Online Learning for Environmental Educators:

35 Tips for Getting Started

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Civic Ecology Lab

Cornell University

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Preface

In 2011, the U.S. Environmental Protection Agency awarded its fifth comprehensive *Environmental Education and Training Program* grant to the Civic Ecology Lab at Cornell University, kick starting a five-year initiative aimed at helping educators grow and improve in their work. Thus began the *Expanding Capacity in Environmental Education Project,* or "EECapacity," offering a mix of web-based workshops, courses, and professional learning communities for environmental educators throughout the world. To make the most of every grant dollar and create the largest impact possible, the collaborators behind EE Capacity knew the program had to go online. This report aims to capture some of the lessons learned through five years of EE Capacity, making them available to anyone tasked with developing online professional development opportunities for environmental educators.

Introduction

Lawyers learn to argue court cases in law school. Doctors learn to diagnose illnesses in medical school. Architects learn to design buildings in architecture school. But where do environmental educators go to learn the skills and knowledge they rely on to become effective and well-informed teachers? Colleges and universities across the country offer a variety of advanced degree programs in environmental education. Yet for every graduate of one of these programs working in the field today, there are many more environmental educators out there with little formal training or lengthy experience in the art of effective teaching. "That's not such a big deal," one might argue. "After all, lawyers, doctors, and architects *really* learn their trades once they get out on the job." We agree—but only to an extent.

We believe classroom instruction can never take the place of hands-on experiential learning (a point we make again and again in the pages that follow). Yet we also believe the opposite is true— that apprenticeship can never completely replace the learning that happens outside the stresses and distractions of daily practice. Both are required for achieving proficiency and mastery in any field. Otherwise medical school would begin with a rotation in the Emergency Room, law school would start off with a judicial clerkship, and architecture school would put designers straight to work drawing technical documents on Day One. It sounds absurd for doctors or lawyers to jump right in. Why should we think any differently about environmental educators?

And so, we return to our original question: where can environmental educators go to develop the skills and knowledge they need to grow and improve in their work? If graduate school isn't an option—because it's too expensive or time consuming or for any other reason—how else can environmental educators find entry into an informative and reflective "community of inquiry" (to borrow a phrase from John Dewey[1]) with other inquisitive practitioners? The answer, we believe, is online.

Going online for professional development in environmental education can seem counterintuitive. Why ask environmental educators to spend more time indoors staring at computers screens

when so many of them are working to get their own students offline and outdoors? Let's be clear: we believe people of all ages (including environmental educators!) benefit from spending time outdoors,[2] and our push to take professional development online should *not* be interpreted as a retreat from this core value. Our reasons for going online are mostly pragmatic. First, online learning can more affordably and efficiently reach a wider audience of learners than in-person instruction. Second, online learning can help environmental educators weave professional networks with other practitioners around the globe, radically expanding their circle of informal advisors, mentors, cheerleaders, and collaborators. Third, going online gives environmental educators access to a near infinity of articles, videos, webinars, and other learning materials while inviting them to participate in creating their own media as part of the learning process.

Gone are the days when online courses mostly resembled mail-based distance learning programs of old, with instructors uploading reams of information for students to work through at their own pace and in isolation from each other. Online learning has grown increasingly interactive with the advent of free video conferencing, file sharing, and simultaneous editing features in browser-based word processors, spreadsheets, and other tools for collaborative creativity. Social media "apps" and websites have also opened new doors to deep and meaningful interactions between students and instructors. It's getting easier to foster a true sense of sustained *presence* in an online learning experience, making learning together online more and more like collaboratively learning together in person[3].

It follows, then, that designing and facilitating effective courses for adults *online* mostly matches what we generally know from more than one hundred years of research and experiment in crafting effective learning experiences for adults *in person.* Think of this report as a first-time expedition into the wide-ranging field of adult education. We will visit some of the principles and practices built up by influential thinkers in the field, lingering a while longer in those places that are particularly relevant to adult learning online. We will mostly stay on a short and straight road through the field, leaving sign-posts for readers who may want to track back and

follow the winding intellectual pathways that branch off from our charted route. It will be a short expedition, but you'll get a lay of the land and begin to understand the contours of the field as you plan your own journey into online learning for environmental educators.

Our route loosely follows a conceptual map drawn by Jane Vella, an influential adult educator with a knack for navigating the connections between landmark principles and practices in adult education. Vella's survey of the field is captured in six books published between 1994 and 2007,[4] and like any atlas drawn to make sense of a complex landscape, each volume of Vella's work invites careful, focused, and sustained exploration by both novice sight-seers and experienced voyagers. We hope you will be inspired to pick up Vella's work and begin to chart your own path through this field after following along with us on this initial journey.

Vella maps out the field by asking eight basic questions related to designing courses, workshops, and other learning experiences. They are:

> **Who** will participate in a course? What do we know about these specific participants—their needs and aspirations and the assets they bring to the learning experience? What do we generally know about what motivates adults to learn? What do we generally know about how adults learn?

> **Why** are we creating and offering learning experiences for adults? What do we need to know about the current state of things that leads us to want to create change through teaching and learning? And **what is our vision** for the future that results from the learning that happens in our programs? What do we envision as the future that results from our efforts?

> **Where** and **when** will the learning take place? What do we know about effective adult education and training that can shape the visual, interactive, and chronological design of

our courses?

What is the content of a course? What are the concise *skills, concepts* and *attitudes* that students will work with together? How should we think about content and where can we find the right media to get our content across?

What is the content **for?** In other words, what are the objectives we hope to see students achieve in the context of a course? What action will they take with the course content to demonstrate the extent of their learning?

Finally, **how** is the course designed for the day-to-day experience of the students? How do dialogue and hands-on learning allow students to achieve the objectives of the course?

We assume you're reading this report because you have been tasked with imagining, creating, facilitating, or evaluating an online learning experience for environmental educators. In the pages that follow, we respond to each of these overarching questions with a list of tips for effectively crafting and leading online learning experiences for your network of environmental educators. We follow up in end notes with references to related ideas, theories, principles, and practices for you to explore on your own for a deeper and broader understanding of the field. Welcome!

Who?

Designing Online Learning Programs with Adult Learners in Mind

The experience of learning in adulthood is significantly different from learning as a child or adolescent. Adults can carry a wealth of knowledge and wisdom acquired over a lifetime. Adults also have what the educator Malcolm Knowles called a "need to know" why new skills and concepts are relevant to them in their daily lives[5]. If the learning isn't relevant, adults probably won't engage. Get to know the needs and aspirations of the environmental educators enrolled in your online courses and take time to learn about how most adults learn most effectively.

Tip One: Get to Know Your Learners

The best source of information about the needs and aspirations of the environmental educators in your courses are (not surprisingly) the educators themselves. Leave time before the start of a course to survey prospective students and learn more about their needs and aspirations. Ask them to describe the relevant knowledge they already bring to a course and identify the specific skills and concepts they hope to learn through their work with you. Use what you learn to refine and tailor your courses to be more immediately relevant and useful.[6]

Tip Two: Check Your Assumptions

What are your assumptions about the needs and aspirations of the people enrolling in your online courses? How do your assumptions match what people say about their own needs and aspirations? Take time to make your underlying assumptions explicit. List all the things you *think* you know about the people enrolling in your courses and compare your written reflection with what you learn from surveying students before a course. How might your course design change to reflect an insights that emerge from comparing your assumptions to the responses you receive from students?

Tip Three: Provide a "Need to Know"

"When will I ever use this in real life?" school children ask whenever they're taught an abstract concept that stretches beyond their immediate experience of the world. Adult learners rarely find themselves in the same position. Adults typically have the choice to avoid learning experiences that aren't directly relevant to them

in their daily lives. Some adults enroll in courses to satisfy their curiosity about a subject or because the experience pleasure in the process of learning. Others learn to get better at their jobs. No matter the reason, adults need to find *meaning* in the work of learning. Effective online courses for environmental educators will give participants multiple chances to connect new skills and concepts to a bigger "need to know"—whatever that may be.[7]

Tip Four: Make it Real

Adults are busy. Adults taking online courses for professional development are even busier. Every moment adults spend engaging in a course should have immediate resonance with the issues, projects, and problems they're tackling in their lives and their work. Don't assign busy work. Design tasks and assignments that students can immediately put to work in useful ways outside the context of the course. Invite students to make meaningful connections between what they're learning and what they're experiencing in their day-to-day. Don't take for granted that students immediately find relevance in the readings, videos, discussions, and exercises you've assigned. Create opportunities for them to make those connections together in dialogue.[8]

Tip Five: Show Some Respect

Respect the knowledge and wisdom that environmental educators bring to your courses by designing opportunities for *them* to lead the learning. Instructors who truly respect adult learners will not be afraid to humble themselves and create space for students to assume more control.[9] Invite students with unique experience or expertise to share what they know. Involve students in making decisions about how a course unfolds over time, taking different directions based on changing needs and priorities. Honor the work they've done by asking them to connect their experiences to the issues and ideas that come up in a course.

Why Offer Your Courses—and What Is Your Vision for their Outcomes?

Designing Online Learning Programs with Clear Purpose and Vision

We often rush to design lessons without taking a moment to reflect on the bigger picture in our work. What are our underlying reasons for investing time and energy in creating new online learning opportunities for environmental educators? What are the current problems or challenges in environmental education that call us to offer a particular course? And what is our vision of the future? What do we hope will result from the teaching and learning that happens in our online courses? Taking stock of the gap between current conditions and an idealized future can sharpen the programs we design and make the learning immediately useful for participants.

Tip One: Start with A Clear Purpose in Mind

Every great learning initiative starts with a deep understanding of the current conditions that drive a need for change. You may feel uncomfortable thinking about the problems and challenges that frame your efforts to train environmental educators, but without a crisp and clear picture of what is *wrong* you may never succeed in truly making things *right.* Set aside some time at the beginning of a new teaching project to have an open and honest check-in about current conditions. Reflect on what you know and reach out to colleagues and students for input.

Tip Two: Take a "Twenty Statement Test"

Start your reflection on current conditions by asking yourself, "What are the problems or challenges in environmental education that I aim to address with my course?" Start every answer with the phrase "The problem is…" and keep writing until you've come up with at least twenty different bulleted responses. This is called a "Twenty Statement Test," and it can help you flush out all the ideas and assumptions that are just below the surface in your mind[10]. Don't stop at twenty if your pen keeps moving across the page. Get everything out so you can form a clear picture of the problems you're trying to tackle in your work.

Tip Three: Think Globally *and* Locally

The problems we aim to address in our courses can come in all shapes and sizes and they're often connected. "The environmental educators I'm training don't know enough of the basic science in their content areas" is a statement describing a local problem, specific to the people you work with here and now. "Environmental education centers don't have enough funding to invest in professional development" describes a more widespread, global problem. Both are clearly linked and important to the design of a professional development course. Don't leave anything out as you work to paint a precise picture of current conditions. You can always edit later.

Tip Four: Tell a Story

Review your list of twenty (or more) statements and look for the patterns, themes, and *stories* that emerge as you try to connect the dots. What kind of short story would you tell if you had to sum things up for someone who isn't familiar with these issues? Who are the characters in the story and what roles are they playing? Does the story have a beginning, middle, and conclusive ending? Are there any plot twists or surprises? Craft a short story to help make even the most complex problems a little easier to work with.

Tip Five: Don't Forget the Good Stuff

Though there may be plenty of problems to address in your training programs, don't forget to account for all the good things that *shouldn't* change from the status quo. What are your students doing particularly well already? What assets do they bring to their work? What resources do they rely on to be effective educators? There are good things to be found in even the most challenging circumstances, and efforts to create sustainable change can build on the things that already work well.

Tip Six: Dream of the Future

Taking a critical look at current conditions is just the first step in framing your efforts to teach environmental educators online. Reflecting on the problems you've identified in the present, imagine precisely what change would look like in the future. Dream big. Shut your eyes and picture the difference in the world that results from your programs. What are your students doing differently? What are their students doing differently? What kind

of impact are these changes having on a local community or even on the wider world? How are things changing over time?[11]

Tip Seven: Dream in the Present Tense—What's Going On?

Imagine using a time machine to travel into the future and observe the outcomes and impacts of your programs. Write a story about what you see as you look around. Use the *present continuous* tense to make your account vivid and easy for someone else to imagine as if they were there, like a news reporter broadcasting live from the scene of a big story. For example: *Six months after our program, environmental educators* **are designing** *more effective lessons for their students. They* **are planning** *their lessons ahead of time using best practices...* and so forth.

Tip Eight: Foster Creative Tension between the Present and the Future

For every problem that you identified in the current conditions you're working to address, imagine a positive alternative for the future. Create a balance between your understanding of current problems and the future outcomes of your training programs. Peter Senge, an expert on creating change in organizations, describes the gap between current conditions and a future vision as a "creative tension" that can drive our work to design effective learning experience online[12].

Tip Nine: Stagger Your Vision

Meaningful change rarely happens overnight. As you imagine the transformations you hope to foster in environmental education through online learning, think about how change might unspool over the days, weeks, months, and even years following the end of a course. What changes immediately in the work environmental educators do with their own students because of their experiences in your courses? What changes as the same educators grow more confident gradually applying new skills and concepts in their practice? Even further along, what changes across the practice of environmental education as new practices catch on and spread?[13]

Tip Ten: Research!

Reach out to environmental educators and their employers to learn more about *their* perspectives on current challenges and their dreams for the future of their work. Share your stories with

colleagues to get their feedback. Do they agree with your account of things? What would they add or edit to make the story more accurate? The more you can develop a clear sense of the apprehensions and aspirations held by your students, the more likely you are to design online learning programs that truly meet their needs.

Where and When?

Place and Time in an Online Learning Experience

Online learning experiences are not entirely free from the constraints of time and place. Students in online courses can be physically located anywhere with Internet access, interacting with course materials and discussions any time of day or night, squeezing lessons into busy schedules and moving at their own pace through assignments. Yet the virtual environment of discussion boards, course platforms, webinar portals, and social networking sites can shape the learning experience just as much as any physical setting. And timing is still important for moving through lessons in a multi-week program, coordinating work on group projects, and planning around the number of hours that participants can realistically devote to learning

Tip One: Get to Know Different Learning Management Systems Online

There are a variety of technology platforms, or "learning management systems," designed to support interactive learning online. As of 2017, sites like Canvas and Blackboard were amongst the most popular options, but new sites are always coming out and older products are under almost constant revision. Most learning management systems offer a variety of interactive tools, from message threads to document uploads to video conferencing. Most systems are free, though some will charge for premium services and customizations. Take the time to review and test some of the different options on offer when you get to work designing a course.

Tip Two: Try Social Media and Peer-to-Peer Platforms

Like Learning Management Systems, social media and peer-to-peer media platforms are constantly evolving and offering new interactive features. Though these technologies haven't been purposefully designed for education, they provide free and intuitive platforms for students to connect, share stories, weave professional networks, and collaboratively create in text, video, photo, animation, and much more. As with Learning Management Systems, take the time to test different social media products (such as Facebook or Instagram) and peer-to-peer media platforms (such as Google Drive) and consider how to best use them in your online courses.[14]

Tip Three: Experiment with Online Meeting and Video Applications

Online meeting and "webinar" applications are often free and easy to use directly in a web browser without installing new software on a computer. These applications can allow instructors to lecture and broadcast a slide presentation while students watch and interact in a parallel chat window. Video applications, such as the popular Skype service, allow for one-on-one and small group video interactions that mimic in-person meetings. Consider using online meeting and video applications in your courses to support deeper interactions between students.

Tip Four: Create a Time Budget

Online learning schedules are usually designed for flexibility, allowing students to interact with materials and discussions at their own paces. But flexibility does not mean students will have *more* time to cover even *more* content than they would in person. Set realistic expectations and explicitly tell students how much time they should spend on different tasks each week, from reading and watching new content to chatting and meeting in video conferences. Create a "time bank" for your course and draw down minutes and hours as you design each task. If you get to a "zero" balance in your time bank before you're done designing every aspect of your course, you may need to go back and make some critical choices about what can—and can't—get covered.

Tip Five: Leave More Space & Keep it Simple

Online learning environments and schedules can quickly become cluttered with too much *stuff*—busy design templates, frilly typefaces, unnecessary images, excessive videos, and more text than anyone enrolled in an in-person class could ever get through from week to week. After going through a first round of structuring and designing a course, take a step back and ask yourself, "Do we need all this?" Work through every element of your course and ask yourself how you can leave more space and make things more simple. The most impactful learning will happen with simple and direct instructions, pithy content, and plenty of space for participants to explore in inquiry together.

What?

Designing and Discovering Content for a Course

As educators, we often start designing new courses by listing all the content we hope to cover with our students. We grow excited by the prospect of sharing big ideas and useful skills and we quickly find ourselves shaping our courses to serve the content—rather than choosing content that best suits the predetermined objectives of the course. Having taken time to critically consider *who* our students are, *why* we aim to offer a particular course, and *what* our *vision* for future outcomes looks like, we can more responsibly identify the content we hope to work with in our courses.

Tip One: Inventory Skills, Concepts, and Attitudes

Jane Vella encourages adult educators to treat content like a collection of objects—of *nouns—* that students will actively work with in a course. For Vella, content comes in three forms: *skills*, or knowledge that deals in hands-on procedural know-how; *concepts,* or knowledge that deals in ideas, facts, or concepts; and *attitudes,* or knowledge that deals in emotions, worldviews, and values. Use a list or a mind map[15] to inventory all of the skills, concepts, and attitudes you hope to cover in your course.[16]

Tip Two: Aim for Precision and Pare Back Your Content

Take a critical look at all the skills, concepts, and attitudes you've inventoried for your online course. For each bit of content, ask yourself: "Can I be more precise? Is this too broad to tackle all at once? Can I break this down into smaller parts?" Aim for precision—and then pare back. Identify the essential content and consider how much time students can realistically spend working with each new skill, concept, or attitude you aim to cover.

Tip Three: Follow the Rule of Seven (Plus or Minus Two)

In an influential research article in the mid 1950's, the psychologist George A. Miller[17] argued that our short-term memory has "severe limitations on the amount of information that we are able to receive, process, and remember." According to Miller, that amount is roughly seven bits of information—give or take two. If we subscribe to "Miller's Law," then any individual chunk of content should be comprised of no more than five to nine

key ideas, actions, or feelings. Any more would make it too unwieldy for students to effectively work with in a given task.

Tip Four: Remember—Media is not Content

Don't confuse *content* with *media*.[18] Think of media as the text, videos, slide shows, audio recordings, and images we use to communicate the content of a course. Different kinds of media can communicate the same content. For example, a short video, an instruction guide, or a diagram can all walk students through the steps involved in practicing a new skill. Before committing to a particular reading, film, or recording, ask yourself: "Is this the most appropriate medium for communicating this content to this group of students?" You may find that in some cases, providing multiple kinds of media to get across the same content can be more effective than sticking to a single source. As always, gauge your audience.

Tip Five: Find Media Online—And Cite You Sources!

One of the main benefits of teaching and learning online is the ready access to nearly endless sources of media—much of it available for free download or viewing in a web browser. Don't limit yourself to media found on the World Wide Web when curating the content for a course. Podcasts, audio books, documentary films, and other media are often available for free download from Internet-based services like Apple's iTunes, and mobile phone apps can also serve up media rich with content relevant to your courses. Remember—just because it's free and easy to access doesn't mean the original creators shouldn't be attributed in your course materials and syllabi. Give credit where credit is due when using someone else's media to convey content.

What for?

Setting Achievement Based Objectives and Designing for Evaluation in Online Courses

What will the environmental educators enrolled in your online courses achieve together? What will they do with the various skills, concepts, and attitudes you introduce through readings, videos, audio recordings, and lectures? How will they work with new content to make it immediately meaningful and relevant to their work and their lives? Setting clear objectives for the work students do together online will help you responsibly and respectfully evaluate the course as it unfolds.

Tip One: Think In Terms of Achievements

Jane Vella encourages us to think in terms of *achievements* when laying out our course objectives, asking: "What will students *have done* by the end of a course?"[19] Using the future perfect verb tense can help clarify the objectives students *will have* completed and achieved by the end of a course. Review the content you've inventoried for your course and for each skill, concept, or attitude, identify at least one thing students *will have done* to put it into practice.

Tip Two: Use Observable Verbs

Instructors often rely on verbs like "learn" or "understand" to describe the objectives of a course—for example, "Students will **learn** about environmental education." But what does "learning" or "understanding" look like in action? When writing achievement-based objectives for our course, turn to verbs that describe processes with visible and even tangible products. In the 1950's, the educational psychologist Benjamin Bloom[20] created a taxonomy of learning verbs that teachers still rely on for crafting concrete objectives. Bloom's Taxonomy is freely available online in a variety of formats. Give it a try as you look for the right verb to craft your achievement-based objectives.

Tip Three: Use Your Imagination

Crafting clear and observable achievement-based objectives is the first step in designing the minute-by-minute experience of an online course. If you can clearly envision what students *will have done* by the end of a course, you can start to design the experiences that will get them there. Use your imagination to conjure up vivid

and detailed images of students actively achieving their objectives. What does success look like for each objective? What does it *not* look like? Take the time to be precise. Set clear and accomplishable objectives—and then give students the freedom to decide how, precisely, they want to get there.

Tip Four: Use Objectives to Kick Off Course Evaluation

Pairing achievement-based objectives with content is the first step in building a rigorous evaluation framework for any course. Achievement-based objectives create a balance of power between students and an instructor in assessing the strengths and weaknesses of a course. "How do they know that they know?" ask Jane Vella and colleagues in the title of their book on evaluation in adult learning.[21] Their answer is, simply: "They did it." Students receive immediate and useful feedback on the degree to which they've mastered a new skill, concept, or attitude through their efforts to achieve a clear objective. The proof is in the doing.

Tip Five: Check In with the Big Picture

Earlier in this report we urged you to begin designing an online course for environmental educators by asking two basic questions: why do students need the course and what kind of future is likely to result from students taking the course? The first question clarifies existing problems or challenges that call for learning as an instrument of change. The second question clarifies your vision for the future that grows out of your efforts. Your list of achievement-based objectives for a course should fall somewhere between these two poles. They are a list of concrete outcomes that happen in the context of a course that point toward changes in the lives and work of your students—which, in turn, should result in changes in the communities and the world they inhabit. Ask yourself: will the objectives I've set help students take steps toward the bigger picture changes we aim to achieve together?

How?

Putting the Pieces Together in an Online Course

The constructivist tradition in adult education argues that students must be free to create—to *construct*—their own meaning out of new content, linking it to what they already know and value, charting their own course while learning alongside other adults.[22] Such an approach to teaching and learning should value the freedom and the right of adult learners to make decisions and take responsibility for their own growth. It would be what the Brazilian educator Paulo Freire referred to as a "pedagogy for liberation,"[23] reflecting what we know about how adults learn best.

Tip One: Design for Dialogue

Dialogue can be seen as a process for arriving at "something new" or "something creative" in an open-ended exploration of ideas.[24] Dialogue is at the heart of any online professional development course that values the wisdom adult students bring with them from their own work and life experiences. Dialogue in an online course can happen on a variety of platforms, from discussion board threads to chat room exchanges to video conference meetings. No matter the technology, supporting dialogue starts with asking students open questions that generate unpredictable replies (rather than closed questions aimed at surfacing a single "right answer").

Tip Two: Design Hands-on Tasks

Students will more fluidly engage in dialogue when they get to work accomplishing hands-on tasks together. Asking students to read, watch, or listen to content for new skills, concepts, or attitudes is simply not engaging enough to generate dialogue and sustain interest. Invite students to complete challenging tasks that exercise their creativity, critical thinking, and playfulness in response to new content. Be precise in your instructions. For example, instead of asking students to vaguely "share some thoughts" in response to a reading or video, task them with naming two or three ways a new concept resonates with their own experience. Every task should result in an observable achievement: a list, an analysis, a comparison, a drawing, a diagram, a dialogue… you get the idea.[25]

Tip Three: Design With the Real World in Mind

Make every task immediately relevant to student needs and aspirations. Avoid assigning busy work for its own sake. If you can't come up with a meaningful task, consider reassessing the value of the content you're working to get across. What do your environmental educators need to be able to do when they get to work on Monday morning? Provide opportunities for students to model using the knowledge they need "on the job" in the safety of the course.

Tip Four: Design With Every Kind of Learner in Mind

By now it is common wisdom that different adults learn best in different ways. Some are primarily *cognitive* learners who excel at working with verbal or written ideas and concepts. Some are more *visual* or *auditory* in orientation, at their best learning through work with sights and sounds. Others are primarily *kinetic* and need to incorporate movement and the body into their learning process. Create tasks that engage every type of learner, recognizing that we all possess a variety of different learning styles under different circumstances. Just because a course is hosted online doesn't mean students can't be tasked with getting up out of their chairs, moving around, going outside, and engaging all of their senses.[26]

Tip Five: Stay Engaged!

Successful online courses rely on what one group of researchers calls "teaching presence,"[27] which includes facilitating discussions, fostering connections between students, asking questions that extend dialogue on an issue, offering feedback and advice as students work to complete tasks, and synthesizing themes that emerge in dialogue between students. Leading an online course may take *more* active engagement than facilitating a course in-person. Instructors must work to help students overcome any awkwardness or miscommunication that can result from a lack of body language or other tacit social cues that are taken for granted in physical learning environments.

Conclusion

Adult learning can be *transformative,* leading to meaningful and lasting changes in a student's daily life and work.[28] The thirty five tips presented here can help you begin the work of crafting transformative online learning experiences for environmental educators, helping them develop in their practice together. We hope you will take the time to explore the resources we reference in the "notes" section and invest in your own development as an adult educator.

As we wrote at the start of this report, much of what we know about effective adult learning *online* comes from what we already know about effective adult learning *in person.* It can be easy to feel overwhelmed by all of the technological choices involved in crafting an online learning experience. Remember—the tech should serve the learning. Keep it simple as you begin to explore the territory. You don't need much more than email and a file sharing system to get started with a course that honors all we know about how adults learn best. As you grow more comfortable with teaching and learning online, you can experiment with different Learning Management Systems, social media platforms, and other interactive technologies.

Like any new exploration, you won't get anywhere unless you take that first step into the unknown.

Notes

[1] See Lipman (2003) for an extensive review of the role of communities of inquiry in education. Though Lipman approaches the topic from the point of view of childhood educator, the insights resonate with various branches of adult learning theory and practice.

[2] See Louv (2008) for a comprehensive primer on the benefits of spending time outdoors.

[3] Garrison et al (2000) introduce three types of *presence* critical to a successful online learning experience: *social* presence, or the extent to which a course creates a collegial and convivial platform for exchange between students; *cognitive* presence, or the ability of any given student to invest deep focus on the work of a course; and *teaching* presence, or the sustained investment on the part of an instructor in bringing all the pieces of an online course together in real time.

[4] See Vella (1994, 1995, 2000, 2003, 2007) and Vella, Berardinelli, & Burrow (2000). See also Goetzman (2012) for a comprehensive overview of Vella's "dialogue education" approach to adult learning.

[5] "Adults need to know why they need to learn something before undertaking it," write Knowles et al. (1990), drawing on research into adult motivations for learning.

[6] Vella (1994) urges educators to undertake "Learning Needs and Resource Assessments" (p. 57) that include doing background research, student surveys, conversations, and other fact-finding activities prior to starting with the design of a course.

[7] See Knowles et al. (1990) for more on the "need to know" in adult learning.

[8] See Vella (1994) for more on the need for immediacy in adult learning.

[9] For more on ceding control over decision making in an adult learning experience, see Horton (1997) and Freire (2000).

[10] For more information about Twenty Statement Tests, see Kuhn & McPartland (1954).

[11] See Senge (1990) for more on the role of vision on creative planning work.

[12] Senge (1990, p. 157) uses the metaphor of a stretched rubber band to communicate the idea of *creative tension* between current conditions and a vision for the future.

[13] Vella, Berardinelli, and Burrow (2000) encourage us to think of outcomes in terms of the *learning* that happens during a course, the successful *transfer* of new skills, concepts, and attitudes out of the course and into the daily lives and work of students, and the eventual *impact* these changes have on a community or society at large. See David (1997) for an introduction to the related concept of Logic Models in program design and evaluation.

[14] See Poore (2012) for a comprehensive review of the use of social media in learning experiences.

[15] See Buzan & Buzan (1996) for a basic introduction to mind mapping as a brainstorming exercise.

[16] See Vella (1995) for more on skills, concepts, and attitudes as the building blocks of course content.

[17] See Miller (1994). For an accessible introduction to Miller's Law at work, see Rock (2009).

[18] For a detailed introduction to the difference between *content* and *media*, see McLuhan (1994).

[19] See Vella (2007) for more on the purpose of achievement-based objectives in course design.

[20] See Bloom (1956).

[21] See Vella, Berardinelli, and Burrow (2000) for more on the self-evidence of evaluation using achievement-based objectives.

[22] See Fosnot (2005) for an overview of constructivist thinking in education.

[23] See Shor & Freire (1987) for more on emancipatory learning and pedagogy for liberation.

[24] See Bohm (2004) for more on the difference between dialogue and discussion and the importance of dialogue in creative practice and learning.

[25] See Vella (2001) for an accessible introduction to designing learning tasks in four parts: *anchoring* a task in what students already know and feel, *adding* new content through presentations, lectures, readings, films, or other media, *applying* new content through a creative and open-ended task, and setting clear intentions for how to take new knowledge *away* into the world.

[26] See Gardiner (2011) for a classic overview of "multiple intelligences" and various styles of learning.

[27] See Garrison et al (1999) for more on the theme of presence in online learning environments.

[28] See Mezirow (1991) for more on the transformational potential of adult learning.

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