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Introduction and Intentions

Course Overview

This course is place-based and hands-on in nature. It is NorthBay's watershed field course for teachers in an online format. Online means neither alone nor inside in our way of thinking. This course is a hybrid of online and on site learning, requiring a minimum of six stream visits to the stream of your choice. If possible, we encourage you take the course with a colleague or colleagues. In fact, we hope you will collaborate often in this course with colleagues, your students, and us. Sharing and practicing learning will make for a richer, more lasting experience.

Course Philosophy

NorthBay Education Inc. exists to empower people to realize that their attitudes, choices and actions matter. NorthBay's program focus on water fills a critical need. **"**Without

altering current levels of water consumption and pollution, almost half of the world's population will suffer severe water stress by 2030, damaging the well-being of millions of people" (UNEP, 2015, p. 6). At NorthBay, we structure outdoor experiences so the students who visit us can experience how the choices they make matter. We tell students that their choices affect their lives now, their future lives, and also, the lives of other people and other species. Through our programs, students begin to see how our combined choices are so powerful that we are affecting our environment; moreover, it appears we are even affecting our own planetary climate system. That is how interconnected we are. This is how important our choices and actions are. Students, therefore, also learn that they have the capacity to address these issues, and they practice doing so.

To make wise choices, we must be well-informed. Often, "well informed" implies possessing factual knowledge. Here at NorthBay we mean having factual knowledge and we also mean knowledge that comes from the deep understanding of our hearts, those wellsprings of compassion and empathy and relationships and yes, even love. This course for teacher professional development, therefore, has been created to support your learning and that of your students about a local stream ecosystem in a holistic and integrated way. Using inquiry into environmental issues along with activities to increase nature-connectedness, it is designed to meet academic standards and curricular needs in engaging ways. It is designed to support wise, effective decision-making that considers the needs, health and lives of all inhabitants--human and nonhuman.

What You Will Learn and Do

In this course you will practice sensory-based activities outdoors and keep a journal to record reflections and observations. We will ask you to go to a wadeable stream at least six times. During each visit you will be asked to spend some time in contemplation, quietly noticing what is happening inside you and around you. We encourage you to go as often as you can, for as long as you can. Furthermore, you can go by yourself or

invite someone else to sit in silence with you. Afterwards, you can share your experiences with each other, thereby deepening the experience of getting to know a place in a way that complements the scientific way of knowing, which is next.

You will read, watch videos and conduct fieldwork to learn essential watershed content. While the content largely focuses on the Chesapeake Bay Watershed in Maryland, USA, degraded water quality caused by surrounding land use is a problem found across the globe. Using scientific protocols, you will conduct research and use findings to develop an action plan. At times, we will challenge you in this course, ask you to go beyond your perceived limits. This is what we do at NorthBay with 15,000 students and their parents and 700 teachers each year. At the same time we challenge you, we will support you. Even from a distance. You ought never to feel alone as you work your way through.

To this end, this course is designed to provide everything you need to feel confident and inspired to take your students outside to conduct authentic inquiry at a local stream or river or schoolyard. In addition to conducting inquiry, teachers will learn how to conduct meaningful action with students. This last step of taking action is empowering for students. Moreover, it demonstrates to the rest of the community what is possible.

Intentions of the Course

- For you to become intimately acquainted with your local river or stream as a teacher, a citizen-scientist, storyteller, stream snorkeler (optional), witness and participant in the stream community.

- For you to become aware of how using inquiry in a watershed context can help you reach existing academic standards.

- For you to identify and understand the reciprocity of our relationships with freshwater systems, recognizing fully that the choices we make affect the capacity of humans and other nature to flourish.

- For you to strengthen understanding of freshwater ecology.

- For you to practice inquiry to address a local watershed issue.

- For you to develop the confidence to share this integrated approach to teaching stream ecology; enabling students to experience the stream community from multiple perspectives and conduct meaningful research that will lead to lasting solutions for local watershed issues.

Course Expectations

Please read the course expectations carefully to decide whether or not you have the time to join us on this learning journey. Once you begin the course, you will have six weeks to complete it. We expect you will spend approximately 45 hours working your way through, and upon successful completion, you will receive the number of professional development units your state approves for a 45 hour program. Please note that this course will require a minimum of six stream visits to the stream of your choice.

Here is a list of what we will ask you to submit:

1. At least one journal entry from each stream observation for a minimum of six entries. Journal entries can be text, watercolors, acrylics, collages, or a combination of media. We want you to express your experiences in ways meaningful to you.
2. Evidence of one practice that is outside your comfort zone – we are Northbay, an organization which asks people to go beyond perceived boundaries.

3. A mini-research project about a pressing local watershed issue.
4. Evidence of practice/research with students.
5. A final multimedia project to represent what has been learned and applied personally and professionally, including any transformational or “ah-ha” moments.

Other assignments are found throughout the course. We ask you to complete them on your own or together with your students. They’ll appreciate helping you, and seeing you as a fellow learner. For some of the assignments, we’ll ask you to send us a photo of your work.

What You Will Need

- Reliable internet
- Access to a nontidal wadeable stream or river
- A journal
- Curiosity

How the Course is Structured

We structured this course about stream ecology like a stream itself. Nine topics, which we refer to as Tributaries, are explored separately. As you move through the course the knowledge, skills and meaning acquired in each Tributary will converge into an environmental issue inquiry project, and finally, and most importantly, into meaningful teaching and action that catalyzes positive behavior change.

While each Tributary is unique, you will find teacher sidebars, a contemplative practice, a reflective writing practice, background knowledge, video, and assignments in each one. Between selected Tributaries you will find Interludes. Interludes are one page poems that represent calm quiet pools--moments to pause and reflect before you move forward. We encourage you to savor them before moving on to the next section. Finally, appendices at the end contain resources, references, notes, and research protocols.

We intend to give you everything you need to accomplish what we will ask of you in this course.We have field-tested all the protocols and materials, but we understand questions will arise. Please contact us when you need a question answered, support carrying out a stream assessment, using a research protocol, or anything else. If something is missing, please let us know right away. Lastly, we want you to know that if you choose to take this course you will be contributing to its ongoing development. Therefore we encourage you to share with us your learning, your struggles, your joys, your overall experiences. For your participation and feedback, we are truly grateful.

Thank you for joining us on this learning journey.

Suggested Course Progression for a Six Week Program

Essay: How Do We Learn to Love?

By Ian Palkovitz

Take a moment to think about something or someone you care about deeply. How did these feelings develop? Is your life different because of this relationship? Maybe you have experienced romantic love or deep friendship. I would wager that these feelings have grown from sharing experiences and spending time together, not from reading and memorizing a Myers Briggs personality inventory on this person. Maybe you love TV. If so, I doubt it is because of a history of film class you took freshmen year of college where you compared and contrasted the shooting style of six documentaries to six sitcoms. I bet it's because you got wrapped up in amazing stories, got to know the characters, and were transported to a different level of experience.

As an environmental educator, I work with a lot of people who are head-over-heels in love with our world. They are the kind of people who spend Black Friday on the Appalachian Trail and watch more sunsets than evening news programs. Part of our goal is to help students to fall in love with the world. To open their eyes to see how beautiful, how intricate, how dynamic our planet is. To see that nature is not just in a Costa Rican eco preserve, but it's all around us wherever we are. In fact, we ourselves are nature!

As a native Pennsylvanian, I fiercely and deeply love the Mid Atlantic forests, rivers, and hills. Nobody wrote a checklist of outcomes and told me how to feel. As near as I can tell, this relationship developed in two ways.First, when I was young, I ran wild with a stick through the woods, cutting down May Apples and reenacting imaginary historical battles. In the woods, I found a place that I could be myself without being observed by other people. In spite of all the snakes, thorns, and stories of rabies and errant mountain lions, it was, perhaps, the first truly safe place I found. I dug holes, built forts, made ineffectual traps and truly dangerous catapults, built dams, threw rocks, and climbed trees; all in a narrow strip of trees stretching between neighborhoods in suburban Pennsylvania. It was a place I could make mistakes and feel their consequences without judgment. It was a place I could try new ideas. I was just barely out of sight of thirty houses, but to me it was a wilderness, a frontier, a place that anything could happen.

The second phase of falling in love was actually facilitated by an assignment from my mom. She had me mark out one square meter in the woods and observe it for a half hour once a month for a year. I found a tiny tributary that my young legs could easily leap across and marked out my meter, reaching from halfway up the bank all the way to the middle of the stream. I flopped down on my belly and opened my eyes, maybe for the first time. This tiny square of earth and water turned out to be teeming with life. Although this was twenty years ago, or more, I can still remember the way a salamander swam through the water, the way the ice crystals stretched and shimmered in the thin January sunshine, the way the insects broke through the dirt as it began to warm in March, the way tiny green leaves unfurled, the way the bank always changed shape after storms. So much happened in such a small area.

As teachers, we use inquiry to engage students and we meet curricular standards, but the end goal is bigger than building critical thinking skills. It's about connection. It's about love.

We build relationships through shared experiences, and we, as teachers, can facilitate shared experiences between our students and the natural world. A snorkeling trip can meet common core standards but it is also a truly immersive experience that a student shares with the river. To our teacher-trained brains, it can look like so much splashing and carrying on, but it is so much more than that. Twenty minutes sitting and mapping a spot is like getting coffee with a new friend. It might feel awkward at first, the silences might stretch just a little too long, but you will learn things that surprise you. You might even find a beauty you missed at first glance.

These activities are outside the comfort zones of many teachers, and that's ok. We are constantly told that nature is dangerous, that the woods are scary, and that our students need more structure. But there is a power in these activities that is worth stretching outside of our comfort zones to experience. You will see students with different learning styles excelling and succeeding in a different environment. You will be a part of building a deeply meaningful relationship that can last a lifetime. You will be planting seeds that will forever change the way students relate to our world.

Data doesn't change people's behavior. Connection does.