

Interdisciplinary Dialog-Facilitating Activities

Integrating Stage

Activity 4.

“Disciplinary Field Crib-Sheets” Flowcharts for Understanding Disciplines.

Linking key pieces of disciplinary jargon, core concepts, data/methods to help interdisciplinary groups discuss the specialized reasons and logic underlying each fields' approaches.

Activity 5.

“Be-Do-Make” Grid of Participants' Goals (and Products).

A collaborative grid to make explicit the various personal goals of project participants, informing plans for research tasks and end-products.

Activity 6.

“Dialog Journal” Reflections on Interdisciplinary Research.

Weekly structured reflections to help research participants see patterns and distill principles about coordinating working across disciplines, as they progress in their collaborations.

Activity 4.

“Disciplinary Field Crib-Sheets” Flowcharts for Understanding Disciplines.

WHEN: Within the first two weeks of the project, all group participants together.

WHY: To learn as a group the core concepts, methods, and relevant vocabulary of all disciplines involved in the project. (Also prepares participants to teach others outside the group.)

HOW: Creating modular overviews of disciplines that show (concisely) the thread from evidence and reasoning, to→ threshold concepts, to idiosyncratic jargon.

STEP 1. Name Your Discipline.

Prompt the group to: “Decide what academic learning community you are affiliated with most closely: in the way you generally think about the world, the specific types of questions and topics that interest you, and the way you do research (that you find valid and intellectually productive). Put a name on that.”

Form groups based on disciplinary similarity. *If there are solo members of disciplines, have them join a cluster that uses a similar conceptual, ethical, or methodological approach.

STEP 2. Paraphrase Your Discipline.

Now, give each cluster a [[Blank “Disciplinary Crib Sheet”](#)] from which to model the structure of their own [[Individual Notes](#)], as they brainstorm the Jargon, Concepts, Data that define their discipline.

Show the group an [[Example of completed Crib Sheet](#)] to give a clear sense of how to fill out theirs.

* Emphasize the importance of distinguishing Jargon (field-specific theory-infused, implicit meanings) from vernacular explanations (concrete and explicit enough for a novice to understand) when they translate their Threshold Concepts and explain their Practical Methods of data gathering for the group.

STEP 3. Share Your Discipline.

Once individuals have drafted their ideas (give them at least 10 minutes), have them compare/combine notes on the discipline, or discipline-cluster, and fill in their group's Crib Sheet (for another 10 minutes - observe the groups and give additional time/guidance as necessary).

Once they have a well-developed Crib-sheet, have them Organize these ideas into a flow, drawing *Explicit connection-lines from the bottom up: Info sources & Analyzing processes → Types of findings & Key ideas of discipline → Specialized language that encapsulates these main ideas for scholars in field.

Finally, have each discipline-cluster present this flow-chart to the group, creating it with [[Big Pens](#)] on a [[Large Board](#)]. *Give them very little time (3 minutes? Strategically too little time!) to pressure them to be concise and focused, giving a coherent big-picture overview of their field for the novices in the room.

E.G. Preamble: *“Today, our goal is to share what we've discovered, and distilled, about the way our different academic disciplines do business, when it comes to building knowledge: what basic assumptions and attitudes they stand on, where and how they go about adding to those understandings, and the language they use as shorthand in expressing those ideas with one another.”*

“Which discipline-cluster wants to lead us off? Main ideas (make these super-simple) in the center, main methods and data (word these super-concretely) down below, main terms (define them briefly) up top. Organize each level, and connect them together for us: terms, ideas, concrete objects and experiences—help us draw the lines.”

Afterward.

If this activity really engages the group, it will likely lead to many follow-up questions, curiosities, and discussions across the discipline-clusters. This free exploration is great for building group cohesion and building a “common language” for the project. Consider leaving a light schedule for the following meeting, to make room for those discussions.

Disciplinary Field “Crib Sheet”

Use this page to write out key terms in your field, conceptual truths and values that are essential to understanding those terms, and methods of compiling and interpreting data to substantiate those kind of truths and values—that define the academic work of your discipline.

My DISCIPLINE: _____	
Key Jargon	
Threshold Concepts *State it plainly. e.g., “ Energy and Mass are equivalent ” → “Mass is concentrated Energy, and Energy can turn into Mass.”	
Methods: Data + Topics *State it actively. e.g., “ Codification of interview transcripts ” → “Talking with people. Writing out what people say. Marking when people do _____ or mention _____.”	

Example Crib Sheet: Education

My DISCIPLINE: EDUCATION (Teaching & Learning)	
Key Jargon	<p>“Schema/Schemata” • “Scaffolding / Zone of Proximal Development” • “Rote vs. Deep-Active Learning” • “Transfer / Generalization” • “Threshold Concepts” •</p> <p>“Experiential Learning / Learning-by-Doing” • “Situated Learning / Legitimate Peripheral Participation” • “Intrinsic vs. Extrinsic Motivation” • “Hierarchy of Needs / Self-Actualization” •</p> <p>“Fixed vs. Growth Mindset”</p>
Threshold Concepts	<p>People internally organize categories of info (“things that I can eat” “tools for food prep”), and relationships among these categories (“if food raw, use cooking tools”), into patterns of thought and behavior, which provide a framework for sorting incoming info and developing future understanding. • Teachers can help learners to expand knowledge & skills, beyond what they can currently do on their own, by giving guidance and support that is challenging-but-doable at their stage of development • Teachers can choose to (i) guide learners to memorize, recall, and repeat at a mechanical level, or (ii) analyze, decide, critically apply, creatively act using knowledge • Understanding how things work and reasons why they work, a person may be able to connect and use knowledge in situations beyond, or unlike, original scenarios where they learned it • Such growth in the way a person understands the world can radically alter their sense of reality, identity, and purpose, causing disturbing inner conflicts and taking time to process, with lots of back-and-forth rather than a straight line of progress toward a fully personalized understanding •</p> <p>Concrete, first-hand experiences provide a learner with immediate sensory material which they can then use to form deep & personalized understandings about a subject-matter's meaning & practicality • Working reflectively through complex problems across an array situations can stimulate learners to see larger patterns & form more generalizable understandings; working with others, in communities of practice, can help them to identify personally with valued ways of thinking, doing, communicating and to feel comfortable contributing to that field • Educational encounters can be designed so that people see value in each activity, and find their learning and achievement in that activity rewarding in its own right (as opposed to doing an activity to receive praise or avoid shame) • All people have basic human needs that they bring into an educational exchange; more basic needs (such as safety) take precedence over higher-order needs (such as achieving one's full potential) in a learner's motivation •</p> <p>Teachers can choose (a) to look at a learner's character, intelligence, and creative ability as static traits to assess against a fixed standard of success, or (b) to see each learner as growing and changing constantly by testing and stretching their current abilities; the first encourages learners to show their successes and hide their failures in a search for social approval, while the second encourages them to learn from failures and successes together in a search for better understanding and greater skill</p>
Methods: Data + Topics	<p>Broad topics of Educational Inquiry: How people learn • What healthy learning looks like, and does for individuals/society • Effective means for supporting teachers and students in healthy learning exchanges, toward specific educational outcomes // Fields informing this inquiry: History • Philosophy • Sociology • Psychology • etc. // Methods adopted from these fields: reading & organizing accounts/artifacts from past educators & institutions • observing & interviewing teachers & learners in current educational exchanges • collecting large-scale feedback about current educational approaches & outcomes via tests and questionnaires • planning & implementing educational activities/programs, using tests & surveys to determine learning outcomes • exploring literature from other fields to help inform & refine fundamental theories of teaching & learning</p>

ACTIVITY STEPS: “Disciplinary Crib-Sheets”

Brainstorm — Give everyone a blank Crib-Sheet for summarizing their discipline. (~5 minutes)

Let everyone—**privately, individually**—write out important, Specialized Terms from their field (“Jargon” box), Core Ideas for understanding their field, that these terms represent (“Core/Threshold Concepts” box), & basic Methods/Data/Study Topics through which the field has developed its knowledge (“Methods/Data” box).

- * As activity leader, *before this activity*, listen for (and write down) specialized terms that group members use from their own fields as concrete *Examples* of Jargon.
- * In the interest of time, encourage *1st-order thinking*: stream-of-consciousness, no ordering or editing, just flow.
- * *Clarifying*: if students have difficulty differentiating what goes in the three boxes:

Jargon = terms that make you go “*I’m going to have to explain this, aren’t I?*” in conversations with friends/relatives outside your field.

Threshold Concepts = ideas/understandings from your field that (A) change *the way you see & interpret* the world, and that (B) you have to really know to “*be part of*” your field & “*talk with others*” in your field.

Topics/Methods/Data = “*Okay – this is what we do.*” The *Places* you go to learn, the *Tools* and *Strategies* you use to explore or problem-solve, and the *Concrete Stuff/Information* that you use to build/refine your ideas, approaches.

- * *Options*: you can assign this page to people as a *Take-Home Activity* to prepare for the next steps, or you can do it *In-Class* directly before. In the latter case, just have them focus on the “Jargon” box.

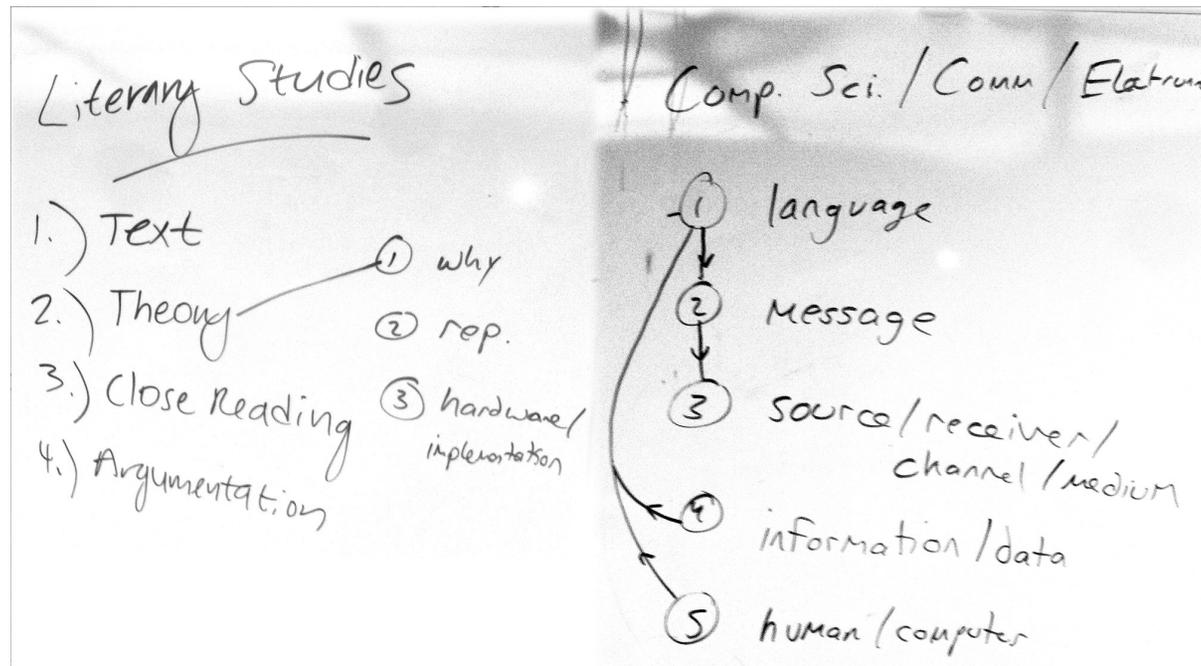
Select & Order — Sort the class into **groups of 3-7**, with people from similar disciplines together. (~15-20 min.)

Have each group: Pick 4-5 terms, Order them, and Unpack them (writing out underlying ideas, data, methods in simple language).

Decide (A) what is the most essential Jargon in their field, (B) in what order these terms should go when explaining the field to others—e.g., *from Basic realities to Practical details/challenges to ultimate Big-Picture purposes/values/goals*, and (C) how to describe those terms to everyone—what *each one* means and how *they all* connect together within the field—without using Jargon!

- * *Priming*: As a Leader, you can create a Crib-Sheet defining your home field, as a *Model* for groups to follow.
- * *Timing*: keep group dialogs moving: 5 min. “*Choose your 4-5 terms, start defining!*”; 15 “*Who will be presenting?*” (e.g., each person describes one term, a volunteer writes on board; or a pair goes up, one talking and one writing)
- * *Numbers*: groups of 4-6 people work well. Focusing in on 4-5 key terms. They can list/order more, but explaining them without Jargon—thinking of a clear defining sentence & a relatable example for the audience—takes time.

Example “Crib Sheets”: *Spatial Navigation*



Activity 5.

“Be-Do-Make” Grid of Participants' Goals (and Products).

WHEN: As the project gets underway, all leaders and participants together.

WHY: To help the group understand one another's personal goals, democratically informing their plans for concrete project deliverables, i.e., “Making sure we know what we're after.”

HOW: Board-centered group discussion activity (creating an explicit, organized, inclusive brainstorm-image about what faculty and students all hope to accomplish through this research collaboration).

STEP 1. State Your Motives and Ideals.

Write on the [Board] these words in a vertical column, with lots of space between them and beside them (this is the beginning of a large 3x3 chart): “Produce” “Do” “Be.” Now have everyone bring out [Paper and Pen] and ask them ~

“What do you want to gain from this project, in terms of:

DOING: personal-professional experience, practice, development
{exposure, skills, knowledge};

PRODUCING: tangible, visible, useful objects
{refined theories/models, recorded experiments/trials, publicly shared prototypes/texts};

BEING: social standing, identity, purpose as a member of this group -or- your academic community
{opportunities, responsibilities, affiliations; votes/voice, CV-lines, titles}?”

Independently, have participants write their responses to this. **Be Concrete, and Selfish!*

STEP 2. Discuss Possible Plans and Strategies.

Now, write on the board horizontally (the columns of this 3x3 chart) “Person” “Group” “Community.”
Have participants gather into small groups – divided by: Level {faculty/grads}? Discipline {history/art}?
Role {research, teacher, technician}? Let group decide – and have each group discuss ~

“How might this project's goals be translated into practices ... that meet yours and your partners' goals?
Acknowledge:

the *Personal* – what this does for you (the notes you just wrote).

the *Interpersonal* – what this will do for others in the group/the group as a whole.

the *Societal* – what this will give those outside: disciplines involved, communities affected, etc.”

Have them take notes on their practical ideas (be-do-make), and their intended impacts (person-group-community). ** Be Constructive, and Imaginative!*

STEP 3. Offer Responses and Adaptations.

Have the groups come together, and begin filling in the grid. Use [Different Colored Markers] to distinguish groups (or circle, underline, illustrate ... whatever helps order the brainstorm!) as you ~

Share: Which of these ideas seem most promising, from your cohort's perspective?

Discuss: What adjustments to one another's plans might make them more sustainable, effective, and efficient in implementation? ** Be Pragmatic, and Realistic!*

	Person	Group	Community
Produce			
Do			
Be			

ACTIVITY STEPS: “Be-Do-Make” Grid

(Solo) Be Concrete, Selfish — Motives & Ideals: Everyone think on your own about the question “What do you want to gain from this project?” in terms of: (~10 minutes)

PRODUCING: tangible, visible, useful objects for you {refined models, recorded experiments, publicly shared texts};

DOING: personal-professional experience, practice, development {exposure, skills, knowledge};

BEING: social standing, identity, purpose in this group - or - your community {opportunities, responsibilities; votes, CV-lines}?

* *Have Available*: paper and pens – for writing down, revising these sentences.

* *Prompt for Reference*: Write on board [Produce \ Do \ Be] = {vertical ↑ levels}

(Groups) Be Constructive, Imaginative — Plans & Strategies: Get into groups and share your ideals. Discuss “How might this *project's* goals be translated into tasks/deliverables ... that meet *your AND your partners'* goals?”
Acknowledge: (~20 min.)

the Personal – what this does for you.

the Interpersonal – what this will also do for others in the group.

the Societal – what this will bring to the disciplines and communities, those involved and affected.

* *Prompt*: write on board [Person | Group | Community] = {horizontal ↔ levels}

(Whole Group) Be Pragmatic, Realistic — Responses & Adjustments: Bring the whole group together. *Share*: What do people in your group want to make sure they're doing, being producing? Which of your suggested project ideas seems most promising, rewarding, feasible at the Personal, Group, World level from your cohort's perspective?
Discuss: What adjustments to one another's plans might make them more sustainable, effective, and efficient in implementation?

* NOW THE BOARD SHOULD HAVE A # GRID – as cohorts share, start take notes of what individuals want.

* NEXT TO GRID – start drawing out a span of feasible project options, that combine peoples' disciplinary skills/resources.

Example "Be-Do-Make" Grids: Grizzly Reintroduction Project



Activity 6.

“Dialog Journal” Reflections on Interdisciplinary Research.

WHEN: Weekly, as the group work together on the project's action items (reading, testing, producing).

WHY: To look at our work together and notice what interferes with/supports interdisciplinary practice.

HOW: Descriptive journaling that progresses from concrete retelling of events, to personal interpretations and judgements, to pattern-recognition and naming possible principles for practice.

STEP 1. Story.

Open a blank text-document or a provided [[Dialog Journal Template](#)] page. In the section titled “Story,” write about **what happened, the flow of events** with your project group this week. You may include:

- *Setting. location, objects, pre-planned structure, etc.
- *Reason/purpose for people coming together.
- ***Order of Events**, connections from one to the next.
- ***Memorable Details**. Things said, done (in “quotes” if particular words stuck in your memory).
- *Final Outcomes. How things concluded (emotionally, intellectually, practically).

STEP 2. Narration.

In the next section, titled “Narration,” write about **your personal perspective of these events**. Where the first section is objective description (i.e., 'This Happened') this section is your experience:

- *Feelings about this environment (things you appreciated, things you disliked).
- *Feelings about gathering's goals and meanings (valued things, wasteful things).
- *Energy of the process (people connected, disconnected; understandings common or separate)
- ***Responses to Details** (why these moments were surprising, disheartening, special, consequential)
- * **Reflective Judgements** (things that worked, things you would change—and maybe how)

STEP 3. Patterns.

In the next section, “Patterns,” briefly write down any **patterns or themes that you're beginning to notice** (i.e., 'X happens every week, and I can now predict that it will end one of these ways...') in:

- *People (character traits; types of reactions; strong identities, affiliations, attitudes, motives that arise in these events)
- *Events (approaches that people seem to do well with, structures and tools that help the project move forward)
- *Ideas (insights and understandings that, when shared, seem to support group cohesion, learning, and productivity)

STEP 4. Principles.

In this final section, “Principles,” write any **general lessons or ideas that might support future practice** in interdisciplinary groups (i.e., 'Providing X helps people to do Y' or 'If you don't have X, then Y falls apart). You can re-write and refine these general notions or claims, each week; the point here is simply to take a minute after journaling about your group's experiences and reflect on the big picture:

- *What seems to be true? (about people, objects, actions or relations in these situations)
- *What seems to follow from these truths? (what works, what undermines; what is dependable, if → then)

Example sentences:

Story - “We met in a warehouse to discuss 'Love.' John began with a dictionary definition, then we all took turns responding—Abby said, 'I think love is about care, acceptance, and understanding, but people short-change the last two.' Billy added, 'because those require effort. Anyone can care, but it takes humility to accept and work to understand.' The talk got cut short because the room was cold—Jaylyn said, 'Whoever picked this location *clearly* does not love us.' And we disbanded.”

Narration - “I think the definitions John offered were a good launch-point: it was important that he introduced them as *grist* for us break apart and build on; that emboldened me to share my own ideas and question others. Cold room = BAD idea!”

Patterns - “People seem to follow the leaders' example, when it comes to the tone they set (open listening, collaborative idea-shaping). But environmental details (like venue) can really distract from that progress.”

Principles - “Comfort supports conversation.”

Dialog Journal Template

Name: _____

Project: _____

Week: _____

Story – what happened; the flow of events:

Narration – your personal perspective of these events:

Patterns – familiar themes you're beginning to recognize in people, events, ideas:

Principles – notions (apparent truths, if→thens) for future practice:

Example Journal Entries: Green Chemistry Project

Story:

"We were assigned to look through the textbook as homework for Thursday." (Week 4)

"The idea was to basically to a 'deep dive' (as said by Dr. M) into the supply chain and life cycle of polyethylene. That is, we were tasked with finding out all we could about the polymer, starting from where all the raw materials came from to what happens to the polymer at the end of its life. We really had to plunge into numbers corresponding to volumes and money, in addition to the chemistry. Our group shared our updates with the rest of the class for two weeks, then gave a final 15 minute presentation." (Week 4)

"Before presentation, we met in the chemistry building, discussed the contents and concluded that what we prepared is enough to introduce important information about PET. During the presentation, Dr. M asked us a lot of really challenging questions to get us to know, to be aware and to be informed" (Week 5)

"Each group gave a presentation regarding to the detailed contents based on various topics: rare earth metal recycling, reverse osmosis, properties of liquid-water supercooling and transition-metal catalysts, etc. Then we picked 3 topics that have good connections to either Chem 1C course contents as well as environmental sustainability." (Week 6)

Patterns:

"Professors love to talk and can get excited quickly. People do not like change when they must change themselves, but they like to talk about how others should change." (Week 4)

"When you put a bunch of like-minded people in a room, you get a lot of like-minded answers that can reinforce inaccurate beliefs about the world. People like to try to help and are good at identifying problems but not solving them. I've learned that I do not enjoy participating in sedentary activities such as sitting in a lecture to hear people talk. I would be more enthusiastic about interactive activities." (Week 6)

Narration:

"When we realized as students that it is extremely hard to get some data (energy or price), we didn't know how to deal with these parts on our own" (Week 4)

"If I had to prepare this presentation alone, I would make a good presentation. But, since I worked with people who have diverse expertise, I think we were able to add more valuable information and make better presentation. In addition, while working together, I was able to learn more." (Week 4)

"I don't like group projects. It's always worrying if other students are willing and able to perform at the level you would perform at ... I feel like I'm the old man yelling 'get off my lawn.'" (Week 5)

"This week allowed us to reflect upon the rather stagnant type of environment that we are creating for freshman chemistry students, and pressed upon how important it is to look at science through a fresh new perspective." (Week 5)

"Looking at the other presentations, too, I was fascinated by the sense of the sheer volume, utility and subsequently danger of using plastics in our day-to-day life." (Week 6)

Principles:

"What seems important is to keep an open mind."

*(**VALUE** – ask: open about what? how does this help the group?)*

"Fresh perspectives are required for growth."

*(**IF> THEN** – ask: whose views? How to use? For growing what?)*

"Escaping from your own reality is hard."

*(**PRACTICAL ISSUE** – ask: What helps you expand beyond your own reality, in this group?)*

Dialog Journal Template (Group Leaders' Version)

WHEN: Monthly as the project progresses. WHY: To chronicle the group's and individuals' progress within the seminar.

HOW: Dialogic journals recounting group goals, discussions, and individuals' notable struggles or successes.

INSTRUCTIONS:

Each month, take 15-20 minutes to describe:

- (A) **what's happening** in your courses - current class learning goals, activities and outcomes.
- (B) **conversations** you're having with students - what are they interested in, asking you about, confused by, needing help with.
- (C) how you and others are using your **various disciplinary expertise as leaders** to model academic teamwork for the group - what experiences or insights (from your own, or invited peers', research), skills or strategies (from communicating across disciplinary boundaries), have you shared or demonstrated to answering students' questions.
- (D) **participants' observable experiences** in contributing to these interdisciplinary conversations and tasks - how are they responding to other disciplines' ideas, methods, and attitudes within the research group. Specifically:
 - Working in a team with people from other disciplines.**
 - Communicating research from one field to people trained in different disciplines.**
 - Recognizing and articulating the comparative strengths of multiple disciplines.**
 - Applying approaches and tools from these other disciplines to address a current research problem.**

No need to over-think these entries. They are journals; their value comes from being consistent and looking at the progress in your thinking over time.

Name: _____ Project: _____ Month: _____	
This Month's <u>Story</u> – Context, Activities, Intentions:	This Month's <u>Conversations</u> – Interests, Questions, Need Help with:
This Month's <u>Leadership</u> – Helping with our Skills, Experience:	This Month's <u>Participants</u> – Collaboration, Struggles, Acheivements, Learning:

Dialog Journal Template (Teachers' Version)

WHEN: Weekly as your interdisciplinary course progresses. WHY: To chronicle students' progress within the seminar.
 HOW: Dialogic journals recounting lesson/activity goals, use of different fields' lenses/tools, group questions and discussions.

INSTRUCTIONS:

Each week, take 15-20 minutes to describe:

- (A) **what's happening** in your courses - current class learning goals, activities and outcomes.
- (B) **conversations** you're having with students - what are they interested in, asking you about, confused by, needing help with.
- (C) how your project's **interdisciplinary work** is being integrated in the class – e.g., as literature and case-studies for students to learn from, as raw data and method-heuristics for students to try, etc.;
- (D) how you use **your expertise** to make interdisciplinary ideas more personal, approachable, relatable for students – what experiences (from your research/discipline OR from others), skills and strategies (from communicating across disciplines), have you shared with students or applied when answering their questions.

No need to over-think these entries. They are journals; their value comes from being consistent and looking at the progress in your thinking over time.

Name: _____ Project: _____ Week: _____	
Context/Activities – what's going on in class right now:	Educational Dialogs – what are students interested in, needing help with, asking about:
Interdisciplinary enrichment–how you are using content from research projects to enhance lessons:	Your expertise – how are you using your experiences, skills from collaborating in these projects to help students learn: