE): Explain that in this lesson, students will be working in small groups toward a shared goal. Share a hook related to communication needs. 2. (1 min) Essential Question: Share the guiding question with students, “How do we communicate effectively in teams?” and explain that we will brainstorm a list of collaboration criteria before the main activity.      1. (3 min) Group chat:  * Give students 20 seconds to compose a response to “identify the qualities of an effective teammate.” Copy/paste their responses to reference later. * Give students 20 seconds to compose a response to “identify the attitudes and behaviors of an effective teammate.” Copy/paste their responses to reference later.  | *Qualities of an effective teammate* | *Attitudes & Behaviors of an ineffective teammate* | | --- | --- | |  |  |   4. (4 min) Create a class list of collaboration criteria to be used for self-assessment. Ask students to describe 1-2 actions or behaviors that would serve as evidence for each criterion. Add the criterion to a Process of Learning tracker for collaboration.  5. (10 min) Introduce Rainbow Logic: Share the rules of Rainbow Logic as well as positive and negative examples of grids. Model an example by acting as grid designer and letting a pair of students serve as the partners who need to agree on what question to ask next.  6.  What do you notice and wonder about the player chat logs and reflections?   * Is there evidence to support the ratings that players 1A and 1B gave themselves?   #. (5 min) Closing Activity: Ask students to reflect on the visualization of their group’s communication during the game. Connect communication motifs from visualizations to patterns of behavior. (2) Ask students to reflect on the collaboration criteria today with a POL tracker. |
| Vocabulary | Communication, pattern, |
| Assessments, Reflection and Evidence of Student Learning | **----[TBD]-----**  Students will be exposed to multiple communication patterns and have the opportunity to discuss their group communication visualization as it relates to the lesson context. |
| Resources | **Lesson resources: Student Handouts:**   * [Test Libra Link](http://libra-hewlett.s3.us-east-2.amazonaws.com/test/index.html) ([prod](https://libra-hewlett.s3.us-east-2.amazonaws.com/prod/client/index.html)) - [Effective/Ineffective Teammates](https://docs.google.com/document/d/18AyGv-LiKzmyt7FIcfYxpe5GOvkETa74VMWvoO46QQI/edit?usp=sharing) * [Test Teacher Dashboard](http://libra-hewlett.s3.us-east-2.amazonaws.com/test/dashboard/index.html) ([prod](https://libra-hewlett.s3.us-east-2.amazonaws.com/prod/dashboard/index.html)) - Libra UI * [Slides](https://docs.google.com/presentation/d/1s_S7_Q-qOUnkeX6hAZiDTbcNSL485aIh_6i9xaDa9R4/edit?usp=sharing) * Dashboard Guide **Rubrics** * **Technical FAQ** - [21st Century Rubric](https://drive.google.com/file/d/1zzpwfP2sj5at2aeEofVXlqPy-wVoftl7/view?usp=sharing)   - [PISA 2015](https://drive.google.com/file/d/11e9QH0peHvT6oqjHoz9OkCAjCU-JtA8A/view?usp=sharing) ([factors](https://drive.google.com/file/d/1gfODOOVw7JRMek-7UctfGLXZkn2hqTOE/view?usp=sharing), [framework](https://drive.google.com/file/d/15mG3yNvg7z_hPobS3nOZzFWiBlv8LSCt/view?usp=sharing))  **Process of Learning Tracker:**   * [Google form](https://docs.google.com/forms/d/11Dl8B6XLuEX_hyW6cr07B4gxBnU0SsAO1IaMzCAfJAc/edit?usp=sharing) ([doc](https://docs.google.com/document/d/1BKweZfNy0qwFVLxu7DBVLaUAPWUvdbPye1zmQOM1Q78/edit?usp=sharing), [sheet](https://docs.google.com/spreadsheets/d/1y-Ds-tY_SDloTt50_pC33HyufWLqWLeHP5GuuJIUQCY/edit?usp=sharing)) |

| **MODERATION SESSION** | |
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| Preparation | You need student self- or peer-assessment ratings from a tool like the POL Tracker as well as evidence of collaboration such as chat logs from the Libra or Little Fish Lagoon Teacher Dashboard to conduct a moderation session.   * Put the assessment ratings alongside the chat log like the Sample Reflections+Messages. * Write the existing collaboration criteria that were used for self-assessment on the Criteria+Evidence handout. |
| Resources | **Lesson resources: Student Handouts:**   * [Slides](https://docs.google.com/presentation/d/1dJDbncy9N0RVvscta--O9AyGKoOOQzca-A_Yd6qZa94/edit?usp=sharing) - [Criteria+Evidence](https://docs.google.com/document/d/18AyGv-LiKzmyt7FIcfYxpe5GOvkETa74VMWvoO46QQI/edit?usp=sharing) * [Sample Reflections+Messages](https://docs.google.com/spreadsheets/d/1mGX4Pp7maRSfZ2Ya5B_RYQBxpE4bDwDzPiiI0ELaQwQ/edit?usp=sharing) - Reflections+Messages * [Video of sample session](https://drive.google.com/file/d/1P7E6UrgISRypajmMvETH2ttBUy98H75L/view?usp=sharing)   **Rubrics:**  **Process of Learning (POL) Tracker:**  - [PISA 2015](https://drive.google.com/file/d/11e9QH0peHvT6oqjHoz9OkCAjCU-JtA8A/view?usp=sharing) ([factors](https://drive.google.com/file/d/1gfODOOVw7JRMek-7UctfGLXZkn2hqTOE/view?usp=sharing), [framework](https://drive.google.com/file/d/15mG3yNvg7z_hPobS3nOZzFWiBlv8LSCt/view?usp=sharing))   * [Google form](https://docs.google.com/forms/d/11Dl8B6XLuEX_hyW6cr07B4gxBnU0SsAO1IaMzCAfJAc/edit?usp=sharing) ([doc](https://docs.google.com/document/d/1BKweZfNy0qwFVLxu7DBVLaUAPWUvdbPye1zmQOM1Q78/edit?usp=sharing), [sheet](https://docs.google.com/spreadsheets/d/1y-Ds-tY_SDloTt50_pC33HyufWLqWLeHP5GuuJIUQCY/edit?usp=sharing)) - [21st Century Rubric](https://drive.google.com/file/d/1zzpwfP2sj5at2aeEofVXlqPy-wVoftl7/view?usp=sharing) |
| Guiding Question(s) | How do we communicate effectively in teams?  How do we measure collaboration skill?  What are my strengths and weaknesses when working in groups? |
| Learning Goal | * Students will discuss revisions to existing criteria for collaboration based on evidence from self-reflections and chat logs. * Greater clarity around what the ‘look-fors’ are for our collaboration criteria. |
| Lesson Flow | 1. (2 min) [Hook](https://youtu.be/DLhNX-ArJT8): Explain that in this lesson, students will be looking for evidence in chat logs to support ratings of collaboration criteria. Share the teaser to engage students around feedback and trust.      1. (1 min) Essential Question: Share the guiding question with students, “How do we communicate effectively in teams?” and explain that we will revisit a list of Dos and Donts before the main activity.      1. (3 min) Group chat:  * Give students 20 seconds to compose a response to “identify the qualities of an effective teammate.” Copy/paste their responses to reference later. * Give students 20 seconds to compose a response to “identify the attitudes and behaviors of an effective teammate.” Copy/paste their responses to reference later.  | *Qualities of an effective teammate* | *Attitudes & Behaviors of an ineffective teammate* | | --- | --- | |  |  |   4. (4 min) Share the existing collaboration criteria on the Criteria + Evidence handout. Ask students to describe 1-2 actions or behaviors that would serve as evidence for each criterion.  5. (20 min) Discuss Ratings: Share the link to the chosen reflections and messages. Have students work in small groups to discuss each question for 5 minutes and share their conclusions with the whole group.   * What do you notice and wonder about the player chat logs and reflections? * Is there evidence to support the ratings that players 1A and 1B gave themselves?   6. (10 min) Whole-group discussion: Ask the class if we should revise our collaboration criteria. Make revisions if the class agrees on some proposed changes.  7. (5 min) Two possible closing activities: (1) Ask students to reflect on any new or deeper understanding they have around the criteria as a result of today’s session. (2) Ask students to reflect on their collaboration today with a POL tracker. |
| Vocabulary | Evidence, criteria, collaboration, shared understanding |
| Assessments, Reflection and Evidence of Student Learning | Students will discuss how well self-ratings on the class’ collaboration criteria match with the chat log from Little Fish Lagoon or Libra.  Students will discuss possible revisions to the class’ collaboration criteria. |