ENVIRONMENTAL / CONSERVATION EDUCATION IN IOWA

ABSTRACT

The Iowa Conservation Education Coalition conducted a survey and follow-up series of interviews with formal and nonfomal educators to determine the current status of conservation/environmental education in Iowa. Included here are the findings from that work and recommendations going forward. Report completed January 2020.

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Environmental / Conservation Education Survey – Iowa Conservation Education Coalition (ICEC)

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This report, a teacher focus group, the survey of conservation education in Iowa in 2019, and follow-up interviews to gain more insight from a broader group of conservation and conservation education professionals was supported by the Resource Enhancement and Protection Conservation Education Program (REAP-CEP). Resource Enhancement and Protection Program (REAP): Invest in Iowa, our outdoors, our heritage, our people. REAP is supported by the state of Iowa, providing funding to public and private partners for natural and cultural resources projects, including water quality, wildlife habitat, soil conservation, parks, trails, historic preservation and more

This final report was developed in conjunction with E Resources Group.

REAP

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Executive Summary

Integration of EE/CE in Schools

EE/CE can be valuable to formal education, but almost 4/10 teacher respondents rarely or never include environmental education in their teaching even though 72% of teacher respondents teach science. Respondents suggest that EE is integrated "somewhat" in multiple disciplines in schools and two-thirds of teachers use the outdoors for learning fewer than 5 days a year. Comments suggest that access to nearby sites and time are barriers. Concerns also exist among a plurality of respondents that EE/CE "seeks to indoctrinate" and that it is an "add-on" to core curriculum.

Even so, classroom visits were the most frequently used type of programming by naturalists and other nonformal educators and formal educators overwhelmingly agree that EE:

- weaves real world experiences and environmental issues into student learning.
- provides meaningful, authentic, and applied learning experiences.
- is related to my discipline / subject area.
- is an important component of scientific literacy.
- provides opportunities for authentic 3-D learning.
- is valuable to a holistic STEM program.

Motivations for supporting and/or engaging with EE/CE

Teacher respondents were most influenced by "makes learning relevant to students," followed by "my commitment to the environment," and "student concerns about or interest in the environment." Administrators indicated student engagement ("makes learning relevant…," "student concerns…," and "makes learning fun...) were strong motivators. "My belief in interdisciplinary education" was also a strong motivator for Administrators and AEA Consultants. A significant portion of curriculum coordinators selected "Useful experiences from courses/workshops I have taken" as well. Overall, administrators were *not* motivated because EE is mandated.

Comfort with and use of CE/EE topics and practices

A significant proportion of teachers indicated they were not comfortable teaching some EE/CE topics. Administrators and curriculum directors indicated they are not as knowledgeable in EE/CE practice or topics. Nonformal educators are well-versed in most content areas, but have less training in educational practice.

Supporting EE/CE through resources, training, and tools

When asked about educational strategies, about half of formal education respondents indicated need for more resources/training for skills in the following: developing and using models; conducting field investigations; project/place-based learning; constructing explanations or designing solutions; exploring phenomena; and obtaining, evaluating, and communicating information.

Among potential barriers to integrating EE into their teaching, "access to resources" was cited by about half of teacher respondents. Potential resources or services to address barriers that ranked high among teachers, administrators, and naturalists include:

- EE curriculum materials aligned with Iowa Core for my grade/subject area
- Resources/support to develop and use an outdoor learning area at my school/site
- Tips/ideas for using EE resources in specific grade/subject area
- Additional professional development/training in EE topics
- A network of teachers working on EE and sharing resources
- Inclusion of EE courses/topics in STEM certification programs
- Webinars/online training or tutorials for EE

Programming/services by nonformal educators:

There are a host of outreach and education efforts related to conservation and the environment. Respondents provide a variety of program types through several venues. Classroom visits were the most frequent. Park/nature area and facility-based programs were also frequently used as were general public programs. The least frequent were service learning, citizen science, after school, and library programs.

Besides programming, nonformal conservation/environmental educators provide several other resources. Most common are websites (73%), newsletters (67%), lessons/activity guides and displays (60% each). About 20 % also mentioned social media, especially Facebook.

Interviews revealed that many local entities (CCBs) are increasing their CE/EE efforts as are several organizations, but state and federal agencies' outreach and education budgets and staffing have decreased significantly in the past decade. Many organizations have a content area focus, and the curricula/resources they recommend reflect that; many interviewees cited content resources (materials, experts). Educational resources cited included lesson plans/curricula, training/workshops, and a variety of methods for sharing/networking.

When asked about a broader CE/EE network or activities across disciplines, a majority of interviewees indicated they would benefit from

- Professional development
- Conferences
- List serves
- CE/EE workshop or networking event
- Webinar or on-line content
- Idea sharing, examples of great CE/EE process or case studies

Recommendations for ICEC (and partners) going forward

Formal Education

- Recognize core formal education areas where conservation/environmental education has the strongest alignment (prioritize) and provide unbiased, quality resources, and professional development that address Iowa Core standards using *best educational practices*. (e.g., Iowa Core for Science – and connections to other Core standards; STEM initiatives)
  - in person/web-based
  - included in STEM certification
  - begin with conservation basics
  - work with AEAs to integrate approaches and formats consistent with current suggested practices

- Provide support to increase integration of EE/CE and connection with outdoors.
  - Continue monthly tips/ideas for using EE resources in specific grade/subject area.
  - Work with partners to enhance communication channels and approaches.
    - Determine existing channels and how to access
    - Provide content that is useful to educators
    - Provide timely content
  - Work with state and local partners to provide resources/support for outdoor learning areas on or near school sites.

Nonformal

- In conjunction with IAN, determine needs and provide basic resources and professional development on pedagogy (general education methods, science and engineering practice) and child development as it relates to education as well as emerging conservation/environmental topics such as soil health.
- In conjunction with partners, determine most expedient approach to sharing examples of great EE/CE process and case studies across content topics. (website, listserv, workshop/event)

Capacity Building

- ICEC is in a unique position to provide a common platform between and among nonformal partners working with formal education, especially in terms of facilitating collaboration on development, promotion, and support of broad-based, quality conservation/environmental education curricula and resources. With the array of resources and providers, ICEC's most important role may be to communicate the value of EE/CE to formal education partners and connect them with quality resources and training.

Survey Results

Overview/methods

An electronic survey was distributed through the Iowa Science Leadership team, direct emails to the ICEC and IAN membership and Iowa Project WILD / Growing Up WILD trainees, school administrators, partner organizations, and agriculture and natural resources teachers. Partners were asked to forward to their networks, including any educators with whom they worked. Results were separated by the following groups (occupations): teacher, administrator, AEA consultant, curriculum coordinator, and naturalist/interpreter/nonformal educator.

Where questions were the same across groups, responses were compared.

Respondent comments included are presented as submitted – no correction to grammar, spelling, punctuation, or word choice.

Acronyms:

AEA – Area Education Agency

CCB - County Conservation Board

EE/CE – environmental education / conservation education

IAN - Iowa Association of Naturalists

ICEC - Iowa Conservation Education Coalition

ISEA – Iowa State Education Association

NAAEE – North American Association for Environmental Education

NGSS – Next Generation Science Standards

Teacher Response Analysis

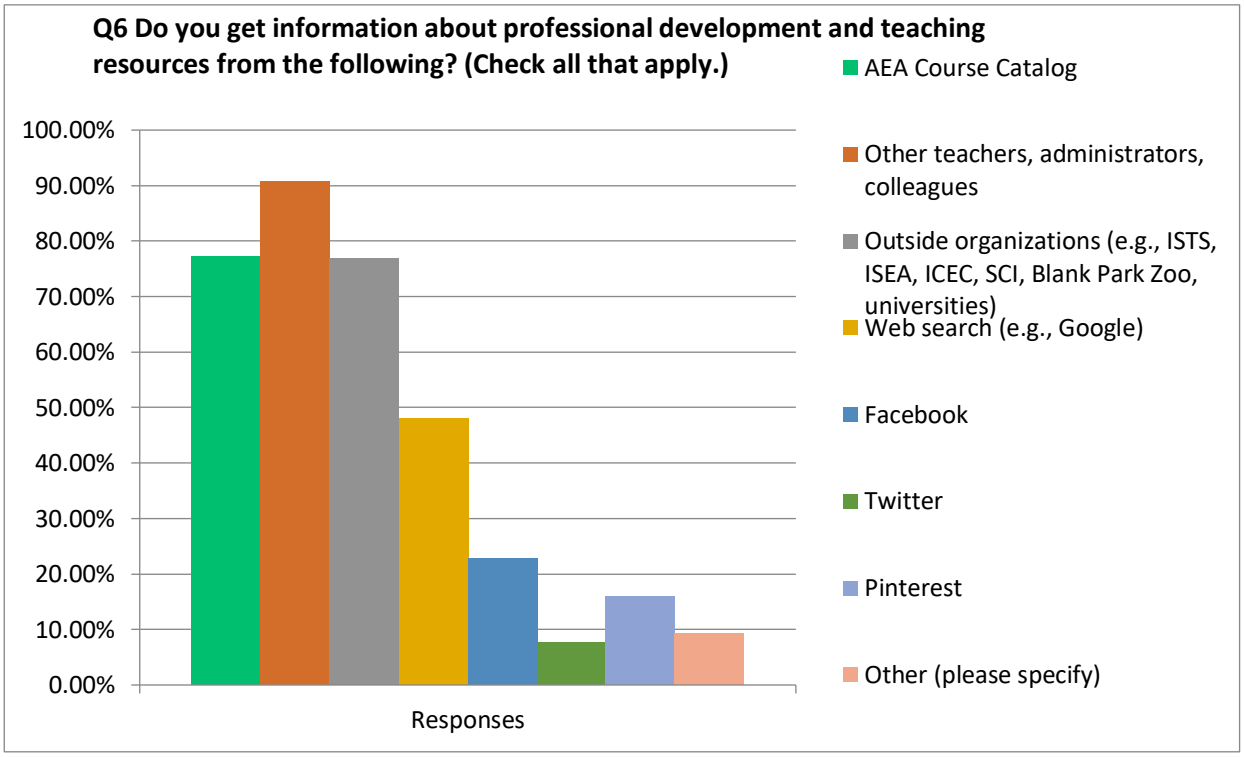
- 237 completed surveys – classroom teachers
- 72% of respondents teach science
- 68% have taught 11 or more years

Teaching Experience:	
Years taught	Percent Respondents
<3	6%
3-5	10%
6-10	16%
11-15	16%
16-20	17%
21+	35%

Grade level taught (Note: several teach at multiple grade levels)	
high school	46%
junior high	32%
upper elementary	24%
lower elementary	18%
pre-K	5%

Subject Area:

Respondents teach a multitude of subject areas, but almost 3/4 taught science. About 1/4 taught social studies.

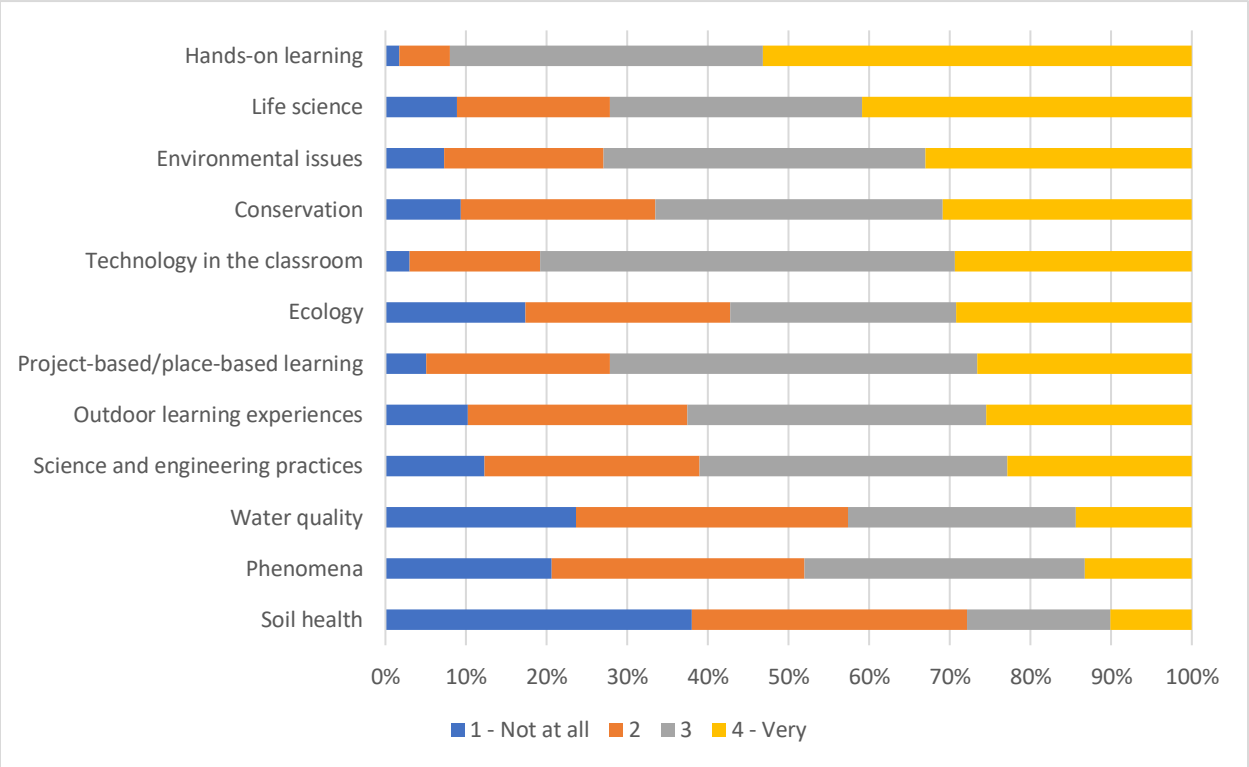


Q6 Do you get information about professional development and teaching resources from the following? (Check all that apply.)	
Answer Choices	**%**
Other teachers, administrators, colleagues	90.72%
AEA Course Catalog	77.22%
Outside organizations (e.g., ISTS, ISEA, ICEC, SCI, Blank Park Zoo, universities)	76.79%
Web search (e.g., Google)	48.10%
Facebook	22.78%
Pinterest	16.03%
Other (please specify)	9.28%
Twitter	7.59%

Teachers get professional development information from:

1. **Other teachers, administrators, colleagues** (91%)
2. **AEA course catalog** (77%)
3. **Outside organizations** (77%)
4. Fewer than half conduct web searches to find professional development.
5. Most teachers who responded do not look to social media to get professional development opportunities.

Q7 How would you rate your comfort level in teaching (at your current grade level)? 1=Not comfortable, 4=Very comfortable



An overwhelming majority ranked their comfort level teaching at their current grade level as a 3 or 4 for the following:

1. Hands-on learning (92%)
2. Technology in the classroom (81%)
3. Life sciences (72%)
4. Project-based / place-based learning (72%)

The topics more respondents were not at all comfortable teaching (ranking = 1) at their current grade level were:

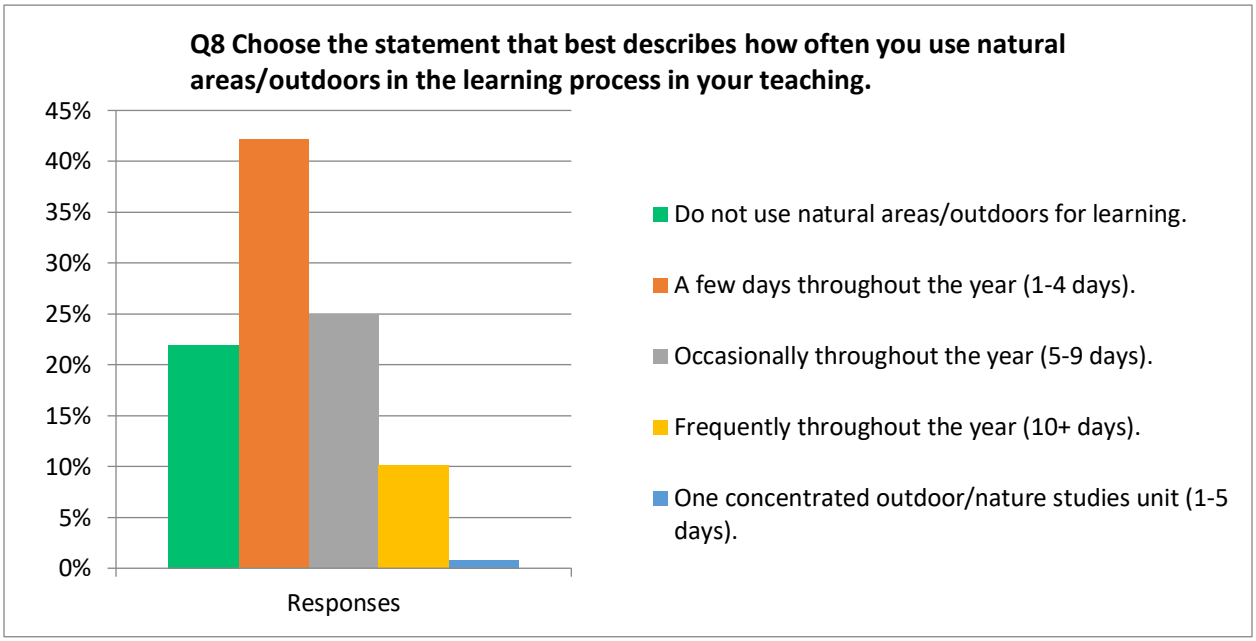
1. Soil health (38%)
2. Water quality (24%)
3. Phenomena (21%)
4. Ecology (17%)

An overwhelming majority of respondents (72%) indicated they were not comfortable teaching soil health at their current grade level (ranking = 1 or 2). About half were not comfortable teaching water quality (57%) or phenomena (52%) and 4/10 were not comfortable teaching ecology.

Take-away:

These results indicate a need for improved conservation education resources and professional development on basic ecological concepts necessary to understand and address environmental issues; and water quality and soil health, arguably two of the top conservation challenges in our state.

As a conservation/environmental education support organization, ICEC must incorporate the language and concepts of Iowa Core in resources and professional development. We should provide resources and PD that support AEA professional development. ICEC needs to stay "in the know" on current approaches and requirements that affect conservation education in formal arenas. ICEC needs to establish and support a diverse network of agencies, organizations, and institutions that promotes and facilitates quality conservation education.



Almost 2/3 of respondents use the outdoors fewer than 5 days throughout the year (22% not at all; 42% 1-4 days). 25% use the outdoors 5-9 days throughout the school year. 10% use the outdoors frequently (10+ days) throughout the school year.

Many of the comments talk about the barriers to using the outdoors as a learning environment; several specifically mention transportation / field trips as barriers:

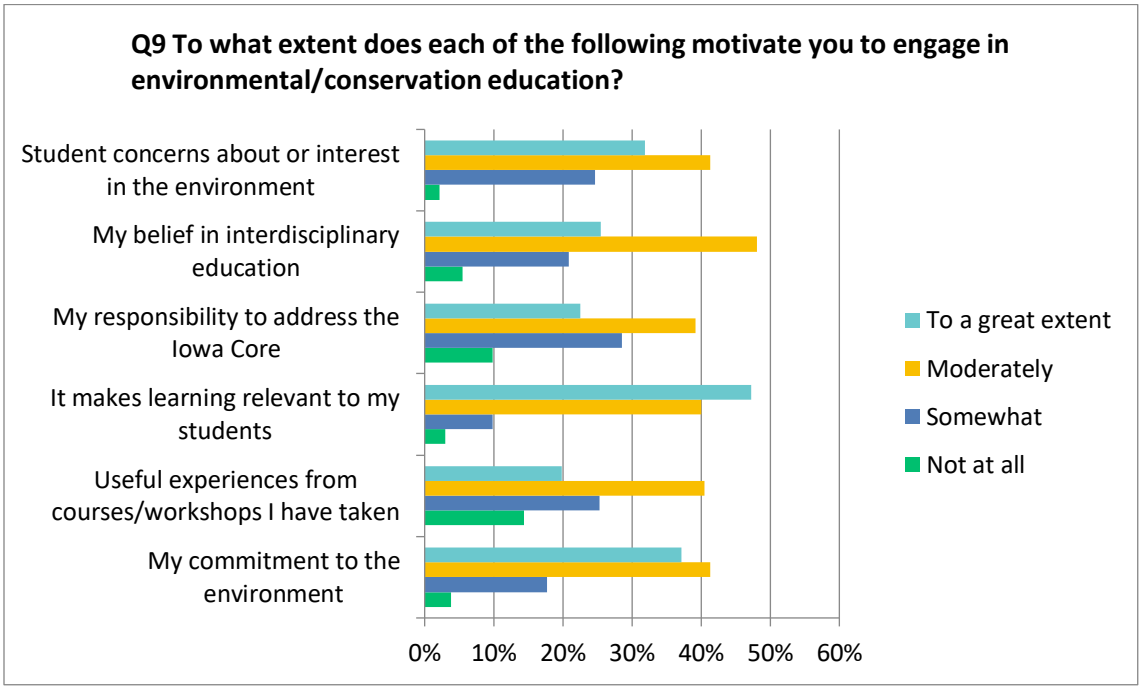
- A HUGE problem with this is the number of students we have in our classes and transportation costs.
- do not have time during the year
- If I had better settings for outdoor learning that would increase my frequency
- Due to where my school is and availability for field trips, I am rarely able use outdoor areas as part of the coursework.
- With my subject area being Special Education, I'm not sure how to incorporate it, but would be willing to learn.
- I would love to do this more! The budget does not allow for many field trip days.
- Difficult to organize because of class schedules
- If I had better settings for outdoor learning that would increase my frequency

Some comments noted relationships with nonformal educators.

- We work at Blank park zoo with the animals
- We go to Metro Waste to their environmental science space. I'd love to visit a sustainable farm with my students!
- We are fortunate enough to have a great partnership with our local County Naturalist as well as an outdoor classroom to learn in.

Take-away:

In order to increase use of outdoor environments in formal education settings, there is a need to make outdoors more available to educators, to provide tangible evidence that outdoor environments enhance learning and support the Iowa Core, and to provide resources that help teachers better utilize outdoor resources, including nearby resources, even if they are "developed." The Nature of Americans study found that adults perceived "nature" as more distant, but "for children, nature is located quite literally right out the door. Special places outdoors and unforgettable memories often consist of back yards or nearby woods, creeks, and gardens."

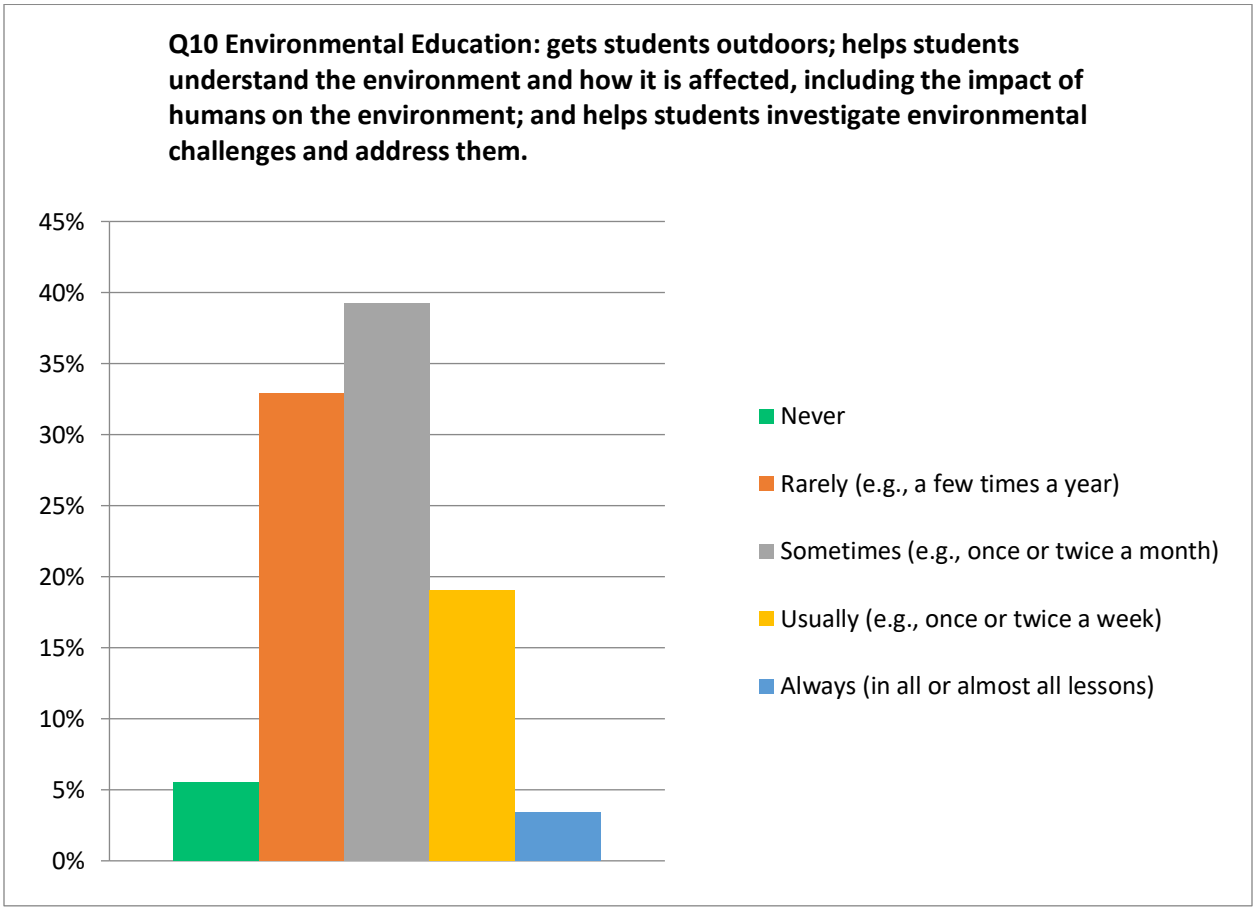


Based on combination of responses "to a great extent" or "moderately,"

- Almost 9/10 (87%) of teachers who responded to the survey indicated that environmental/conservation education makes learning relevant to their students.
- Personal commitment to the environment (78%) and belief in interdisciplinary education (74%) also motivated respondents.
- About 6/10 also indicated courses/workshops in which they participated and their responsibility to address the Iowa Core motivated them to engage in Environmental/conservation education.
- The most influential motivators were: "makes learning relevant to students," followed by "my commitment to the environment" and "student concerns about or interest in the environment."

Take-away:

Conservation/environmental education that provides relevant learning is essential if we are to motivate teachers to use. While science often is seen as the subject area for CE/EE, it needs to integrate other subject areas. The CE/EE community can motivate teachers with quality, experiential professional development. {Note - This also increases teacher comfort level with content and pedagogy.}

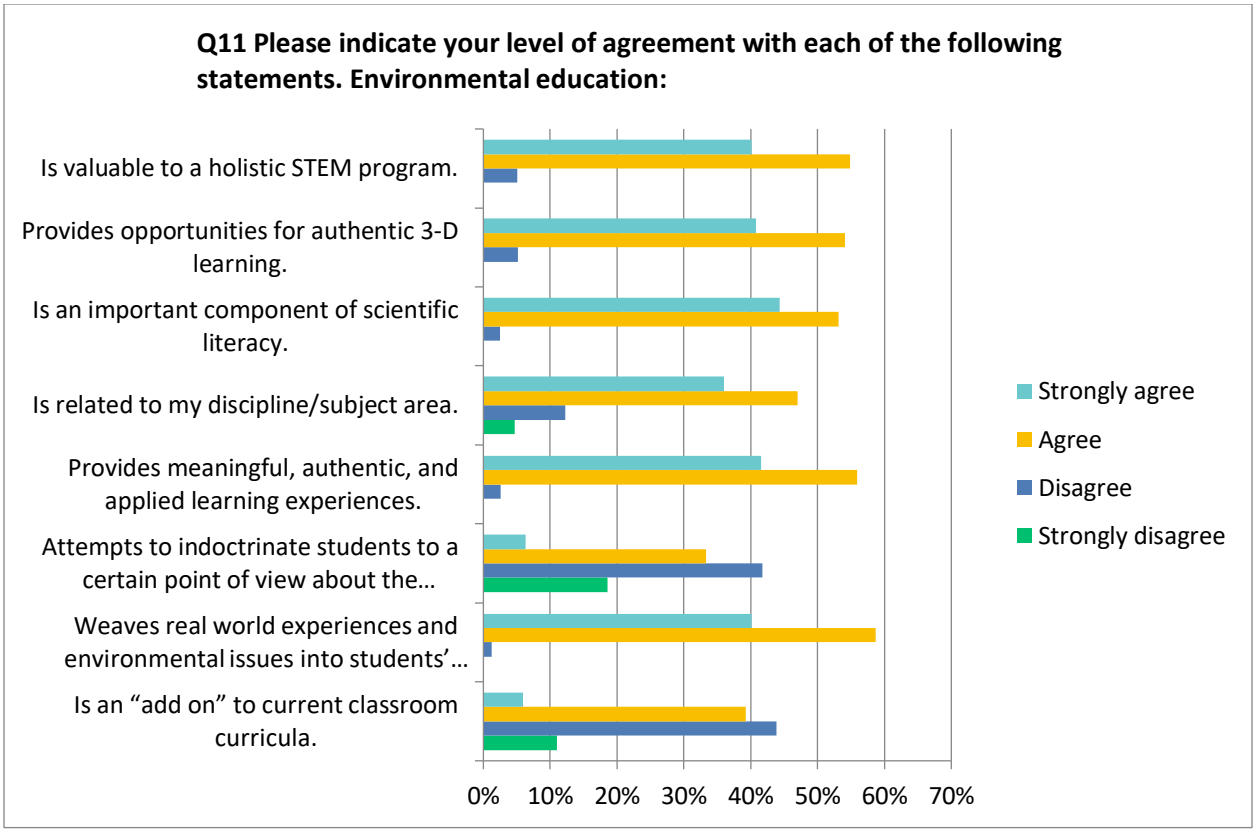


Q10 Cont'd: Given this definition of environmental education, approximately how often do you include environmental education in your instruction?

38% of respondents never or rarely include environmental education in their teaching. 39% indicated that they do so sometimes (once or twice a month) and (22%) said they usually (once or twice a week) or always include environmental education in their teaching.

Take-away:

Almost 4/10 respondents rarely or never include environmental education in their teaching even though 72% of teachers who responded teach science.

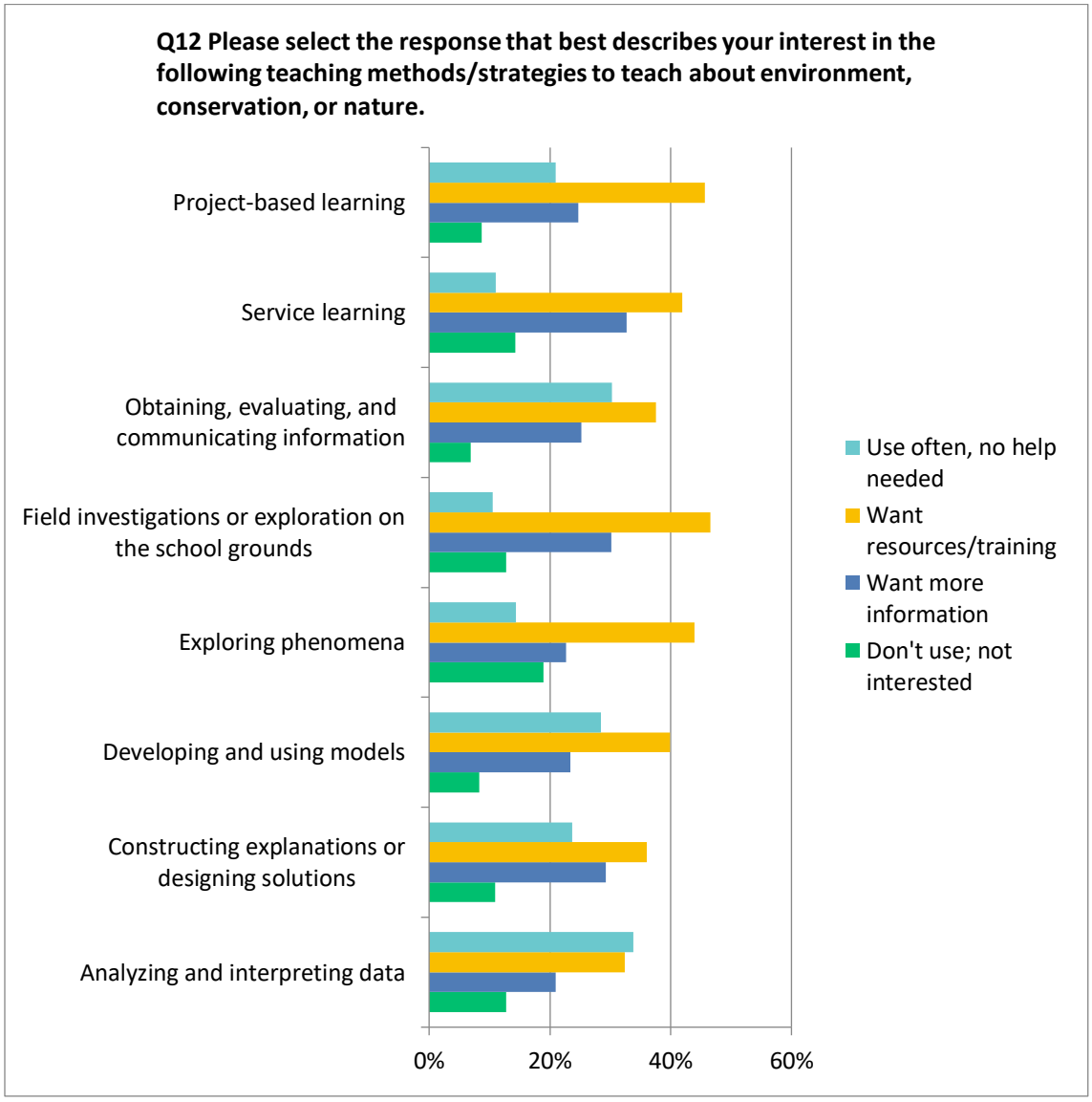


Q11 Please indicate your level of agreement with each of the following statements. Environmental education:	strongly disagree / disagree	agree / strongly agree
Is valuable to a holistic STEM program.	5%	95%
Provides opportunities for authentic 3-D learning.	5%	95%
Is an important component of scientific literacy.	3%	97%
Is related to my discipline/subject area.	17%	83%
Provides meaningful, authentic, and applied learning experiences.	3%	98%
Attempts to indoctrinate students to a certain point of view about the environment.	61%	39%
Weaves real world experiences and environmental issues into students' learning.	1%	99%
Is an "add on" to current classroom curricula.	55%	45%

- Respondents overwhelmingly (>90%) agree That EE:
  1. weaves real world experience and environmental issues into student learning (99%)
  2. provides meaningful, authentic, and applied learning experiences (97%)
  3. is an important component of scientific literacy (97%)
  4. provides opportunities for authentic 3-D learning (95%)
  5. is valuable to a holistic STEM program (95%)
- More than 8/10 respondents agree that EE *"is related to my discipline / subject area."*
- *The majority of respondents disagree that* EE is an *"attempt to indoctrinate students to a certain point of view" (60%) and* that EE *"is an 'add-on' to current classroom curricula" (55%)*

Take-away:

Based on responses, teachers believe EE is relevant and valuable to formal education, but there were a significant number of respondents (4/10) who agreed that EE "attempts to indoctrinate..." and that it is "an add-on…" There is a need to provide quality resources and professional development that are not biased, and that address Iowa Core standards. This includes review and revision of existing resources and programs as needed.



Q12 Please select the response that best describes your interest in the following teaching methods/ strategies to teach about environment, conservation, or nature.	Don't use; not interested	Want more information	Want resources/ training	Use often, no help needed
Project-based learning	9%	25%	46%	21%
Service learning	14%	33%	42%	11%
Obtaining, evaluating, and communicating information	7%	25%	38%	30%
Field investigations or exploration on the school grounds	13%	30%	47%	11%
Exploring phenomena	19%	23%	44%	14%
Developing and using models	8%	23%	40%	28%
Constructing explanations or designing solutions	11%	29%	36%	24%
Analyzing and interpreting data	13%	21%	32%	34%

Teaching methods/strategies that respondents wanted resources/training for included (at least 40%):

1. Field investigations or exploration on the school grounds (47%)
2. Project-based learning (46%)
3. Exploring phenomena (44%)
4. Service learning (42%)
5. Developing and using models (40%)

Teaching methods/strategies that more respondents already used and did not want help included:

- Analyzing and interpreting data (34%)
- Obtaining, evaluating, and communicating information (30%)
- Developing and using models (28%)

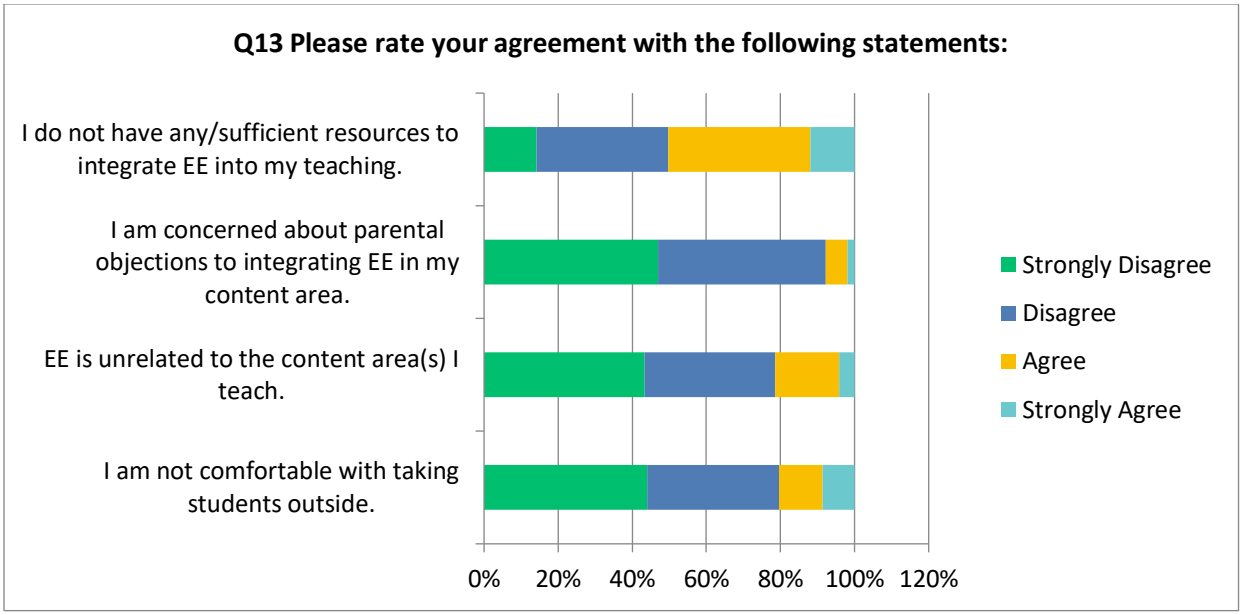
19% selected “do not use; not interested” for “exploring phenomena,” but about 2/3 want more information or resources/training for exploring phenomena.

34% selected “use often; no help needed” for “analyzing and interpreting data,” while about half of respondents want more help.

Comments: Two of the 17 comments specifically mentioned looking for good local, Iowa-based phenomena and data – one specifically mentioned data / phenomena for people with little environmental background. Four additional comments (of the 17) welcomed more updated resources, training.

Take-away:

Almost half the respondents wanted resources/training for field investigations on the school grounds, project-based learning, and exploring phenomena. Resources/training we currently provide address the first two. Modes of delivery may need to be revised to make them accessible to teachers.



Almost 8/10 respondents disagree to strongly disagree that *"EE is unrelated to the content area(s) I teach." and "I am not comfortable with taking students outside."*

9/10 respondents disagree to strongly disagree with *"I am concerned about parental objections to integrating EE in my content area."*

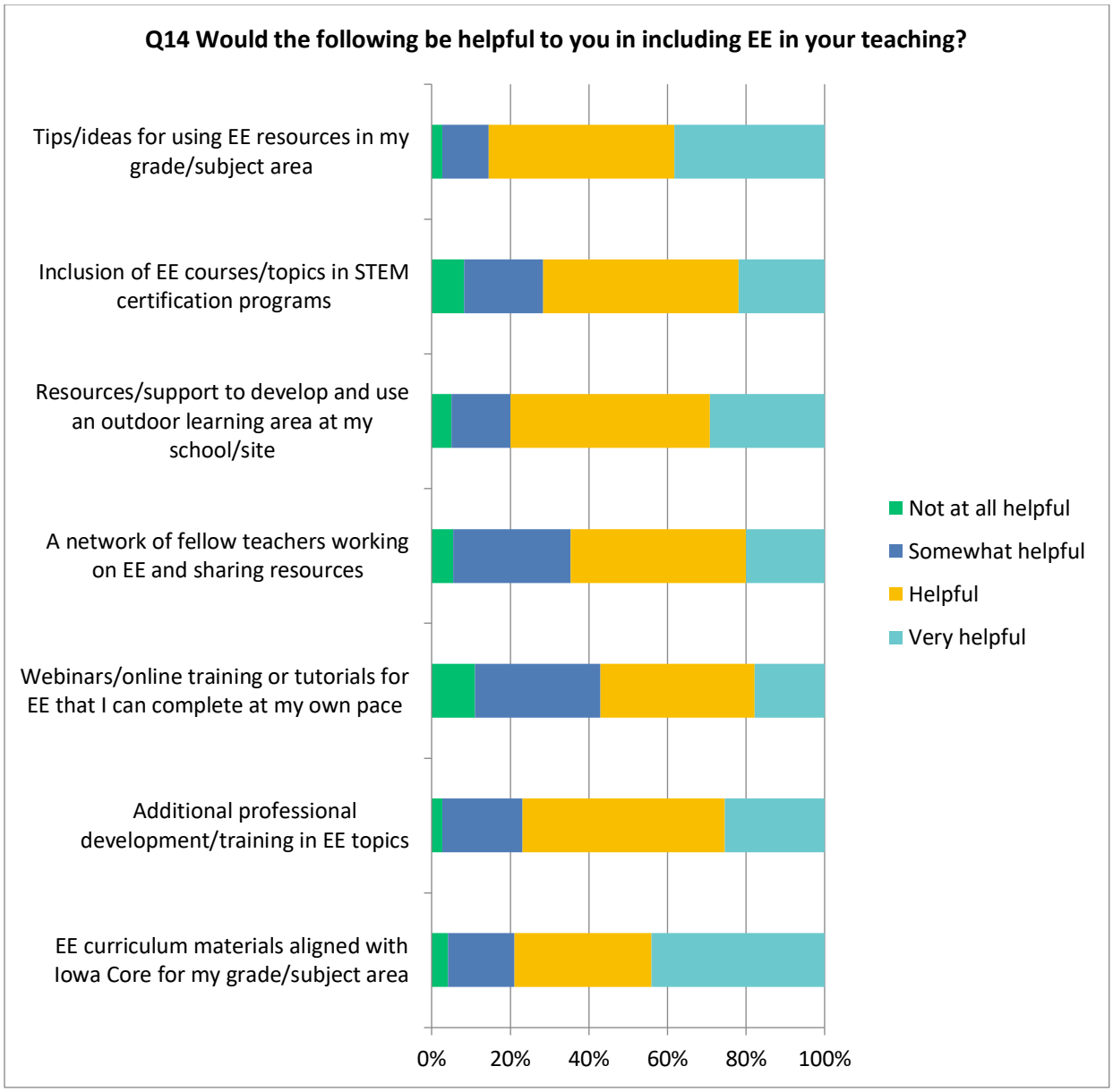
About half of respondents agree to strongly agree with *"I do not have any or sufficient resources to integrate EE into my teaching."*

Take-away:

Respondents' appear comfortable with taking students outside and believe EE is related to their content area. Parental objections are not a barrier to incorporating EE either, but access to resources to integrate EE into their teaching is a barrier for about half of the respondents.

ICEC has useful resources, as do many of our partners – promoting those resources, and making sure they are presented in a way that is most useful/relevant to formal educators is critical to assure integration of EE/CE in formal education (especially science and social studies since many respondents teach those subjects.)

Some comments specifically mentioned issues with travel. The view of "nature" being far away is supported by the *Nature of Americans* study. There often are many opportunities on school grounds or nearby for exploration and investigation of natural systems and processes. Resources and training are needed to help teachers better utilize school grounds and nearby areas, rather than relying solely on field trips for EE/CE.


Q14 Would the following be helpful to you in including EE in your teaching?
Tips/ideas for using EE resources in my grade/subject area
Inclusion of EE courses/topics in STEM certification programs
Resources/support to develop and use an outdoor learning area at my school/site
A network of fellow teachers working on EE and sharing resources
Webinars/online training or tutorials for EE that I can complete at my own pace
Additional professional development/training in EE topics
EE curriculum materials aligned with Iowa Core for my grade/subject area
0%
20%
40%
60%
80%
100%
Not at all helpful
Somewhat helpful
Helpful
Very helpful

Q14 Would the following be helpful to you in including EE in your teaching?	Helpful, Very helpful	
	%	Rank
Tips/ideas for using EE resources in my grade/subject area	85%	1
Inclusion of EE courses/topics in STEM certification programs	72%	5
Resources/support to develop and use an outdoor learning area at my school/site	80%	2
A network of fellow teachers working on EE and sharing resources	65%	6
Webinars/online training or tutorials for EE that I can complete at my own pace	57%	7
Additional professional development/training in EE topics	77%	4
EE curriculum materials aligned with Iowa Core for my grade/subject area	79%	3

Take-away:

Top ranked:

- Tips/ideas for using EE resources in my grade/subject area
- Resources/support to develop and use an outdoor learning area at my school/site
- EE curriculum materials aligned with Iowa Core for my grade/subject area
- Additional professional development/training in EE topics

ICEC currently does emails for tips/ideas and there are quality resources for outdoor learning areas. These may need to be better promoted/distributed. Support of outdoor learning areas will require collaboration between/among conservation agencies and organizations. Resources alignments need to be completed/promoted to teachers. Professional development will require additional discussion with resource professionals and educational leaders to determine topics.

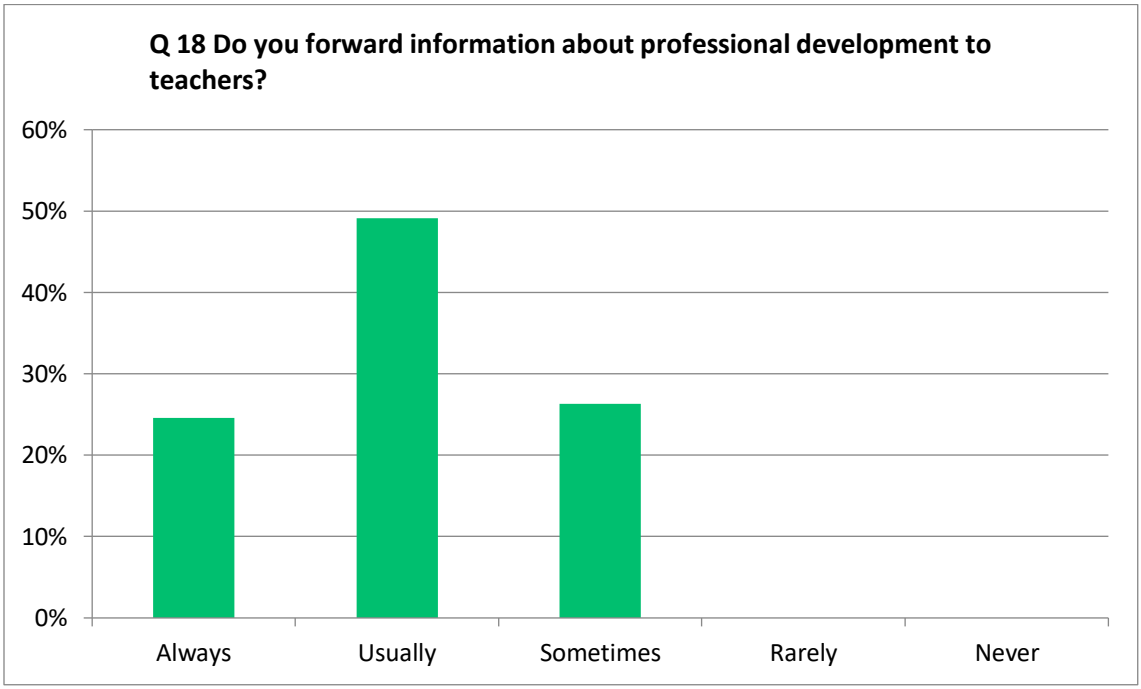
Administrator Response Analysis

Administrator – 59 Completed surveys

Q 17 Do you get information about professional development and teaching resources from the following? (Check all that apply)	
Answer Choices	Responses
AEA Course Catalog	95%
Teachers, colleagues	68%
Outside organizations (e.g., ISTS, ISEA, ICEC, SCI, Blank Park Zoo, universities)	81%
Web search (e.g., Google)	46%
Facebook	16%
Twitter	12%
Pinterest	11%
Other (please specify)	7%

Take-away:

Like teachers, AEA's, outside organizations, and colleagues are the main sources of information on professional development. Administrators who responded do not use social media (as a source for information on PD) to a great extent.



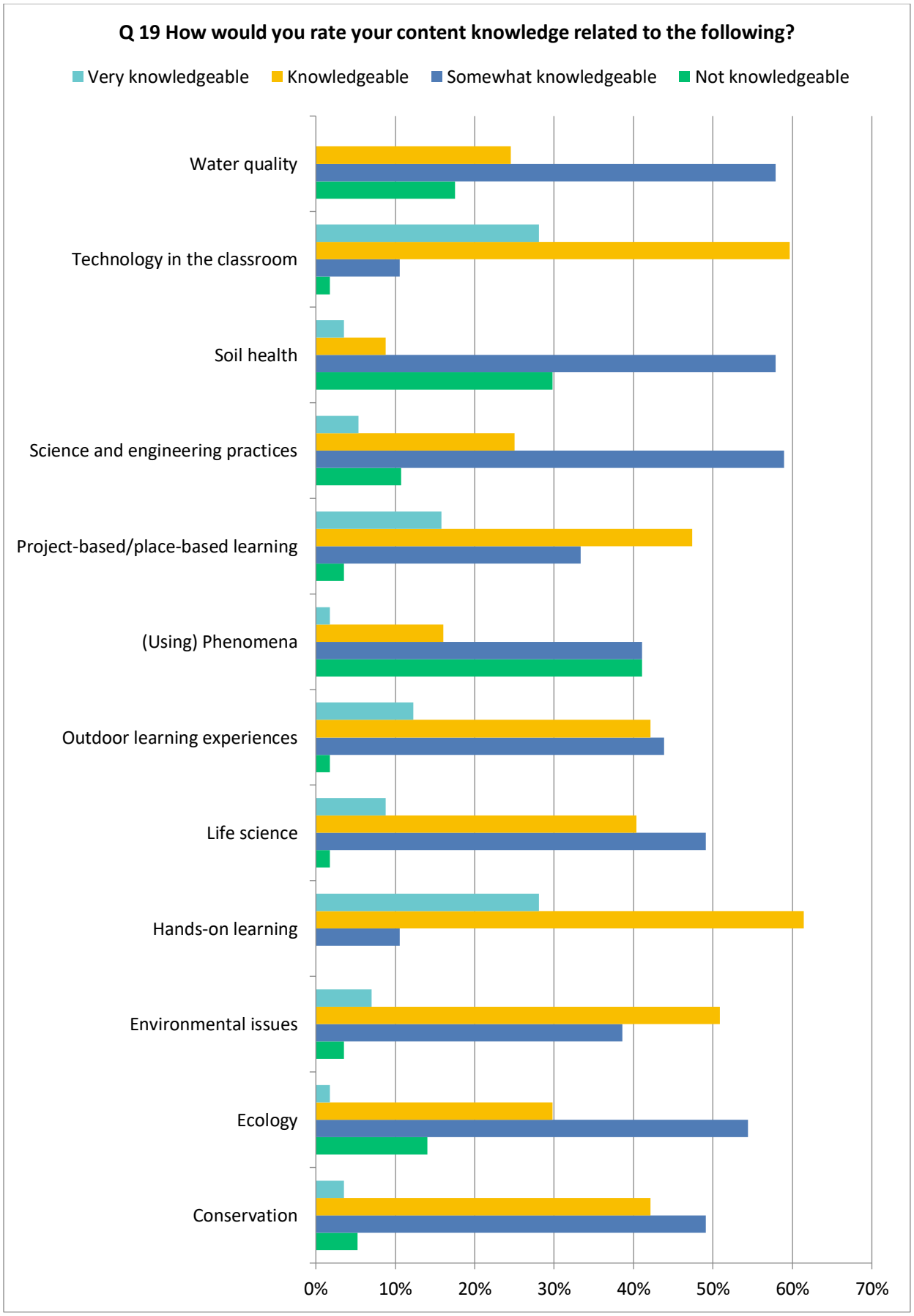
Only 1/4 of respondents indicated that they always forward PD information. Comments indicate that administrators have some personal guidelines for forwarding information:

- We can't afford out of state and PD that is far away in our budget, so I do not usually forward it.
- If I find it relevant and not during school time unless very valuable where the school would get a sub.

- I send it to specific individuals I believe will be interested for most. Some information is sent to all staff.
- I will email teachers if information pertains to them.
- I share relevant information.
- What I receive via mail, I share
- I forward PD information that I feel would be pertinent to specific teachers and (if during the school year) is at a time where I can find subs.
- I flip professional development opportunities and articles that align to our work.

Take-away:

Any PD promotion to administrators must be explicit in terms of the intended audience and benefits to the educator/institution. Otherwise, it will not be shared with teachers.

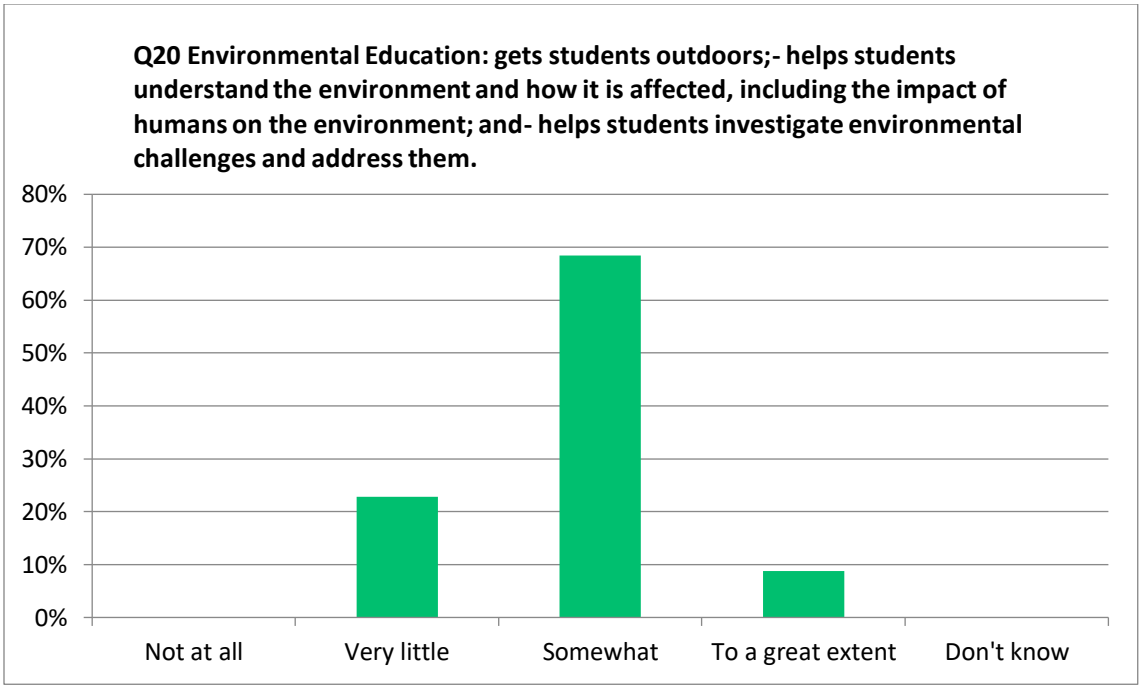

Q 19 How would you rate your content knowledge related to the following?
Very knowledgeable
Knowledgeable
Somewhat knowledgeable
Not knowledgeable
Water quality
Technology in the classroom
Soil health
Science and engineering practices
Project-based/place-based learning
(Using) Phenomena
Outdoor learning experiences
Life science
Hands-on learning
Environmental issues
Ecology
Conservation
0%
10%
20%
30%
40%
50%
60%
70%

Q 19 How would you rate your content knowledge related to the following?	Not or somewhat knowledgeable (%)	Knowledgeable to very knowledgeable (%)
Water quality	75%	25%
Technology in the classroom	12%	88%
Soil health	88%	12%
Science and engineering practices	70%	30%
Project-based / place-based learning	37%	63%
(using) Phenomena	82%	18%
Outdoor learning experiences	46%	54%
Life science	51%	49%
Hands-on learning	11%	89%
Environmental Issues	42%	58%
Ecology	68%	32%
Conservation	54%	46%

- Administrators who responded rated their knowledge of hands-on learning and classroom technology high.
- More than half indicated they were knowledgeable in project-based / place-based learning, environmental issues, and outdoor learning experiences.
- Just under half felt they were knowledgeable in conservation and life science.
- Only about 1/3 felt knowledgeable in ecology, and 3/10 indicated they were knowledgeable in science and engineering practices.
- An overwhelming majority were not very knowledgeable in soil health, using phenomena, or water quality.

Take-away:

Most administrators who responded are not well-versed in EE/CE practice or topics. In order to gain administrative support for integration of EE /CE into formal education settings, it is critical that practitioners clearly articulate the benefit of EE /CE to addressing Iowa Core, and student achievement – those things for which administrators are held accountable.



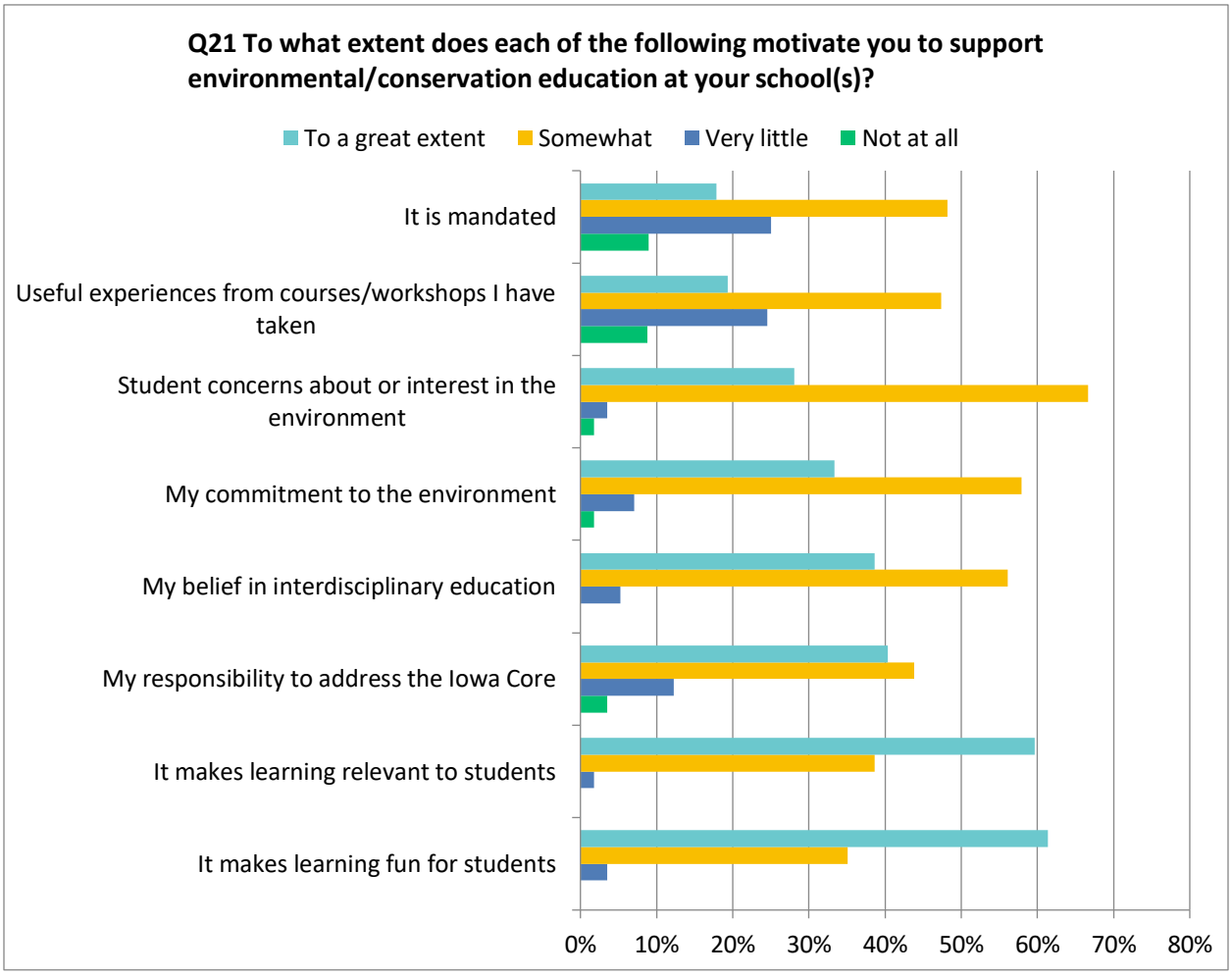
Q20 Cont'd: Given this definition of environmental education, to what degree do you see environmental/conservation education being implemented in multiple disciplines at your school?

- Almost 7/10 respondents indicated that EE was somewhat implemented in multiple disciplines at their school.
- Fewer than 1 in 10 say EE is being implemented to a great extent.
- Almost 1/4 indicated EE was implemented "very little."
- 1/3 of teacher respondents indicated they rarely include EE in their teaching; about 2/5 indicated they did so sometimes, and 1/5 indicated they did so almost always. Note: most teacher respondents taught science or social studies.

Take-Away:

Administrators who responded indicated that EE is being integrated "somewhat" in most instances. There is opportunity to support greater integration of EE/CE if the EE/CE community makes it relevant - e.g., address Iowa Core, student achievement, student engagement and community connections.

Q21 To what extent does each of the following motivate you to support environmental/conservation education at your school(s)?	Not at all	Very little	Somewhat	To a great extent
It is mandated	9%	25%	48%	18%
Useful experiences from courses/workshops I have taken	9%	25%	47%	19%
Student concerns about or interest in the environment	2%	4%	67%	28%
My commitment to the environment	2%	7%	58%	33%
My belief in interdisciplinary education	0%	5%	56%	39%
My responsibility to address the Iowa Core	4%	12%	44%	40%
It makes learning relevant to students	0%	2%	39%	60%
It makes learning fun for students	0%	4%	35%	61%



- Respondents were most motivated by:
  1. It makes learning fun for students
  2. It makes learning relevant to students
- Followed by:
  3. My responsibility to address the Iowa Core
  4. My belief in interdisciplinary education

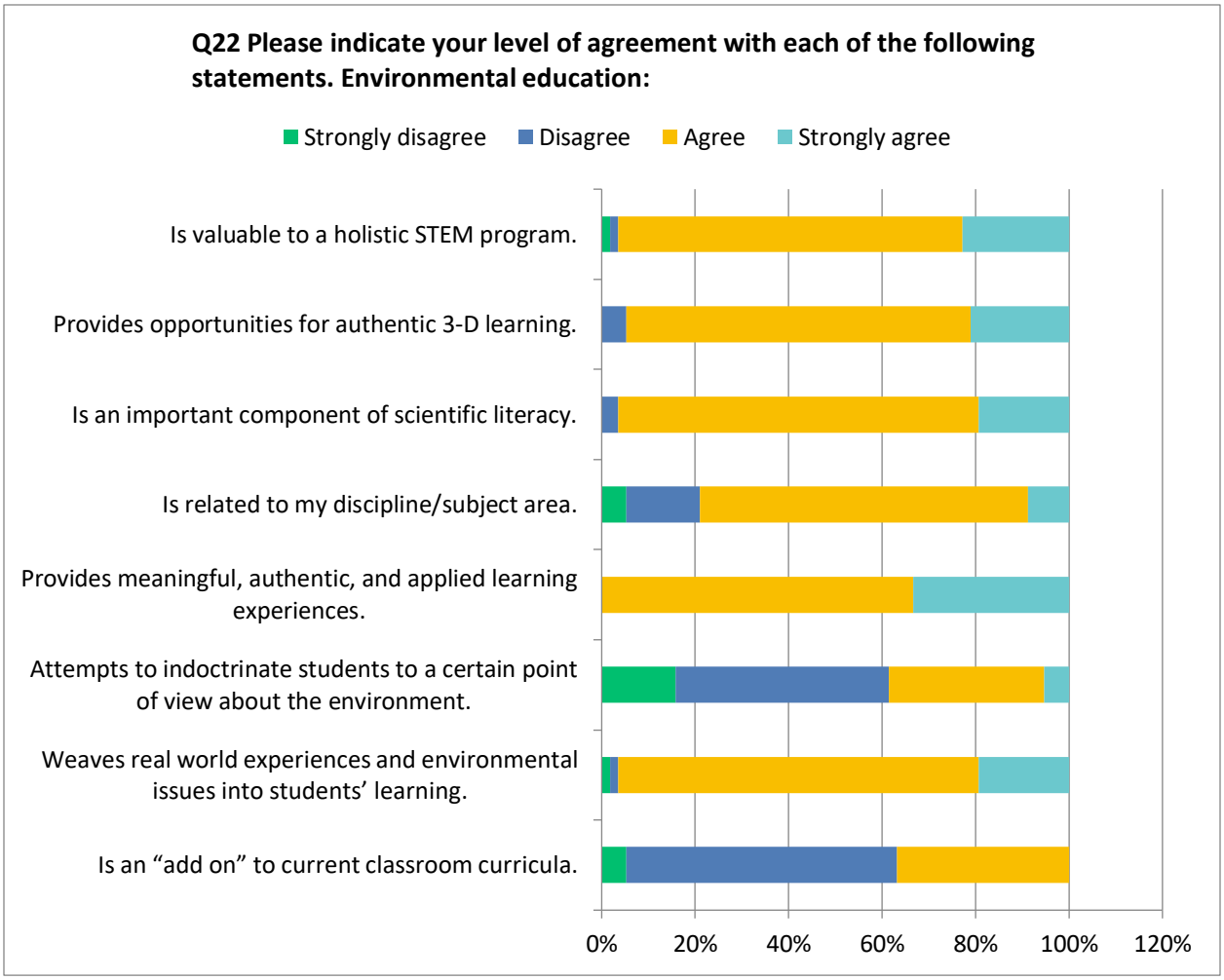
Take-away:

- Educators who responded ranked items differently – motivations were more personal than for administrators:

  1. It makes learning relevant to students
  2. My commitment to the environment
  3. Student concerns about or interest in the environment

- Student engagement (fun, relevant, concerns) ranked highly as a motivator for both teachers and administrators.
- Administrators are not motivated to support EE because it is mandated.

Q22 Please indicate your level of agreement with each of the following statements. Environmental education:	Strongly disagree	Disagree	Agree	Strongly agree
Is valuable to a holistic STEM program.	2%	2%	74%	23%
Provides opportunities for authentic 3-D learning.	0%	5%	74%	21%
Is an important component of scientific literacy.	0%	4%	77%	19%
Is related to my discipline/subject area.	5%	16%	70%	9%
Provides meaningful, authentic, and applied learning experiences.	0%	0%	67%	33%
Attempts to indoctrinate students to a certain point of view about the environment.	16%	46%	33%	5%
Weaves real world experiences and environmental issues into students' learning.	2%	2%	77%	19%
Is an "add on" to current classroom curricula.	5%	58%	37%	0%



- About 1/3 agreed that EE "is an 'add-on' to current classroom curricula."
- Almost 2/5 agreed that EE "attempts to indoctrinate students to a certain point of view about the environment."

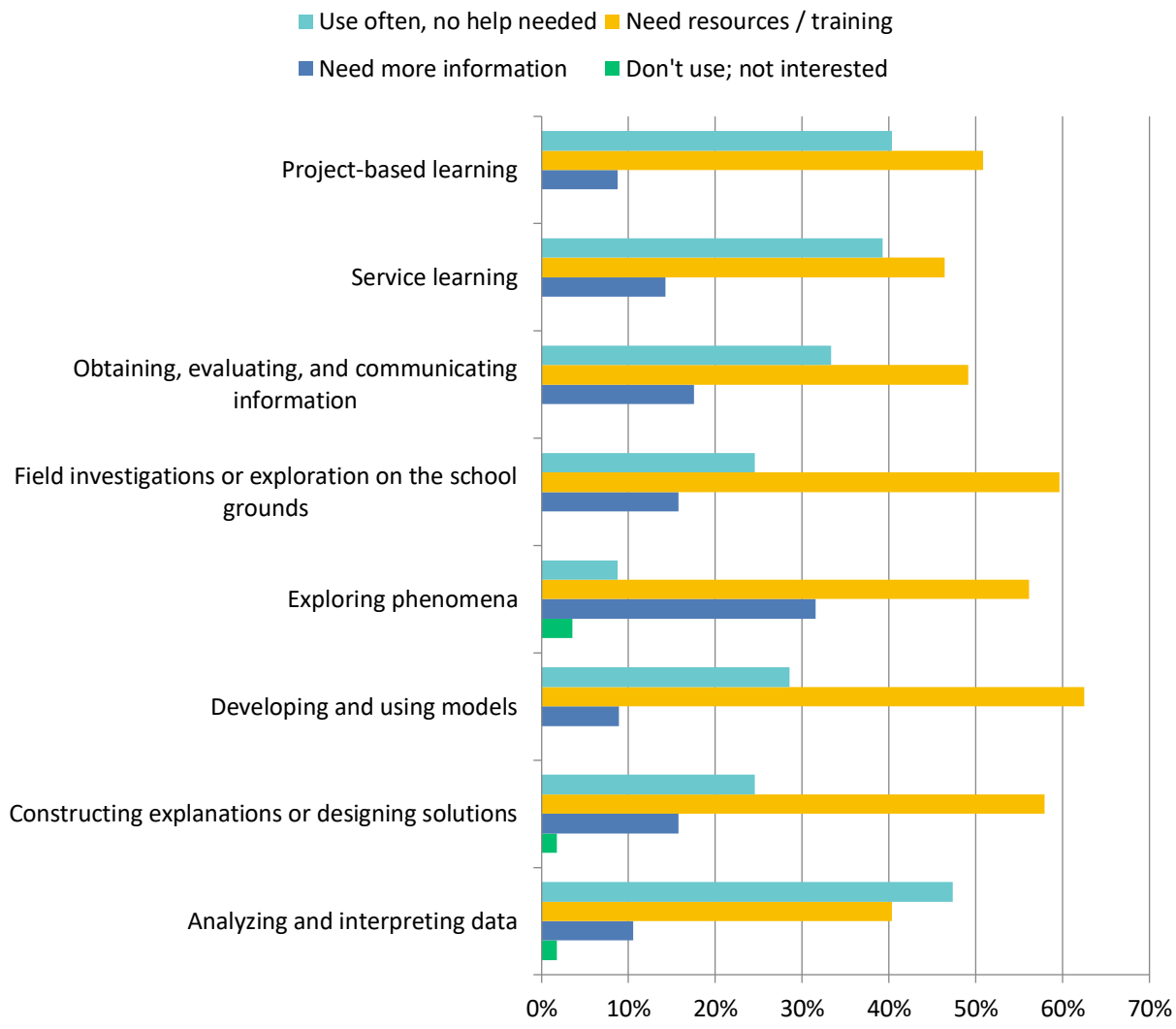
- Almost 3/5 agreed that EE "is related to my discipline / subject area."
- Overwhelmingly, respondents agreed that EE:
    - "is an important component of scientific literacy."
    - "provides opportunities for authentic 3-D learning."
    - "is valuable to a holistic STEM program."
    - "provides meaningful, authentic, and applied learning experiences."

Take-away:

Responses from both administrators and teachers indicate there are a significant number who feel the EE is an "add-on to current classroom curricula" and that EE "attempts to indoctrinate students to a certain point of view." Current programs and practitioners need to work diligently to provide unbiased, holistic approach that engages critical thinking and authentic data, and that helps educators teach the Iowa Core within their context.

Q23 Please select the response that best describes whether the following teaching methods/strategies are used by your teachers AND if they need resources or training to use the strategy to teach about environment, conservation, or nature.	Don't use; not interested	Need more information	Need resources / training	Use often, no help needed
Project-based learning	0%	9%	51%	40%
Service learning	0%	14%	46%	39%
Obtaining, evaluating, and communicating information	0%	18%	49%	33%
Field investigations or exploration on the school grounds	0%	16%	60%	25%
Exploring phenomena	4%	32%	56%	9%
Developing and using models	0%	9%	63%	29%
Constructing explanations or designing solutions	2%	16%	58%	25%
Analyzing and interpreting data	2%	11%	40%	47%

Q23 Please select the response that best describes whether the following teaching methods/strategies are used by your teachers AND if they need resources or training to use the strategy to teach about environment, conservation, or nature.



Strategies most used based on responses:

- Analyzing and interpreting data (47%)
- Service learning (40%)
- Project-based learning (39%)
- Obtaining, evaluating, and communicating information (33%)

Strategies for which by half (or more) of the respondents indicated teachers need resources/training:

- Developing and using models (63%)
- Field investigations or exploration on the school grounds (60%)
- Constructing explanations or designing solutions (58%)
- Exploring phenomena (56%)
- Project-based learning (51%)
- Obtaining, evaluating, and communicating information (49%)

Strategies that both teachers and administrators indicated the need for resources/training:

- Field investigations or exploration on the school grounds
- Project-based learning
- Exploring phenomena
- Service learning
- Developing and using models

A higher percentage of administrators indicated that teachers need more information/training on 'Exploring phenomena' than teachers who responded. Strategies that ranked higher with teacher and administrator respondents included Field Investigations and Exploring Phenomena.

Take-away:

There is opportunity to reach formal educators with EE/CE with resources and PD that address the listed topics. Obtaining, evaluating, and communicating information ranked lower among teachers (38%), but it is integrally related to other topics, so should be incorporated in resources and PD.

Q24 Would the following be helpful to you to support EE in your school(s)?	Not at all helpful	Somewhat helpful	Helpful	Very helpful
EE curriculum materials aligned with Iowa Core for my grade/subject area	0%	9%	46%	46%
Resources/support to develop and use an outdoor learning area at my school/site	4%	11%	40%	46%
Tips/ideas for using EE resources in specific grade/subject area	2%	7%	54%	38%
Additional professional development/training in EE topics	4%	14%	47%	35%
A network of teachers working on EE and sharing resources	2%	14%	56%	28%
Inclusion of EE courses/topics in STEM certification programs	2%	16%	56%	26%
Webinars/online training or tutorials for EE that teachers can complete at their own pace	9%	16%	49%	26%

Top-ranked items among administrators who responded included:

- EE curriculum materials aligned with Iowa Core for my grade/subject area (46% very helpful; 46% helpful)
- Resources/support to develop and use an outdoor learning area at my school/site (46% very helpful; 40% helpful)
- Tips/ideas for using EE resources in specific grade/subject area (38% very helpful; 54% helpful)
- Additional professional development/training in EE topics (35% very helpful; 47% helpful)

Top-ranked items for teachers included the above *and* Inclusion of EE courses/topics in STEM certification programs.

Take-away:

Administrators and teachers indicate a need for resources, training and support for EE. Resources and support to develop an outdoor learning area ranked surprisingly high. Past programs in this area have not always been sustainable, so building a sustainability plan is a critical component for this. “Networks” did not rank as high as they have on some past surveys, so a “network” needs to provide content (resources, tips, PD).

AEA (Area Education Agency) Consultant Response Analysis

Nine respondents

Note: Due to the low number of respondents, results are included only for comparison with information from teachers and administrators.

Q17 Do you get information about professional development and teaching resources from the following? (Check all that apply.)	
AEA Course Catalog	100%
Teachers, colleagues	78%
Outside organizations (e.g., ISTS, ISEA, ICEC, SCI, Blank Park Zoo, universities)	89%
Web search (e.g., Google)	56%
Facebook	33%
Twitter	33%
Pinterest	11%
Other (please specify)	22%

Science consultants appear to seek out information about PD from more resources than teachers or administrators.

Q18 Do you forward information about professional development to teachers? (always, usually, sometimes, rarely, never)

- Over half of consultants *usually* forward information.
- Comments noted vetting the information to assure it is a trusted source and not having a good system for disseminating information.

Take-away:

Any course promotion should attempt to be explicit in audience and benefits to practitioners. There is still not a universal system for disseminating information to teachers. The combined AEA learning system may improve that, but information must be distributed through a variety of channels to better reach teachers.

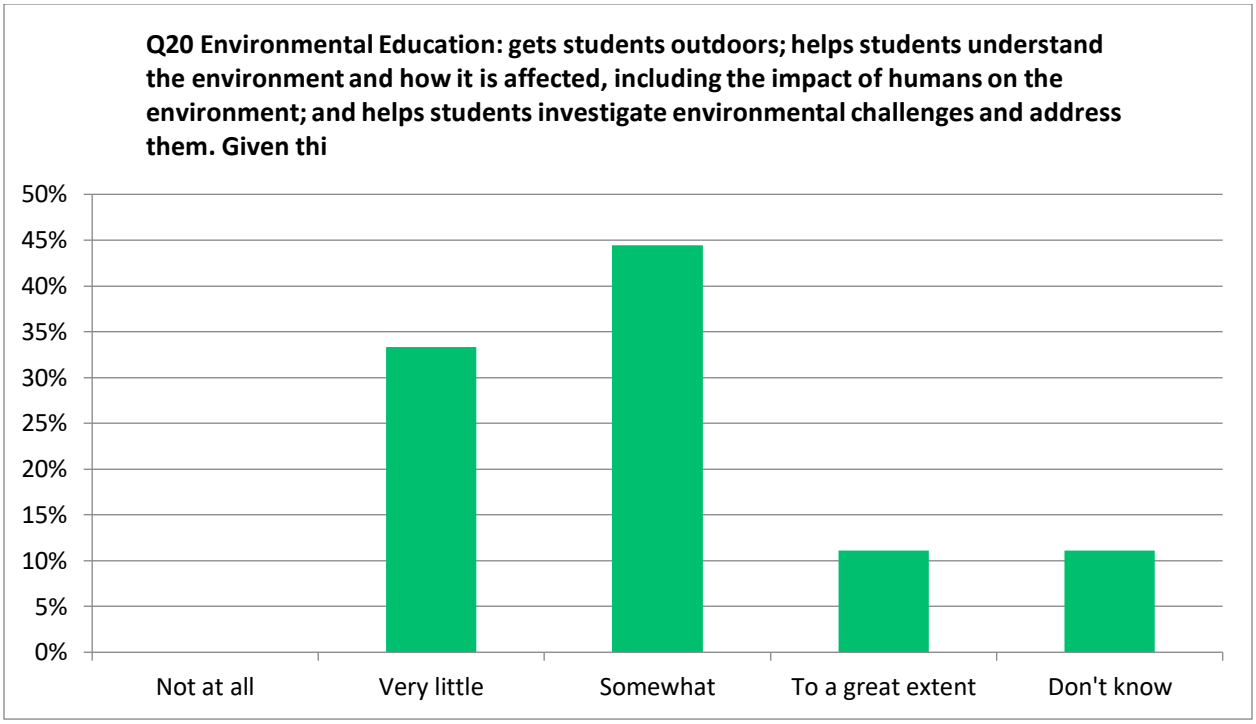
Q19 How would you rate your content knowledge related to the following? (not knowledgeable, somewhat knowledgeable, knowledgeable, very knowledgeable)	Administrators	AEA Consultant	Administrators	AEA Consultant
	Not or somewhat knowledgeable	Not or somewhat knowledgeable	Knowledgeable to very knowledgeable	Knowledgeable to very knowledgeable
Conservation	54%	22%	46%	78%
Ecology	68%	22%	32%	78%
Environmental Issues	42%	22%	58%	78%
Hands-on learning	11%	0%	89%	100%
Life science	51%	0%	49%	100%
Outdoor learning experiences	46%	33%	54%	67%
(using) Phenomena	82%	11%	18%	89%
Project-based / place-based learning	37%	33%	63%	67%
Science and engineering practices	70%	11%	30%	89%
Soil health	88%	56%	12%	44%
Technology in the classroom	12%	33%	88%	67%
Water quality	75%	44%	25%	56%

AEA Consultant responses in orange text (9 respondents); Administrator Q19 responses in blue text (57 respondents)

AEA Consultants indicated they were more knowledgeable about EE/CE concepts than school administrators. They were not as knowledgeable about technology in the classroom. Only about 2/3 of respondents indicated they were knowledgeable/very knowledgeable about outdoor learning experiences. Just over half were knowledgeable about water quality and fewer than half were knowledgeable about soil health.

Take-away:

EE/CE community should reach out to consultants to determine how to best support development of knowledge/skills related to outdoor learning, water quality and soil health, and provide evidence of how these support student learning and scientific literacy.

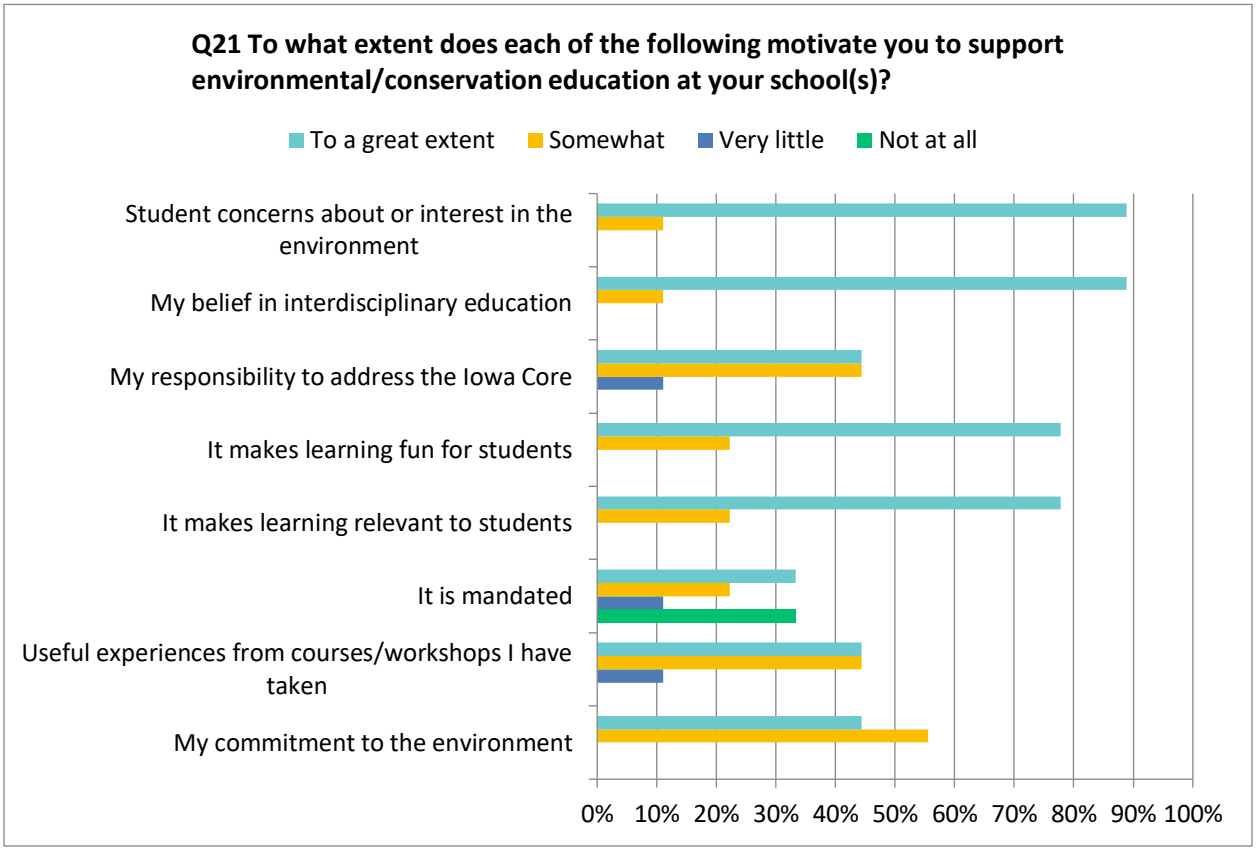


Q20 Cont'd: Given this definition of environmental education, to what degree to do you see environmental/conservation education being implemented in multiple disciplines at your school?

AEA Consultants rated the level of integration of EE lower than school administrators, but both groups indicate that EE is not integrated to a great extent in most schools.

Take-away:

While EE is happening in formal education settings. It is not fully integrated. Further discussion about what needs to happen if more comprehensive integration in formal education settings is to occur.



AEA Consultants' responses overall ranked differently than administrators or teachers, but the combined lists are similar.

Top-ranked responses:

- My belief in interdisciplinary education.
- Student concerns about or interest in the environment.
- It makes learning relevant to students.
- It makes learning fun for students.

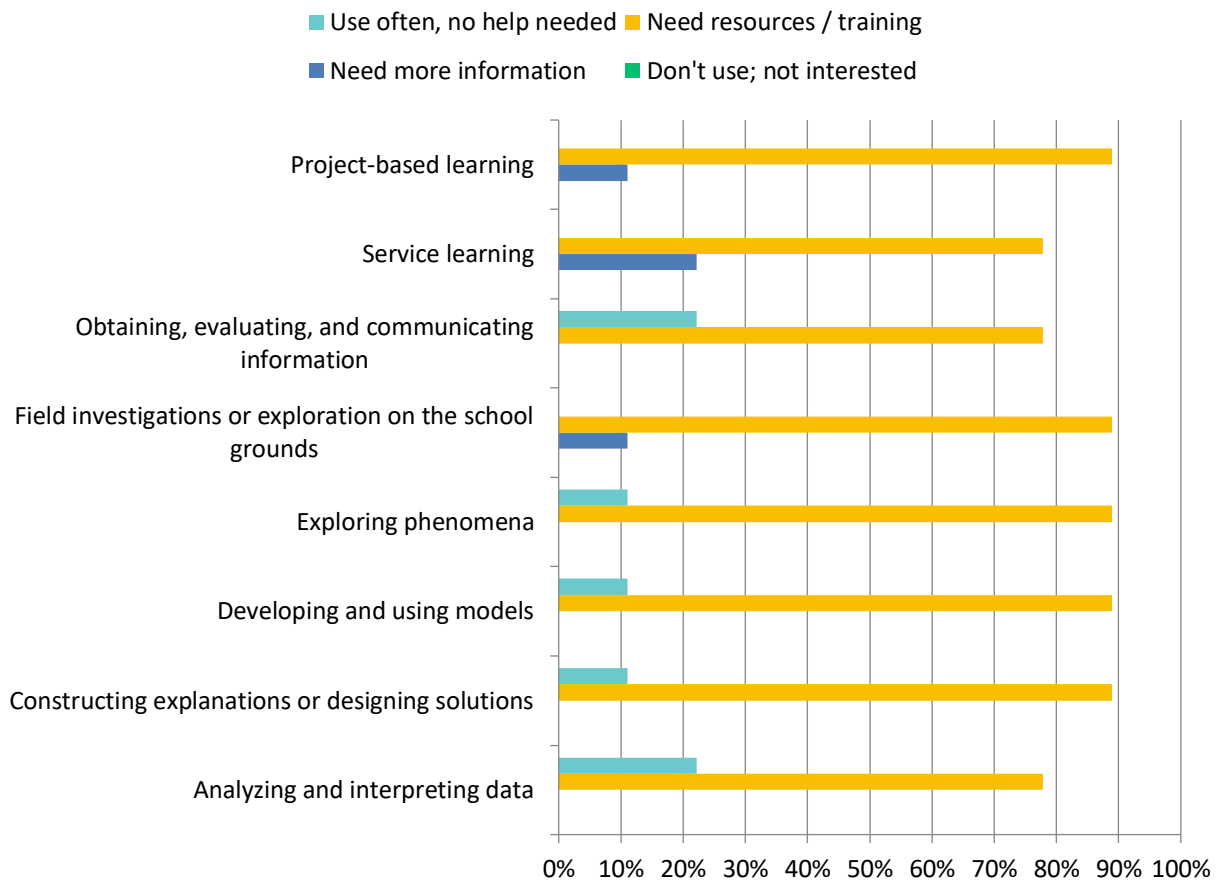
Q22 Please indicate your level of agreement with each of the following statements about environmental education. (strongly disagree, disagree, agree, strongly agree) n=9			
	Q22 AEA Consultant	Q22 Administrator	Q11 Teacher
EE "is an 'add-on' to current classroom curricula"	67% disagree, strongly disagree	63% disagree, strongly disagree	55% disagree, strongly disagree
EE "weaves real world experiences and environmental issues into student learning"	100% agree (4) strongly agree (5)	96% agree to strongly agree	99% agree to strongly agree
EE is an "attempt to indoctrinate students to a certain point of view…"	78% disagree, strongly disagree	61% disagree, strongly disagree	60% disagree, strongly disagree
EE "provides meaningful, authentic, and applied learning experiences"	100% agree to strongly agree	100% agree to strongly agree	97% agree to strongly agree
EE "is related to my discipline / subject area."	100% agree to strongly agree	79% agree to strongly agree	83% agree to strongly agree
EE "is an important component of scientific literacy."	100% were in agreement (7 of 9 strongly agreed)	96% agree to strongly agree	97% agree to strongly agree
EE "provides opportunities for authentic 3-D learning."	100% were in agreement	95% agree to strongly agree	95% agree to strongly agree
EE "is valuable to a holistic STEM program."	100% agreement (7 of 9 strongly agreed)	96% agree to strongly agree	95% agree to strongly agree

Take-away:

One consultant commented, "Several of these statements are dependent on the teacher and the phenomena or problem selected. The third and fourth ones in particular."

One-third of AEA consultants agreed that EE is an add-on to the current classroom curricula. This indicates that current resources/programs have not adequately demonstrated their place in formal education classrooms. Rather than just aligning to the Iowa Core, resources and professional development need to clearly articulate how they contribute to skill and knowledge development, and help educators accomplish the Core.

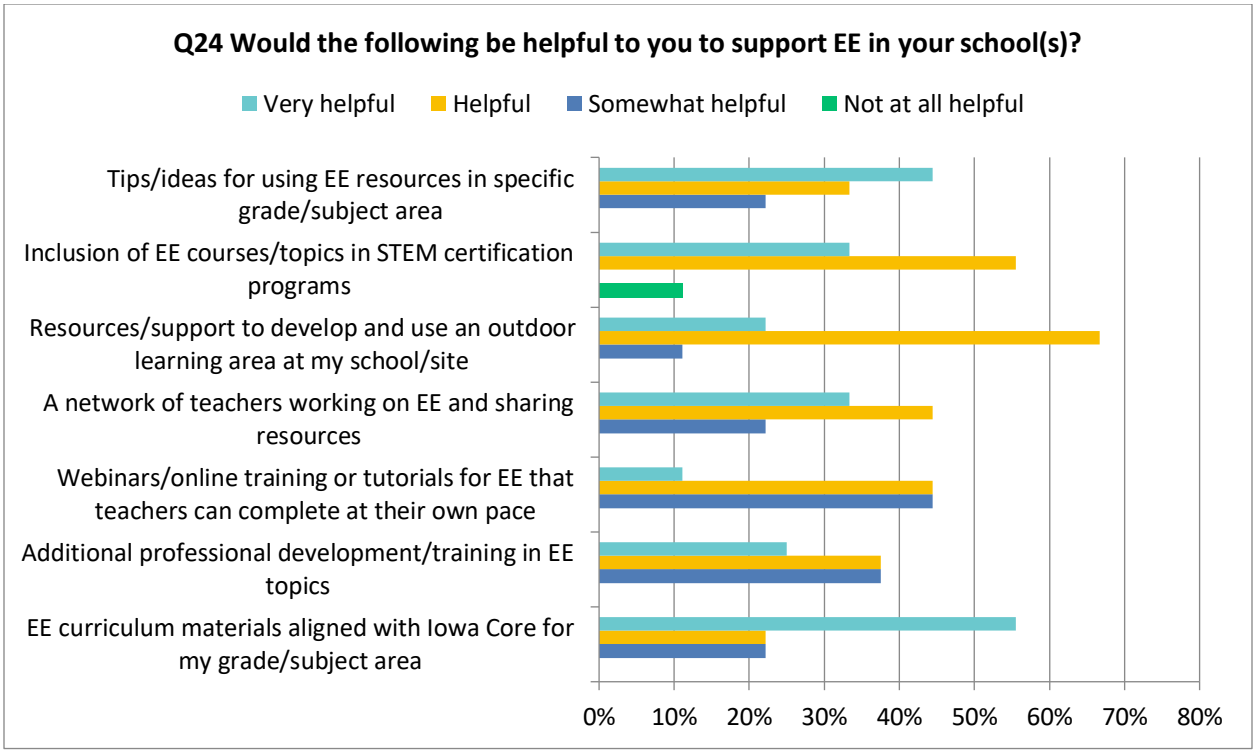
Q23 Please select the response that best describes whether the following teaching methods/strategies are used by your teachers AND if they need resources or training to use the strategy to teach about environment, conservation, or nature.



Overwhelmingly, science consultants indicate a need for more resources/training for the teaching strategies listed.

Take Away:

Again, results indicate the resources and professional development with which ICEC is affiliated are needed by educators. Strategies for and coordination with formal education partners to share resources and deliver PD are needed.



The top-ranked resource was EE curriculum materials aligned with Iowa Core followed by tips/ideas for using EE resources.

Take-away:

Existing resources that have been aligned with the Iowa Core (or NGSS) and services that provide ideas and tips need to be shared, and perhaps better promoted to educators, including examples of integration into sample units, storylines, etc. More discussion on the best approach is needed.

Curriculum Coordinator/Director Response Analysis

10 respondents

Like AEA Consultants, there are a low number of responses, so analysis is general in terms of relative alignment with, or departure from, other groups.

Q17 Do you get information about professional development and teaching resources from the following? (Check all that apply)

Highest ranking responses:

- Outside organizations (e.g. ISTS, ISEA, ICEC, SCI, BPZ, universities) 90%
- AEA Course Catalog 70%
- Teachers, colleagues / Web search (e.g., Google) 60%

Take-away:

The top three choices for PD information is similar among all groups.

Q18 Do you forward information about professional development to teachers? (always, usually, sometimes, rarely, never)

Half of the responding Curriculum Directors (n=10) ***sometimes*** forward information on to teachers, three said ***usually***, and two indicated they ***always*** forwarded information on to teachers.

Take-away:

Not all information is forwarded to teachers. Based on administrator and AEA Consultant answers, PD providers must articulate credibility and relevance.

Q19 How would you rate your content knowledge related to the following?	Administrator	AEA Consultant	Curriculum Coordinator
	Not or somewhat knowledgeable	Not or somewhat knowledgeable	Not or somewhat knowledgeable
Conservation	54%	22%	30%
Ecology	68%	22%	40%
Environmental Issues	42%	22%	40%
Hands-on learning	11%	0%	20%
Life science	51%	0%	30%
Outdoor learning experiences	46%	33%	40%
(using) Phenomena	82%	11%	50%
Project-based / place-based learning	37%	33%	40%
Science and engineering practices	70%	11%	30%
Soil health	88%	56%	89%
Technology in the classroom	12%	33%	40%
Water quality	75%	44%	70%

Q19 How would you rate your content knowledge related to the following? (not knowledgeable, somewhat knowledgeable, knowledgeable, very knowledgeable)	Administrator	AEA Consultant	Curriculum Coordinator
	Knowledgeable to very knowledgeable	Knowledgeable to very knowledgeable	Knowledgeable to very knowledgeable
Conservation	46%	78%	70%
Ecology	32%	78%	60%
Environmental Issues	58%	78%	60%
Hands-on learning	89%	100%	80%
Life science	49%	100%	70%
Outdoor learning experiences	54%	67%	60%
(using) Phenomena	18%	89%	50%
Project-based / place-based learning	63%	67$	60%
Science and engineering practices	30%	89%	70%
Soil health	12%	44%	11%
Technology in the classroom	88%	67%	60%
Water quality	25%	56%	30%

Administrator Q19 responses in blue text (57 respondents)
AEA Consultant responses in orange text (9 respondents)
Curriculum Coordinators Q19 responses in dark green text (10 respondents)

Take-away:

Curriculum coordinators may not have in-depth knowledge or experience with EE/CE concepts and constructs. Information provided to this group needs to align these with formal education goals and needs.

Q20 Environmental Education: gets students outdoors; helps students understand the environment and how it is affected, including the impact of humans on the environment; and helps students investigate environmental challenges and address them. Given this definition of environmental education, to what degree to do you see environmental/conservation education being implemented in multiple disciplines at your school?

Half of respondents indicated EE/CE was somewhat implemented in multiple disciplines at their school, 30% said very little, 10% indicated not at all and 10% indicated to a great extent.

Take-away:

Responses are similar across responses from administrators, AEA consultants, and curriculum coordinators.

Q21 To what extent does each of the following motivate you to support environmental / conservation education at your school(s)? (not at all, very little, somewhat, to a great extent)

Top-ranked motivators based on number of responders who indicated "to a great extent."		
Administrator (n=57)	AEA Consultant (n=9)	Curriculum Coordinator (n=10)
• **It makes learning fun for students.** • **It makes learning relevant to students.** • My responsibility to address the Iowa Core. • **My belief in interdisciplinary education.**	• **My belief in interdisciplinary education.** • Student concerns about or interest in the environment. • **It makes learning relevant to students.** • **It makes learning fun for students.**	• My commitment to the environment. • **It makes learning relevant to students.** • Useful experiences from courses/workshops I have taken. • **It makes learning fun for students.**

Administrators, AEA Consultants, and Curriculum Directors were motivated to support environmental / conservation education because:

- "It makes learning fun for students."
- "It makes learning relevant to students."

"My belief in interdisciplinary education" was also a strong motivator for Administrators and AEA Consultants. The high ranking of "Useful experiences from courses/workshops I have taken." by Curriculum Coordinators warrants further investigation.

Take-away:

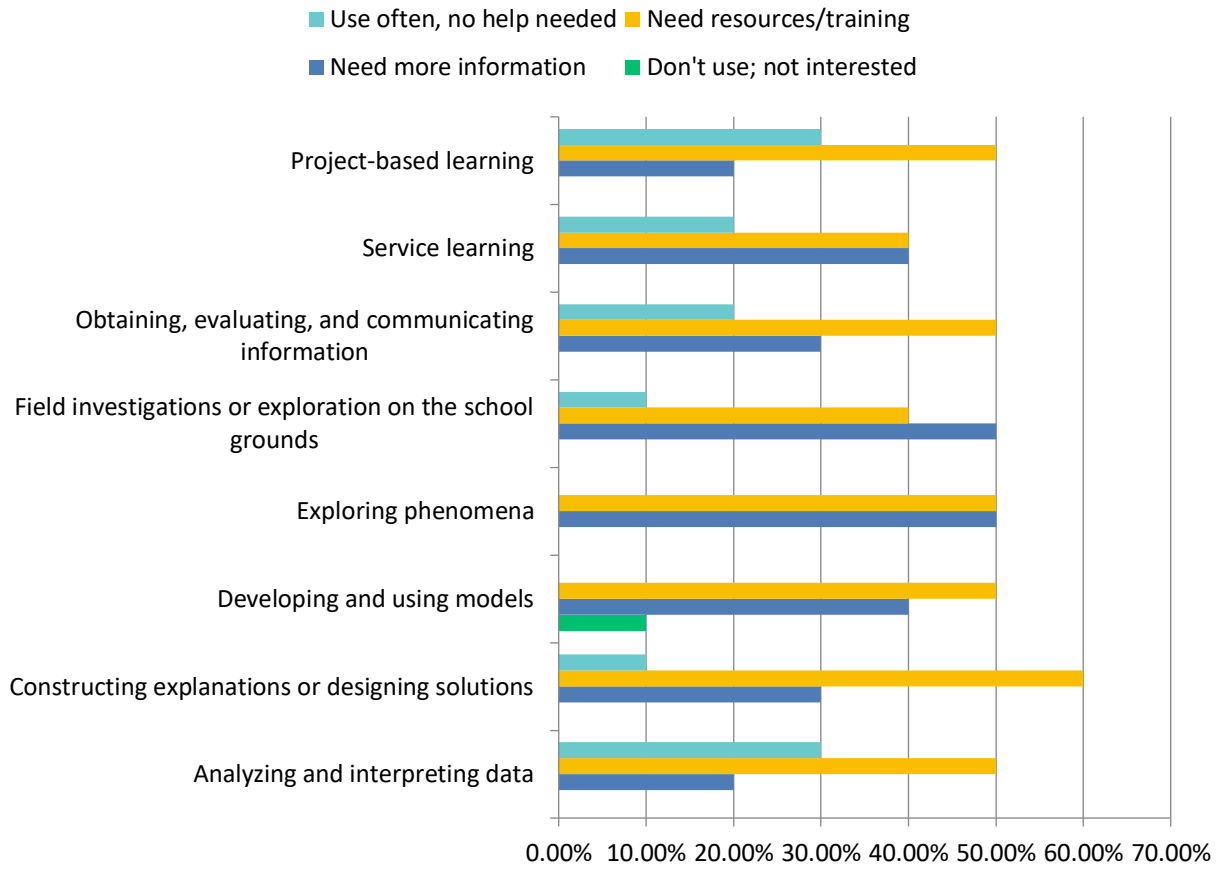
Practitioners should highlight how EE/CE increases student engagement (fun, relevancy for students).

Q22 Please indicate your level of agreement with each of the following statements about environmental education. (same as Teacher Q11) (strongly disagree, disagree, agree, strongly agree)				
	Curriculum Coordinator (n=10)	AEA Consultant (n=9)	Administrator (n=57)	Teacher Q11 (n=221)
EE "is an 'add-on' to current classroom curricula"	60% were in disagreement	67% were in disagreement	63% were in disagreement	55% were in disagreement
EE "weaves real world experiences and environmental issues into student learning"	100% agree (6) to strongly agree (4)	100% agree (4) to strongly agree (5)	96% agree to strongly agree	99% agree to strongly agree
EE is an "attempt to indoctrinate students to a certain point of view…"	60% were in disagreement	78% were in disagreement	61% were in disagreement	60% were in disagreement
EE "provides meaningful, authentic, and applied learning experiences"	90% agree (4) to strongly agree (5)	100% agree, strongly agree	100% agree, strongly agree	97% agree, strongly agree
EE "is related to my discipline / subject area."	90% agree (4), strongly agree (5)	100% agree, strongly agree	79% agree, strongly agree	83% agree, strongly agree
EE "is an important component of scientific literacy."	100% agree (4), strongly agree (6)	100% agree(2), strongly agree (7)	96% agree, strongly agree	97% agree, strongly agree
EE "provides opportunities for authentic 3-D learning."	100% agree, (6) strongly agree (4)	100% were in agreement	95% agree, strongly agree	95% agree, strongly agree
EE "is valuable to a holistic STEM program."	100% agree (5), strongly agree (5)	100% were in agreement (7 of 9 strongly agreed)	96% agree, strongly agree	95% agree, strongly agree

Take-away:

EE/CE programs and practitioners must target subject areas and provide resources that clearly accomplish educational goals and help teachers meet Core standards for that subject area (e.g., science, social studies). EE/CE must provide broad-based perspectives and include methodologies for participants to review sources and processes and so perception of bias is minimized.

Q23 Please select the response that best describes whether the following teaching methods/strategies are used by your teachers AND if they need resources or training to use the strategy to teach about environment, conservation, or nature.



Project-based learning and analyzing and interpreting data were used most according to respondents, but at least half of respondents indicated that teachers needed more resources/training for project-based learning and analyzing and interpreting data, as well as obtaining, evaluating, and communicating information; exploring phenomena; and developing and using models.

Take-away:

The four top-ranked methods/strategies were the same for curriculum directors and administrators. While percentages vary, results indicate that resources/training are needed for a large proportion of methods/strategies listed. ICEC should work with partners to determine the best formats and approaches to deliver resources/trainings and support them.

Q24 Would the following be helpful to you to support EE in your school(s)? (not at all helpful, somewhat helpful, helpful, very helpful)	Very helpful	
	%	rank
EE curriculum materials aligned with Iowa Core for my grade/subject area	40%	4
Additional professional development/training in EE topics	60%	1
Webinars/online training or tutorials for EE that I can complete at my own pace	33%	5
A network of fellow teachers working on EE and sharing resources	22%	6
Resources/support to develop and use an outdoor learning area at my school/site	20%	7
Inclusion of EE courses/topics in STEM certification programs	50%	2
Tips/ideas for using EE resources in my grade/subject area	50%	2

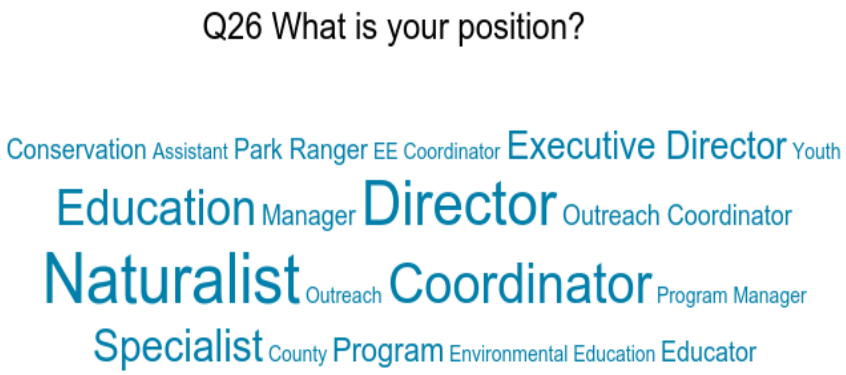
Professional development, Inclusion of courses in STEM certification, and tips/ideas ranked highest among respondents who identified as curriculum coordinators. Tips/ideas also ranked high among AEA consultants and administrators.

Take Away

Tips/ideas ranked high among AEA curriculum consultants, administrators, and curriculum coordinators. Resources/training and inclusion of EE courses/topics in STEM certification resonated more with teachers and those who support them (AEA consultants and curriculum coordinators). There appears to be an opportunity to support integration of EE/CE by providing quality products in these areas.

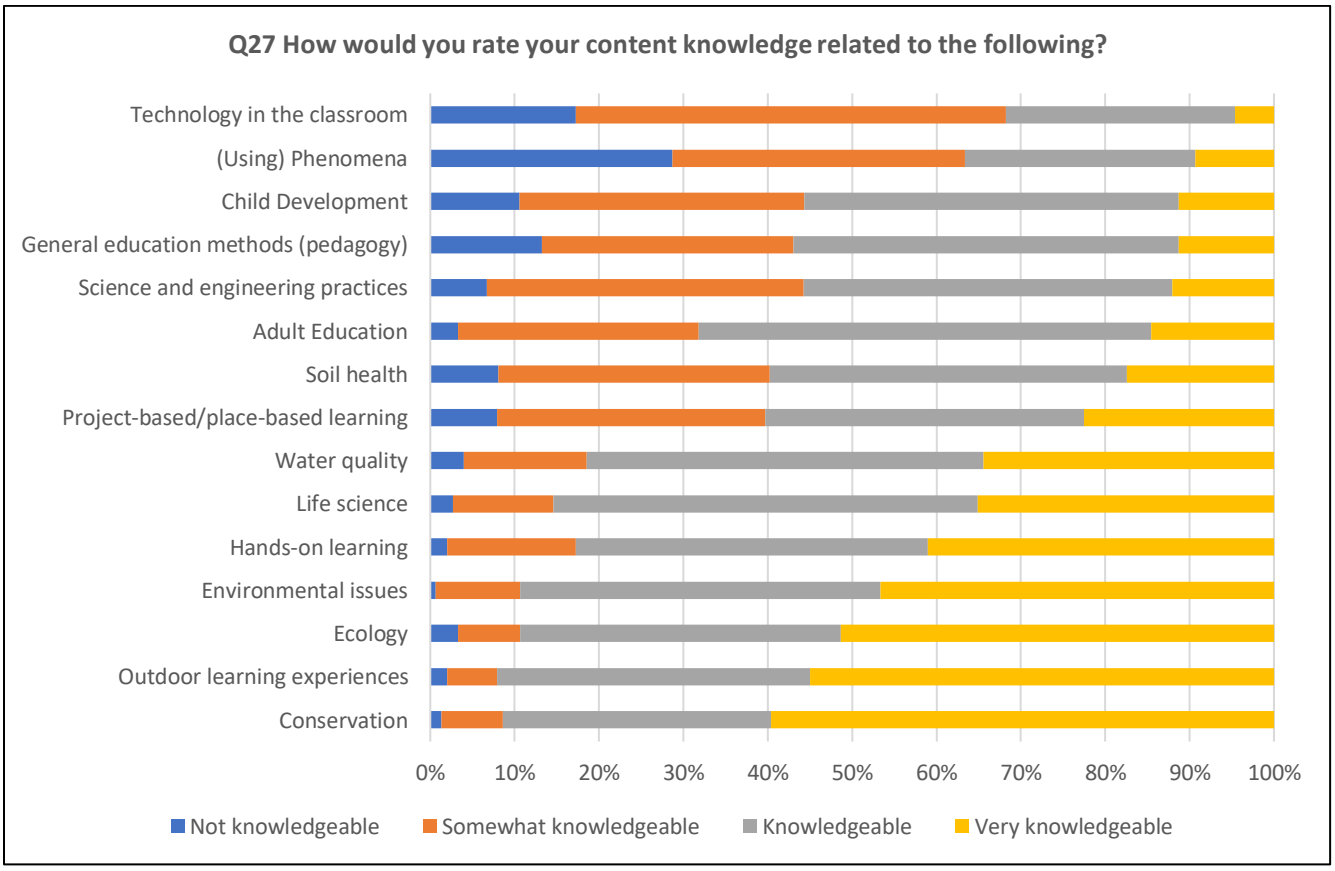
Naturalists/Nonformal Responses

151 respondents: 120 naturalists plus 31 individuals who indicated their position was “other,” but it was determined that a significant portion of their job responsibilities included conservation/environmental education.



Take-away:

There are a host of titles for non-formal educators whose responsibilities include conservation/environmental education. This can be very confusing for others outside the profession.



Q27 How would you rate your content knowledge related to the following?	Not / somewhat knowledgeable		Knowledgeable / very knowledgeable	
	%	Rank	%	Rank
Technology in the classroom	68%	1	32%	15
(using) phenomena	63%	2	37%	14
Child development	44%	4	56%	12
General education methods (pedagogy)	43%	5	57%	11
Science and engineering practices	51%	3	56%	12
Adult Education	32%	8	68%	8
Soil health	40%	6	60%	9
Project / place-based learning	40%	6	60%	9
Water quality	19%	9	81%	7
Life science	15%	11	85%	5
Hands-on learning	17%	10	83%	6
Environmental issues	11%	12	89%	3
Conservation	9%	14	91%	2
Outdoor learning experiences	8%	15	92%	1
Ecology	11%	12	89%	3

A majority of respondents (50+%) who are naturalists indicated they are not/somewhat knowledgeable about:

- Technology in the classroom
- (Using) phenomena
- Science and engineering practices

40+% of respondents in the group indicated they are not/somewhat knowledgeable about:

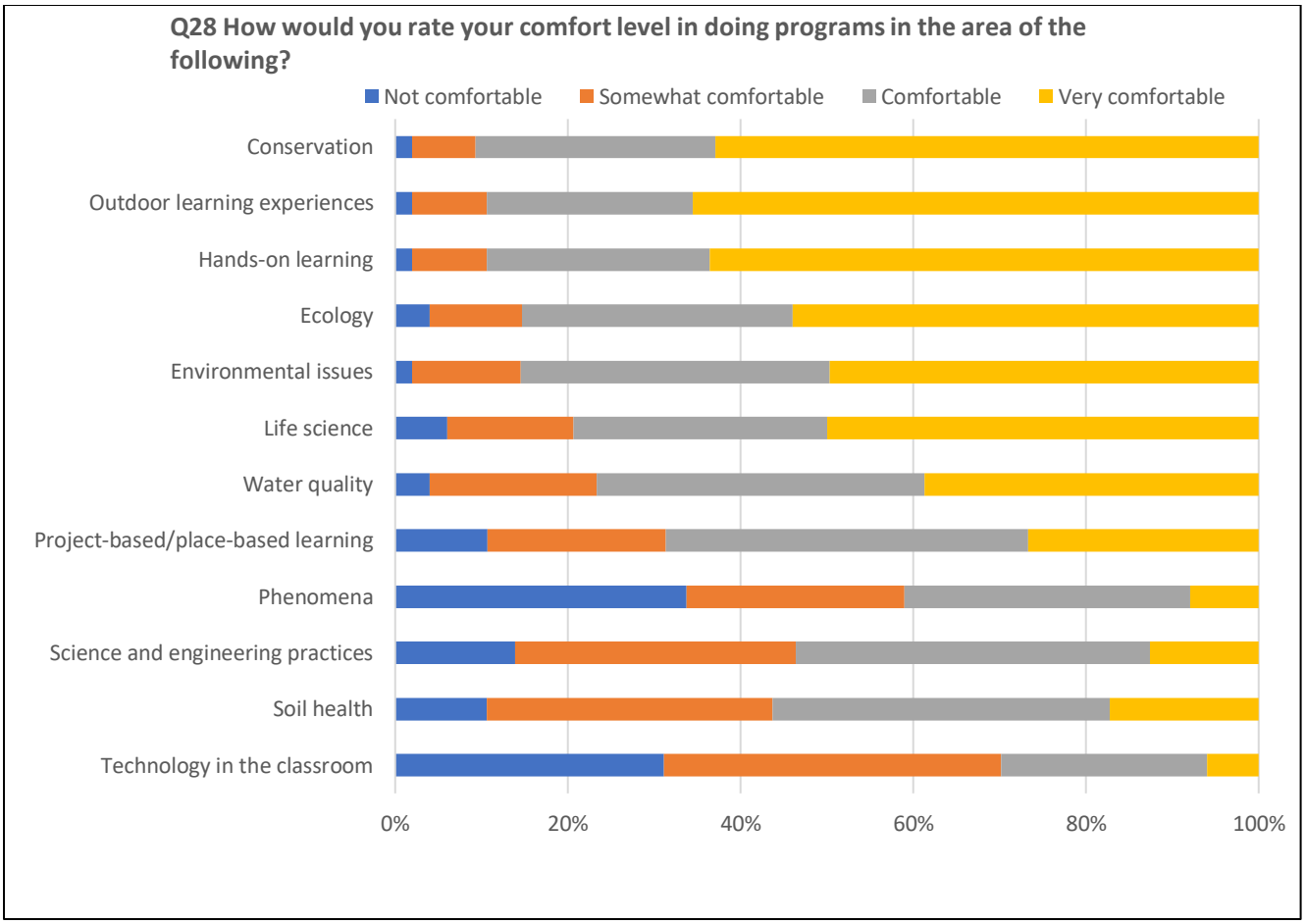
- Child development
- General education methods
- Project/place-based learning
- Soil health

An overwhelming majority (80+%) of respondents are knowledgeable/very knowledgeable about:

- Conservation
- Ecology
- Environmental issues
- Hands-on learning
- Life science
- Outdoor learning experiences
- Water quality

Take-away:

- Naturalists have a wealth of conservation knowledge, but may need additional professional development and/or resources on pedagogy – general education methods, science and engineering practice, and child development as it relates to education.
- Many conservation/environmental education programs are place-based and/or project-based; the response indicates example/explanation of these terms are needed.
- Soil health is a topic that has received much more attention in recent years so it is important to provide appropriate resources/training to improve knowledge levels in this area.

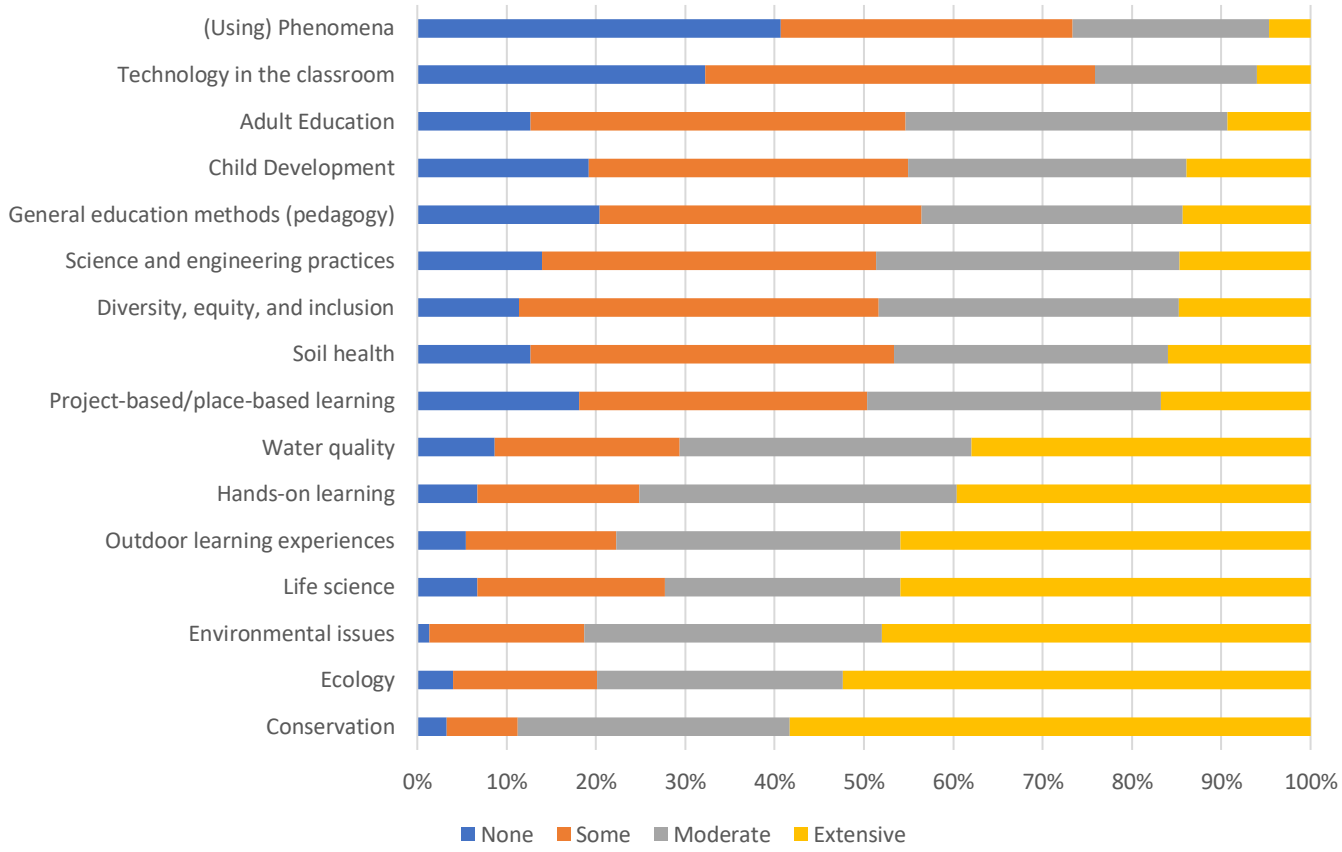


Comparison of responses	Q27 Knowledgeable to very knowledgeable		Q28 Comfortable to very comfortable	
	%	Rank	%	Rank
Conservation	91%	2	91%	1
Outdoor learning experiences	92%	1	89%	2
Hands-on learning	83%	6	89%	2
Ecology	89%	3	85%	4
Environmental issues	89%	3	85%	4
Life science	85%	5	79%	6
Water quality	81%	7	77%	7
Project/place-based learning	60%	9	69%	8
(using) phenomena	37%	14	41%	11
Science and engineering practices	56%	12	54%	10
Soil health	60%	9	56%	9
Technology in the classroom	32%	15	30%	12

Take-away:

Overall, respondents' comfort level in doing programs reflects their knowledge in the topic/skill area.

Q29 Please rate the level of formal training you have received (either in college or through staff / professional development) in these areas: (none, some, moderate, extensive) n=151



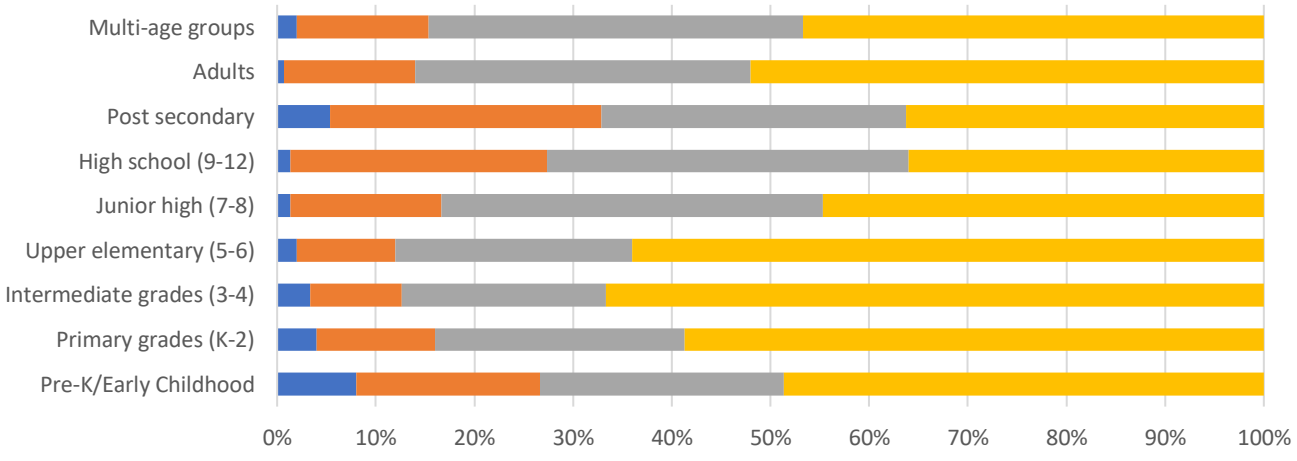
Question Comparison	Q27 Knowledgeable to very knowledgeable		Q28 Comfortable to very comfortable		Q29 Moderate to extensive training (college or PD)	
	%	Rank	%	Rank	%	Rank
(using) phenomena	37%	14	41%	11	27%	15
Technology in the classroom	32%	15	30%	12	24%	16
Adult Education	68%	8			45%	12
Child development	56%	12			45%	12
General education methods (pedagogy)	57%	11			44%	14
Science and engineering practices	56%	12	54%	10	49%	10
Diversity, equity, and inclusion					48%	11
Soil health	60%	9	56%	9	60%	8
Project / place-based learning	60%	9	69%	8	50%	9
Water quality	81%	7	77%	7	71%	7
Hands-on learning	83%	6	89%	2	75%	5
Outdoor learning experiences	92%	1	89%	2	78%	4
Life science	85%	5	79%	6	72%	6
Environmental issues	89%	3	85%	4	81%	2
Ecology	89%	3	85%	4	80%	3
Conservation	91%	2	91%	1	89%	1

Take-away:

- As expected, levels of training, knowledge and comfort level in programing appear correlated with each other.
- Half or fewer of the respondents indicated they had moderate to extensive training in
  - diversity, equity and inclusion
  - child development
  - adult education
  - general education methods
  - project/place-based learning
  - science and engineering practices
- Only about ¼ had moderate/extensive training in
  - (using) phenomena
  - Technology in the classroom

While conservation/environmental education is focused very much on authentic outdoor experiences, aligning with or integrating scientific technology and practice can strengthen impact of programs; and are important to maintaining formal education partnerships. ICEC could facilitate development of model efforts and tools to strengthen this aspect of non-formal conservation education programming, especially relative to efforts in conjunction with formal education.

Q30 How would you rate your comfort level in working with the following audiences? (not comfortable, somewhat comfortable, comfortable, very comfortable) n=150



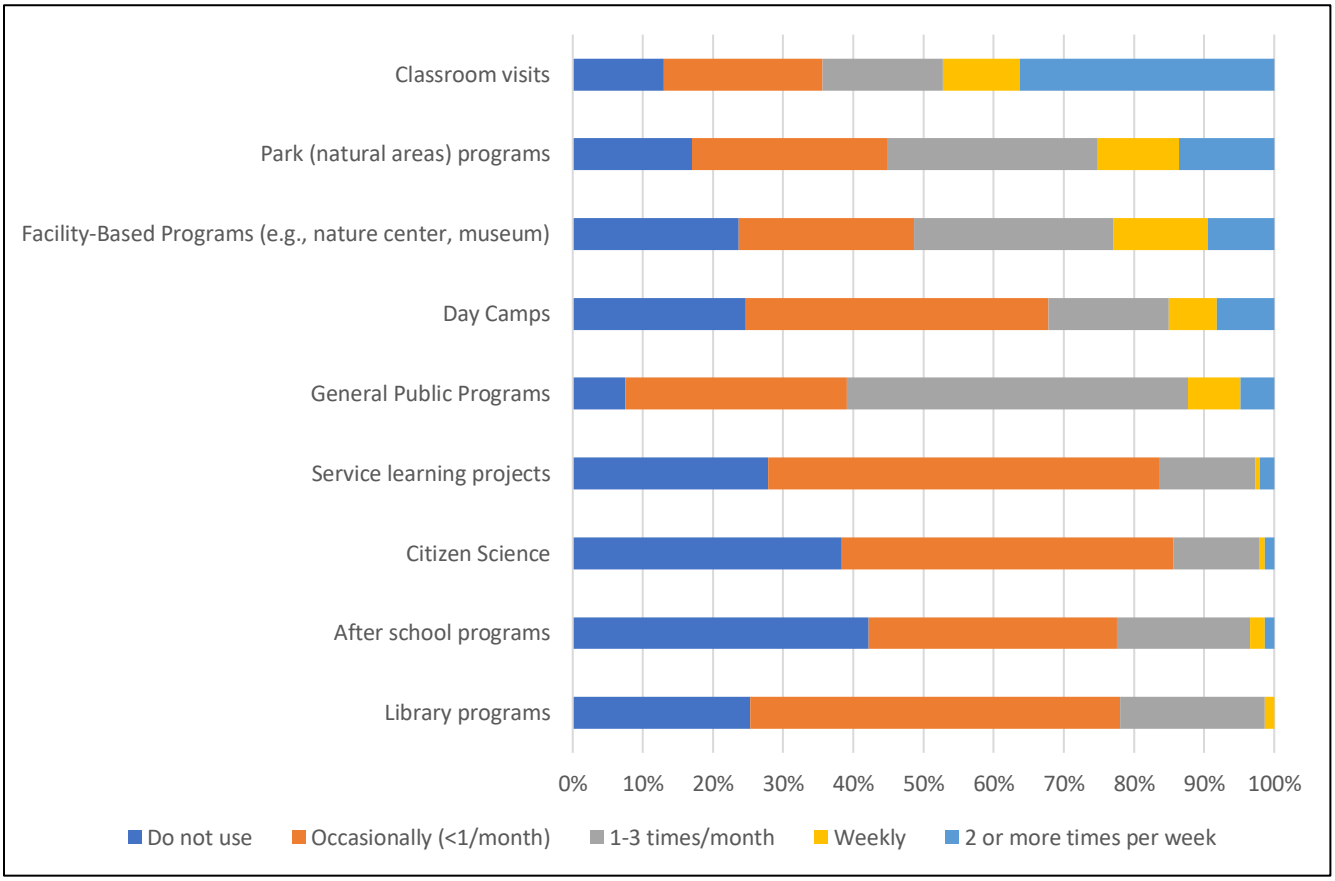
	Pre-K/Early Childhood	Primary grades (K-2)	Intermediate grades (3-4)	Upper elementary (5-6)	Junior high (7-8)	High school (9-12)	Post secondary	Adults	Multi-age groups
Not comfortable	8.00%	4.00%	3.33%	2.00%	1.33%	1.33%	5.37%	0.67%	2.00%
Somewhat comfortable	18.67%	12.00%	9.33%	10.00%	15.33%	26.00%	27.52%	13.33%	13.33%
Comfortable	24.67%	25.33%	20.67%	24.00%	38.67%	36.67%	30.87%	34.00%	38.00%
Very comfortable	48.67%	58.67%	66.67%	64.00%	44.67%	36.00%	36.24%	52.00%	46.67%

Q30 How would you rate your comfort level in working with the following audiences? (not comfortable, somewhat comfortable, comfortable, very comfortable) n=150	Not comfortable to somewhat comfortable		Comfortable to very comfortable	
	%	Rank	%	Rank
Pre-K/Early Childhood	27%	2	73%	7
Primary grades (K-2)	16%	5	84%	5
Intermediate grades (3-4)	13%	8	87%	2
Upper elementary (5-6)	12%	9	88%	1
Junior high (7-8)	17%	4	83%	6
High school (9-12)	27%	2	73%	7
Post-secondary	33%	1	67%	9
Adults	14%	7	86%	3
Multi-age groups	15%	6	85%	4

Take-away:

Naturalists and other nonformal educators are comfortable working with a variety of age groups. A significant number of respondents were not, or only somewhat comfortable with pre-school audiences, high school audiences, and post-secondary audiences. This may be due to some nonformal educators who work with more specific audiences.

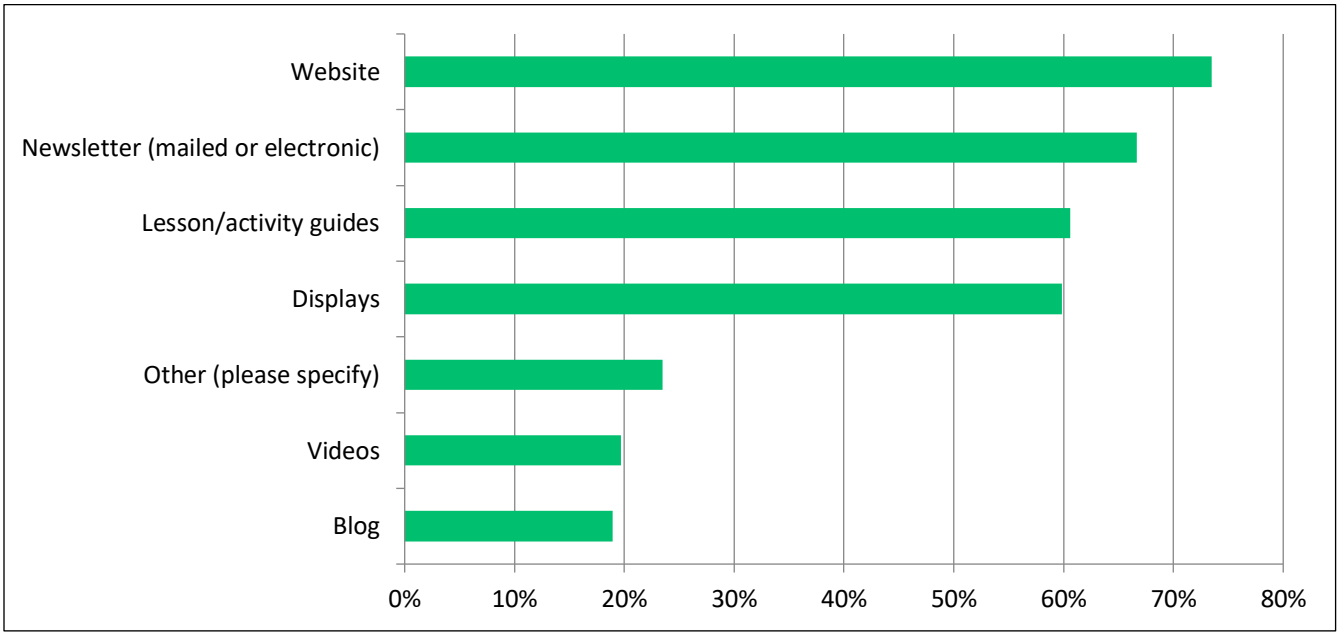
Q31 Which type of programming do you commonly use to teach environmental/conservation education? Select the most appropriate option for each type of programming. (do not use, occasionally or <1 time per month, 1-3 times per month, weekly, 2 or more times per week) n=149



Take-away:

Respondents provide a variety of program types through several venues. Classroom visits were the most frequent. Park/nature area and facility-based programs were also frequently used as were general public programs. The least frequent were service learning, citizen science, after school, and library programs.

Q32 Do you provide any of the following resources and / or teaching tools for teachers, other educators, or the public? Mark all that apply. (n=132)

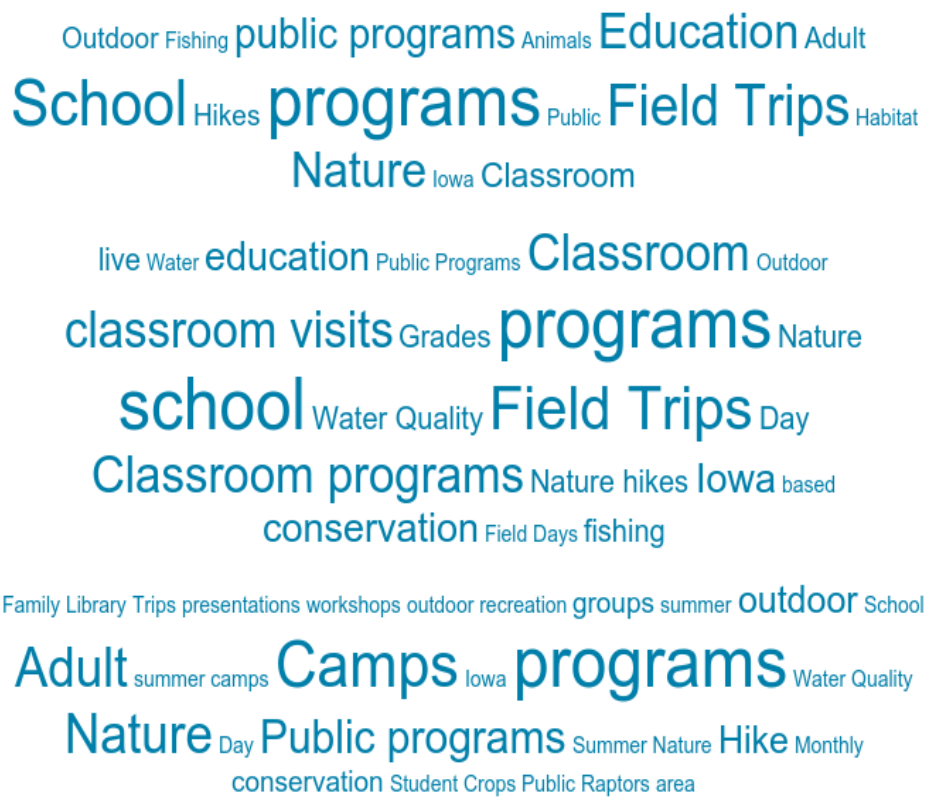


"Other" responses:

Social media - Facebook
Equipment – backpacks, recreational equipment, environmental theme tubs/totes
Resources – printed, electronic materials, direct emails, presentations, live animals

Take-away:
Besides programming, nonformal conservation/environmental educators provide several other resources. Most common are websites (73%), newsletters (67%), lessons/activity guides and displays (60% each). About 20% also mentioned social media, especially Facebook.

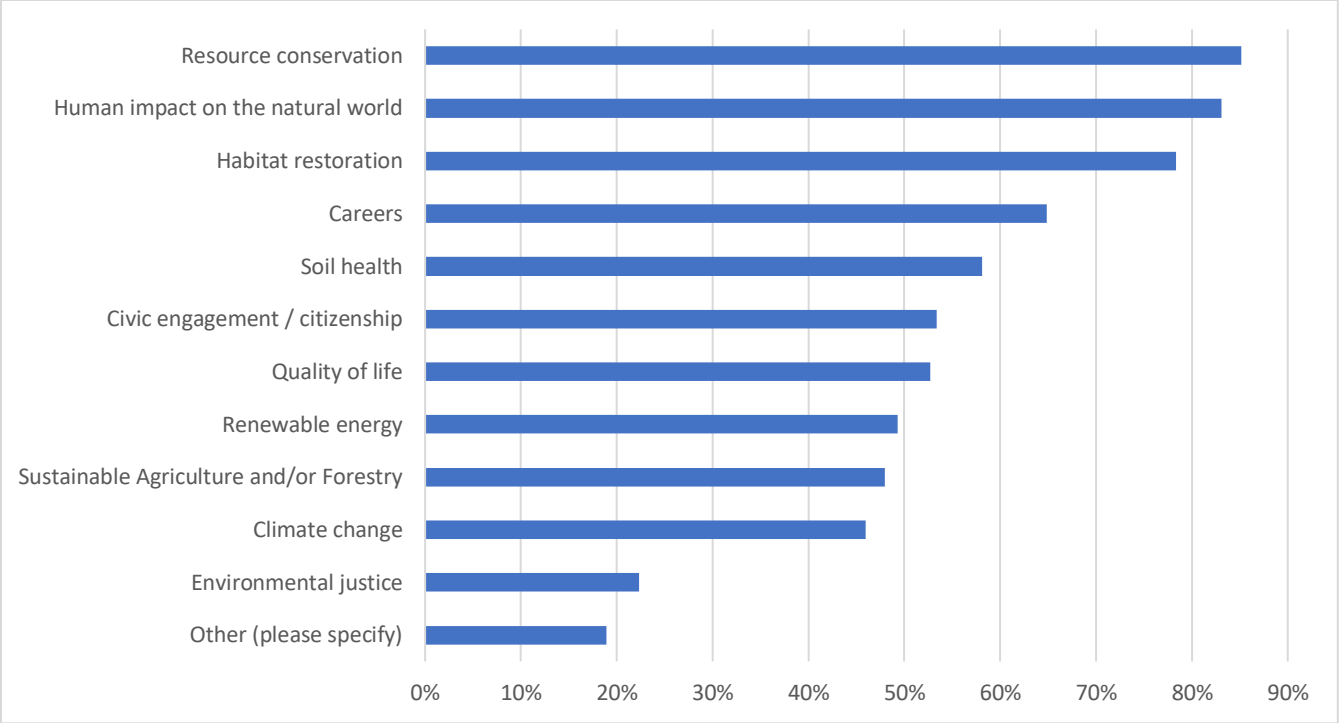
Q33 What are the major programs offered by your organization? (Please list up to 3 major programs.)



Responses to this question can be categorized by content topic, audience, and/or venue. The most common are listed below:

Topics	**Venues**
• Outdoor skills/recreation • Agriculture/gardening • General nature/conservation/ environmental education • Habitats/ecosystems • Environmental topics/issues	• Parks • Schools • Fairs • Libraries • Trips
Audiences	
• General public • Elementary • Pre-school • High school	

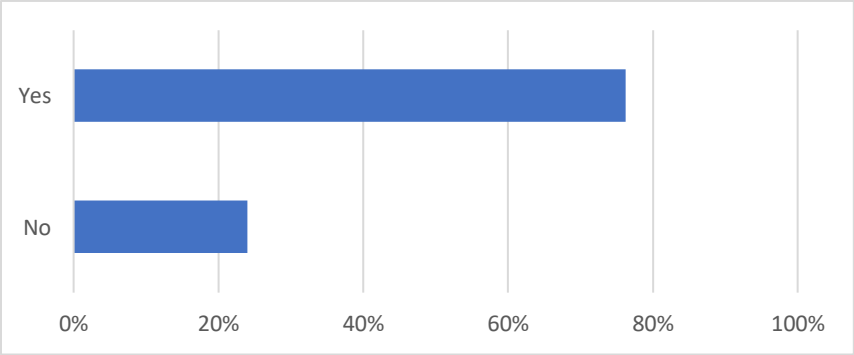
Q34 Which of the following topics do you include in your teaching? Check all that apply. n=148



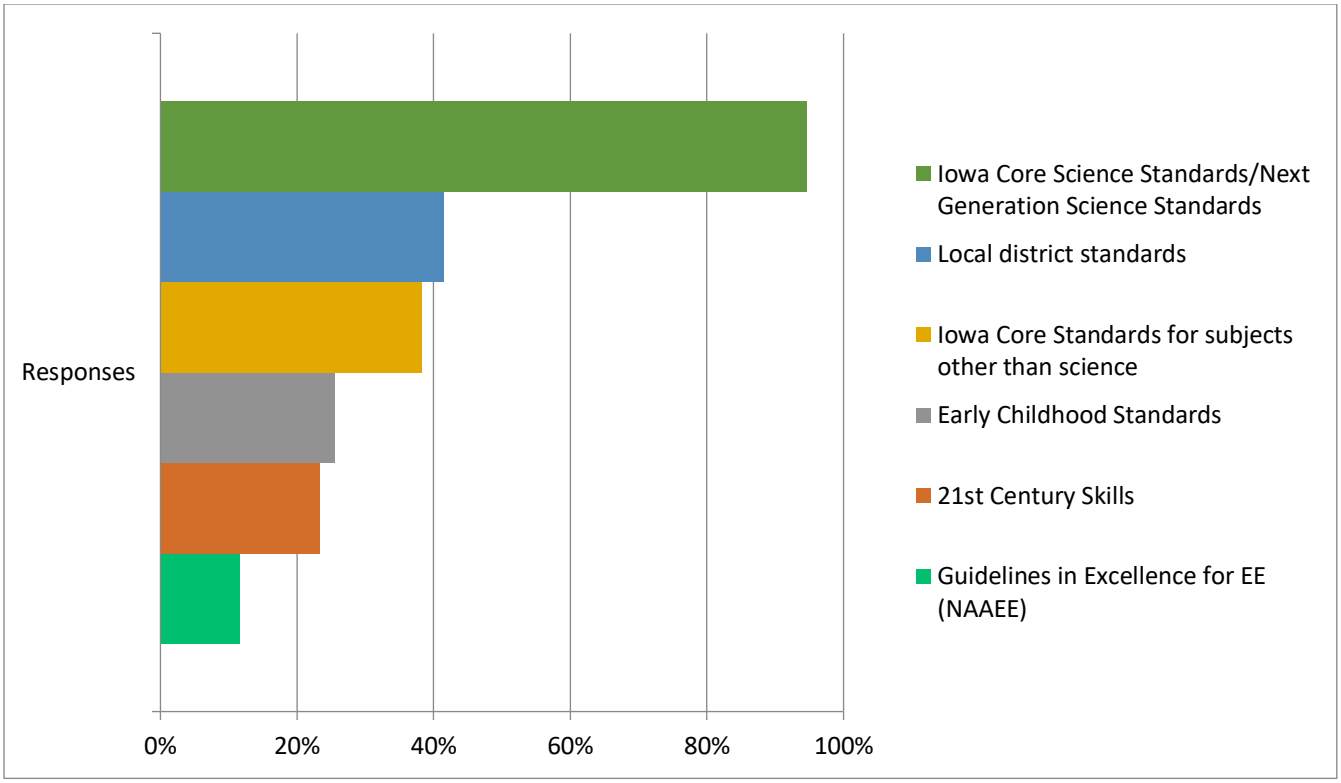
Take-away:

- The most prevalent topics included respondents' teaching included resource conservation, human impact, and habitat restoration.
- About half of respondents do not include "social" aspects of conservation/environmental education: climate change, sustainable ag/forestry, renewable energy, quality of life, or civic engagement/citizenship. Fewer than 1 in 4 address social Justice Environmental justice in their teaching.

Q35 Are your school programs correlated to standards? n=122 (26 respondents do not do school programs.)



Q36 If your programs are correlated to standards, which ones? Select all that apply. n=94

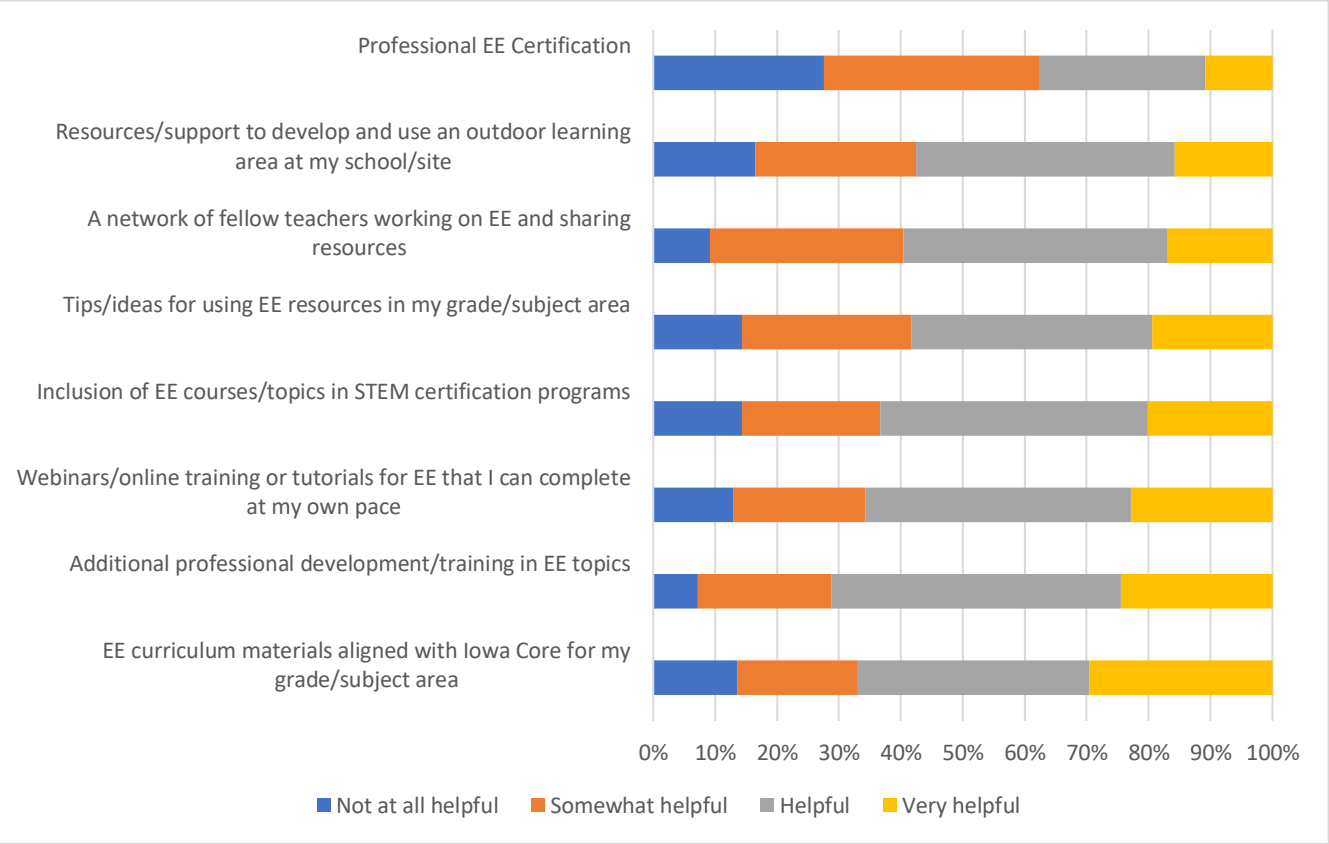


Take-away:

About 3/4 of respondents who do school programs, have aligned their programs with educational standards. For those who have aligned programs, an overwhelming majority are aligned to state science standards; 4/10 have aligned with district standards; 4/10 have aligned to state standards for subjects other than science. Comments indicate other respondents are working on alignments, or teachers with whom they work select activities based on standards/curriculum.

Alignment with standards/curriculum is important for nonformal educators working in conjunction with schools, whether the nonformal entity is doing the alignment, or if they are working with their formal partners to do so.

Q37 Would the following be helpful to you to improve your environmental / conservation education program? (not at all helpful, somewhat helpful, helpful, very helpful) n=143



Q37 Would the following be helpful to you to improve your environmental / conservation education program? n=143	Helpful & Very helpful		Somewhat helpful, Helpful, and Very helpful	
	%	Rank	%	rank
Professional EE Certification	38%	8	72%	8
Resources/support to develop and use an outdoor learning area at my school/site	58%	7	83%	7
A network of fellow teachers working on EE and sharing resources	60%	5	91%	2
Tips/ideas for using EE resources in my grade/subject area	58%	6	86%	5
Inclusion of EE courses/topics in STEM certification programs	63%	4	86%	5
Webinars/online training or tutorials for EE that I can complete at my own pace	66%	3	87%	3
Additional professional development/training in EE topics	71%	1	83%	1
EE curriculum materials aligned with Iowa Core for my grade/subject area	67%	2	83%	4

Take-away:

Nonformal educators did not rank resources/support as highly as teachers, but both ranked “materials aligned with Iowa Core” and “additional professional development” highly. Nonformal educators ranked webinars (PD) highly. More than half ranked the other resources/supports as helpful or very helpful with the exception of EE Certification. (Note: There has been discussion in the past about EE Certification, but it did not rank highly in any of the survey groups.)

Assessment of Iowa Environmental and Conservation Education Professionals

EE and CE Attitudes and Perceptions
Final Report

Prepared for

Iowa Conservation Education Coalition

Prepared by

Northeast Iowa RC&D Inc.

October 2019

Background and Methods

Parameters and Goal

Northeast Iowa Resource Conservation and Development (RC&D) was contracted by the Iowa Conservation Education Coalition (ICEC) to conduct phone interviews with Iowa environmental and conservation education professionals. The interviews were intended to help the ICEC Board complete a multi-phased needs assessment to inform development of an Action Plan. Potential participants were selected by the ICEC and the RC&D and included employees and volunteers from a wide variety of Iowa organizations, departments, and agencies. Thirty-three Iowans accepted the invitation to participate. Each was asked to be honest and open in their responses and told that their responses would be respected and considered by the ICEC Board during development of the Action Plan.

Timeline

The interviews were conducted in September 2019 and October 2019. The interview questions were provided by the ICEC.

Participant Selection and Affiliations

Interviews were conducted with 33 Iowa professionals who are employed by, or volunteer for, one or more organizations, departments, and/or agencies, that provide conservation and/or environmental education to some population subset in Iowa. Interviewees were purposefully selected from different strata within organizations and agencies. In some instances, the first entity contacted within an organization deferred to, or referred the interviewer to, another employee. Although a few participants were from the same organizations, and some were from similar types of organizations, an effort was specifically made to engage Iowans of diverse thought, education, working environment, and experience. Additional individuals from additional groups or organizations were contacted but either declined to participate or did not respond to repeated invitations and messages. Although the organizations and agencies the participants work or volunteer for influenced the initial selection of that person for inclusion in the study, and the participant's employers are used as participant identifiers throughout this report, the responses of any given individual were not, and should not be, attributed to the organizations and/or agency for which they work or volunteer. Rather, the responses of participants simply reflect the attitudes and opinions of people working for organizations that provide conservation and/or environmental education to Iowans. It may be assumed that the participants influence the work and perceptions of the organizations and agencies they work or volunteer for, but not that their co-workers, supervisors, and/or boards would agree with any individual interview response.

As a group, the participants are well connected and actively involved with over 100 regional, state and federal organizations and agencies. Some of the organizations and agencies that the interviewees are employed by, serve on the boards or committees of, volunteer for, or advise, are detailed in *Figure 1. Participant's Organizations and Agencies*. Many local service and nonprofit organizations were not included in the list and some participants specifically noted that they limited the number of organizations they reported. Although a deliberate effort was made to include

county conservation board (CCB) employees, as CCBs have in the past been one of the most active groups participating in ICEC, the CCB participants represented less than one fourth of the interviewees (8/33).

Participant Preparation

Each participating interviewee was informed about the project through a phone conversation before their interview was scheduled. The interviewee was allowed to select a time that was convenient with their schedule. Some participants scheduled two to three weeks in advance; others interviewed immediately. The people interviewed are referred to throughout this report as either interviewees or participants.

Before each interview began, the interviewer provided, either in writing and/or by phone, information about the ICEC as a *"nonprofit organization that has provided professional development too formal and informal educators in conservation and environmental education."* It was noted, that the ICEC "*has been a unifying voice for conservation and environmental education in Iowa and that additional information about the ICEC is available online at iowaee.org."* Project goals were summarized and the grant funding from the Conservation Education Program (CEP) was recognized. The interviewees were told about ICEC's previous research, including the survey and the statewide summit. (Only two of the interviewees noted previously participated in either.) The interviewee understood the interview goal as, *"To help ICEC assess the state of conservation education in Iowa."*

Interview Structure and Context

In order to maximize participant engagement, interviews were conducted with individuals rather than groups of people. In one instance, two participants from the same organization participated on the same call. All the interviews were conducted by the same interviewer. The interviews lasted forty-five minutes to two hours, depending on the length of the answers provided by the participants. Only two participants had access to the questions prior to the interview. As a result, the majority of the participants were asked each question and immediately responded with their thoughts and ideas. The responses were typed as each interview progressed. Thus, responses are transcribed and reported as conversational answers rather than "formal" proper English. In some instances, when the participant was extremely off topic, or when the participant requested to answer "off the record," responses were not recorded. Because the participants did not receive the questions ahead of time to review with their organizations, superiors, boards or co-workers, their answers represent only their own thoughts and were not/are not intended to represent any affiliate organization or agency's policy or thought.

Report Purpose

This report is intended to help the ICEC Board maximize the individual input of the 33 participants, as well as the body of information that the collection of interviews provide, for development of their Action Plan. It calls attention to some of the observable similarities and differences between responses. Because of the limited number of participants, the answers are not statistically representative of the beliefs and attitudes of Iowan's or even of Iowa environmental and conservation professionals. However, each of the interviews provides an opportunity to better

understand the people who passionately provide conservation and environmental education to Iowans and the collection of interviews provides a compelling perspective of the diversity and complexity of environmental and conservation education in Iowa.

Figure 1: Participant's Organizations and Agencies

- American Society of Agronomy
- Association for the Advancement of Sustainability in Higher Education
- Black Hawk County Conservation Board
- Blufflands Alliance
- Byways of Iowa Coalition
- Byways of Iowa Foundation
- Center for Energy and Environmental Education
- Clayton County Conservation Board
- Clayton County Pheasant Forever
- Clean Water Iowa
- Climate Adaptation Forum
- Coalition to Support Iowa Farmers
- Conservation Districts of Iowa
- Corridor Conservation Coalition
- Driftless Chapter Trout Unlimited
- Ducks Unlimited
- Fayette County Conservation Board
- Fayette County Pheasants Forever
- Floyd County Conservation Board
- Hawkeye Fly Fishers
- Howard County SWCD
- Howard County Farm Bureau
- Impact Outdoor
- Iowa Ag Literacy Foundation
- Iowa Ag Clean Water Alliance Board/Assoc.
- Iowa Association of CCBs
- Iowa Association of Naturalists
- Iowa Beef Center
- Iowa Cattlemen's Association
- Iowa Coldwater Conservancy
- Iowa Conservation Education Coalition
- Iowa Corn Growers
- Iowa Corn Promotion Board
- Iowa Cultural Coalition
- Iowa Department of Ag and Land Stewardship
- Iowa DNR Nonpoint Source Pollution
- Iowa Environmental Council
- Iowa Envirothon
- Iowa Farm Bureau
- Iowa Flood Center
- Iowa Forage and Grasslands Council
- Iowa Homeland Security and Emergency Management
- Iowa Learning Farm
- Iowa Monarch Conservation Consortium
- Iowa Natural Heritage Foundation
- Iowa Nutrient Research and Education Council
- Iowa Organic Association
- Iowa Public Health Association,
- Iowa REAP Board
- Iowa Recycling Association
- Iowa Rural Health Association
- Iowa Soybean Association
- Iowa State Dairy Association
- Iowa State Extension
- Iowa Valley Resource Conservation and Development
- Iowa Valley Scenic Byway
- Iowa Water Resources Bureau
- Iowa Wildlife Federation
- Iowa Woodland Managers Association
- Jackson County Conservation Board
- Johnson County Partners Group
- Land Trust Alliance
- Lynn County Conservation Board
- Midwest Environmental Ed
- Mississippi River Parkway Commission
- Monarch Matters
- Motor Mill Foundation
- Multi-Crop Iowa

- National Association for Interpretation
- National Accreditation Commission for Land Trust
- National Ag in the Classroom Organization
- National 4-H Council
- National Cattlemen's Beef Association
- National Milk Producers Federation
- National Water Monitoring Council
- National Wildlife Federation
- Northeast Iowa Dairy Foundation
- Northeast Iowa Resource Conservation and Development
- Pheasants Forever
- Polk County Conservation Board
- Practical Farmers of Iowa
- Prairie Restoration Initiative Team
- River Bluffs Scenic Byway Board
- Soil and Water Conservation Society
- Soil Health Partnership
- Story County Conservation Board
- Tallgrass Prairie Center
- Tallgrass Prairie Oak Savanna Fire Science Consortium
- The Nature Conservancy
- Turkey River Recreational Corridor
- Turkey River Watershed Management Authority
- US Fish and Wildlife Service Iowa Private Lands Program
- United Soybean Board
- University of Iowa Office of Sustainability and the Environment
- Upper Iowa River Alliance
- Upper Midwest Association for Campus Sustainability
- Watershed Management Authorities of Iowa
- Wild Turkey National Federation
- Winneshiek County Conservation Board Winneshiek County Pheasants Forever

Summary and Interpretation of Responses

1) Perceptions of Environmental Education and Conservation Education in Iowa

The first question asked each of the participants to help establish a baseline for their perception/context of environmental education (EE) and conservation education (CE). The participant was told that this question was being asked to help establish where they were coming from and how they defined and/or perceived EE and CE. They were specifically asked to describe their perception of conservation/environmental education. It was obvious for many that their jobs and affiliate organization's target audience and methods of outreach influenced their answers. However, their descriptions varied widely. Some participants answered the question from within their own sphere of influence and others as they perceive EE and CE within Iowa. Some provided a more wholistic response, while others were felt very strongly about the type of education, the audience, the location, the focus and/or the delivery method. Some of the respondents recognized that the definition of EE/CE had changed over time but they attributed the change to different social, environmental, political and natural dynamics. Although this question was presented as an innocuous ice breaker, many of the participants were passionate about their answer and some expressed anger about what they *thought* other participants would answer, even though, answers were not shared between participants.

After describing their perceptions of EE and CE, each participant was asked to do so again using one word. Very few used the same word. In fact, only four words, or derivations of the same word, were

used more than once. The interviewer observed that the single word that was selected by any participant typically established a theme for the rest of the participant's answers. Therefore, collectively, the single word answers demonstrated the depth and breadth of thought, action, and focus, associated with EE and CE in Iowa. They were as follows:

1. Affection
2. Awareness
3. Caring
4. Complex
5. **Connection**
6. **Connectivity**
7. Demonstration
8. Engagement
9. **Experience**
10. **Experiential**
11. Farmer-to-Farmer
12. Fun
13. Future
14. Hope
15. Important
16. Ineffective
17. Interpretation
18. Lacking
19. Legacy
20. Nuanced
21. **Nature**
22. **Nature**
23. One-Water
24. Relationship
25. Resilience
26. Science
27. Systems-Thinking
28. Stewardship,
29. **Sustainable**
30. **Sustainability**
31. **Sustainability**
32. **Sustainability**
33. Vital

Excerpts from each answer are included in the paragraph below titled "***Summary of All Participant's Descriptions of EE/CE in Iowa."*** The corresponding "one-word" descriptor follows each individual participant excerpt. As a whole, the paragraph provides a glimpse into the depth and breadth of thought, action, and focus, associated with EE/CE in Iowa.

Summary of All Participant's Descriptions of EE/CE in Iowa

EE/CE is any work that helps a variety of audiences to shift their loyalties towards the land and ecosystem processes and services. It is ***Affection.*** It is the informal instruction in the interpretation or background of wild areas, including flora, fauna and sense of place. It is ***Awareness.*** Primarily, it is teaching others what conservation is, and natural resources, and why it is important, and, in the end, the goal is to engage and get them interested in doing conservation themselves or on behalf of their organization. It is ***Caring.*** It is outreach to help producers them understand the latest science-based conservation practices and consumers to understand the value of conservation on the land for water quality and the land. It is ***Complex.*** It is what happens in schools, nature centers, national parks, and interpretive centers. It is ***Connection.*** It's a fraught topic. Sometimes it is ***Ineffective.*** It is formal and informal learning that increases understanding of natural systems, environmental topics, and the human interaction with, and influence on, the natural world and its systems. It is ***Connectivity.*** You are demonstrating and sharing practices that lead to conservation. Its ***Demonstration.*** It's communicating the story of the earth and its systems effectively, how the systems on the planet fit together and how the people play a role in that system - for all ages. It is ***Engagement.*** Trying to get people experiences to connect them with nature including as much hands-on nature experiences as possible with the goal that through that connection with nature they will be more caring and possibly become advocates. It is ***Experience.*** It's an emphasis on experiential learning, out in the field…outdoor classrooms and field tours…field days to look at conservation practices on the land and linking it back to environment and water quality, field days, tours for the general public or urban to engage with nature and the environment and getting to see ecosystems and animals in place. It is ***Experiential***. It is learning how as farmers we can help create

an environment that is beneficial for farmers, and wildlife, and has a positive impact on soil and water. It is ***Farmer-to-Farmer***. It's providing interactive, outdoor educational experiences. It is ***Fun!*** It is talking about the environment in a way that deals with the future of mankind. It is our ***Future***. Conservation education is the wise use of natural resources so the environmental education challenge is engaging the public and having them see the world around them that way. It is our ***Hope***. EE is different than CE. EE is environmental science topics and CE is more of what to do to protect the environment and maintain natural resources. It is ***Important.***

EE and CE are synonyms. Learn more about their environment, what are issues in their area and how can they help improve the environmental areas. It is ***Interpretation***. It is education related to biology or ecology, plant and animals, water cycle, impact of land uses on the environment, land protection and the way of farming because it is such a big part of our economy, and all those things – wildlife habitat and water quality but it is ***Lacking.*** It is educating diverse audiences, youth, students, elected officials, legislators and others - based on science, data, experience, and delivered in a variety of different methods to bring awareness of what is going on in our state, as far as the environment and natural resources, and to bring about change with the environment, water resources and other natural resources in Iowa. It is our ***Legacy***. Conservation is taking care of our natural resources and EE/CE is to educate us to make decisions intelligently. If you don't know it and care about it you can try to save it or protect it. It is ***Nature.*** It is teaching people about the outdoors about natural history as well as outdoor skill education/outdoor recreation. People need to be able to have fun in the outdoors. Ultimate goal is to create citizens who want to be active in the outdoors and have a passion for protecting the outdoors. Getting people comfortable in the outdoors…local things – things in your backyard or local park. It is ***Nature***. Conservation and environmental education is very important and a complex topic that students and adults need a better understanding of. It needs to incorporate the science of what we know about conservation and environmental, but also practical real-life examples and solutions to problems. CE and EE can see very idealistic at time and its should be realistic but it is ***Nuanced***. It is making the student, or whomever your audience is, aware of their surroundings. It is best described as ***One-Water.*** CE tries to bring people closer to the land to give them a better understanding of their relationship to the natural world and how things are related. It is ***Relationship***.

It is functions of systems that contribute to water quality and water quantity flows so we prevent flooding and reduce negative effects, ***Resilience.*** Environmental Education is more comprehensive than CE – It is teaching at an ecosystem level, and all-encompassing of the environment. Conservation Education is more of a subset, like a good land ethic, stewardship, land management or a change in land management. It is ***Science***. It is getting kids to understand what ecological function is and how everything is tied together, and how effecting one thing effects the rest, and how our decisions on how we take care of our environment impacts the functionality of our ecological systems. It is ***Stewardship***: It is how we care for the land and use the land and water. It is ***Sustainable***. It is conservation practices for farmers and how they can incorporate them into their choices and production. It is ***Sustainability***. It is raising awareness of environmental issues. It's a complicated issue. It is ***Sustainability***. It is an understanding of all those things that make up the ecosystems in which we live, both natural ecosystems and, more and more, man-made and

influenced, like agro-ecosystems and how the agro-ecosystem interacts with natural ecosystems. Conservation – we define sustainability as being a 3-legged stool, economically sustainable, socially sustainably and environmentally sustainable. All in all, it is ***Sustainability***. It is finding ways to teach people about their surroundings and how everything is interconnected, thinking big picture**.** Its more about building that systems-thinking mentality, so that no matter the topic people can break it down for themselves and not necessarily rely on an expert to give them the answers. It is ***Systems-Thinking.*** Conservation Education has been around forever and has a haunting, consumptive edge. Environmental Education has come up in the past 10 or 12 years with the attention to climate change, it is more inclusive and takes in fishing, camping and recreation but also more serious things like climate changes and renewable energy. It is ***Vital***!

2) Ongoing Environmental Education (EE) and Conservation Education (CE) Efforts in Iowa

The second set of questions was related to the participant's EE/CE efforts, the efforts of their affiliate organization, and their perceptions of increases and decreases in EE/CE efforts in Iowa. The participants were asked if they or their organization conducted any CE or EE, what they conducted, and why they did it. They were also asked if they provided information or resource for others who implement EE or CE education in Iowa; if they were involved in or supported service learning, outdoor learning projects, or civic action; and how their efforts had changed over the past ten years. They were asked if their efforts had increased or decreased and if they had any insight on other agencies, organizations, or groups that may have increased or decreased their efforts.

Unsurprisingly, all (33/33) of the interviewees reported that they or their organization implemented some type of EE and/or CE to a specific or general audience. Exactly how they defined conservation education and/or environmental education in this answer, what they did, who they delivered to, and why they did it varied *widely*. All but one (32/33) of the participants reported that they or their organization provided information and/or resources for others who deliver EE/CE and all but two (32/34) perceived that their organizations were involved with or supported service learning, outdoor learning projects or civic action.

The majority (27/33) of the interviewees reported that they and/or their organization had increased their efforts through the addition of EE/CE staff, through expanded programming, by increasing the diversity of programs, increasing the number of people reached, or by reaching new audiences. Some of the increases were dramatic and included doubling or tripling staff, starting new organizations and reaching thousands of more citizens annually. Several reported expanding learning into new EE/CE topics and greatly increasing the depth and content of learning. Several interviewees reported a shift in learning topics from soil erosion and water quality to more complex topics and issues. Adapting to CORE standards had increased in importance for several entities. Another notable trend was related to the increased use of technology by the public and to reach the public, which created new opportunities and new challenges. Social media created new opportunities for reaching greater numbers of people faster and in a more dynamic manner. However, the increased access to information also resulted in a need to shift EE/CE learning and topics from learning about things to experiencing them. People can learn about things on the Internet and through technology but they can't really experience them. As one participant said, *"We*

need to get more basic. We can no longer assume people know how to take a walk in the woods. People ask me – Can you teach me how to hike? How to fish?"

Only two participants reported decreasing their own efforts or their affiliate agency's effort (2/33). The interviewee associated with the Iowa Wildlife Federation reported personal decline in total hours due to retirement. The Nonpoint Source Project representative reported substantial declines in agency funding, personnel, and programs. Although seven of the participants (7/33) reported that they were new to their positions, only two felt they were too new to comment on increases or decreases associated with their affiliate organizations. Two felt that although their organizations had shifted the types of EE/CE, they had not really increased or decreased their efforts.

Fewer participants, but still a majority (23/33) felt that other organizations and agencies had increased EE/CE efforts. Some (5/33) perceived that some organizations had increased and others had decreased and a few (3/33) participants noted decreases without noting any increases. Almost all of those participants who reported/perceived decreases noted those decreases with governmental agencies naming SWCDs, Iowa DNR, and/or USDA/NRCS. One reported a decline in outdoor EE/CE activities and programs with Girl Scout and Boy Scout groups. Six participants reported not knowing if other agencies or organizations had increased or decreased.

3) Conservation Education Networks

The third set of questions was related to the participant's affiliation with conservation education networks. They were specifically asked which networks they were affiliated with, how they received their information in general, and how they formally engaged with, or were engaged by, other groups or organizations. The word affiliation was perceived differently by the various interviewees. Some interviewees perceived affiliation as a formal membership; others perceived affiliation as any type of ongoing communication and/or engagement with a partner, agency, or other organization, especially those with which they obtained or provided information and resources, or even those for which they served on boards, committees, or working groups. Participants were then asked to rank, from one to ten, with ten being the most connected, how connected they felt with CE/EE educators *"within their scope"* and how connected they felt with CE/EE educators outside their scope. After they ranked their connections, they were asked to explain their answers.

As a subgroup, the eight participating County Conservation Board (CCB) employees were the only interviewees that answered the first question, *"What conservation education networks they were affiliated with?"* consistently and with the same understanding. As a subgroup, they were more likely to perceive the question to be related to a *formal*, *paid* membership. All reported affiliation with the Iowa Association of Naturalists (8/8) and half with the National Association of Interpreters (4/8). Two thirds (four out of six participants in the group of 33) who reported being affiliated with the ICEC were from CCBs. (The two ICEC members who were not from CCBs worked for IDALS and CDI.) Many in this CCB subgroup also reported having an organizational budget that paid for their and other employees annual membership fees, as well as participation in conferences and learning opportunities. Non CCB participants were more likely to report budget limitations for membership dues during this set of questions.

When asked how they received information, participants responded with many different answers but enough of the same answers to create a word cloud. The adjacent word cloud shows the answers by scale, with the most common answers in larger font size, transitioning to the least common in the smallest font size. The most common responses were ***Conferences*** (9), ***Meetings*** (9), ***Emails*** (9), ***One-on-One*** (7), ***Newsletters*** (6), ***Websites*** (5), and ***List-Serves*** (4). The remaining answers were triplicate, duplicate or singular.

The next question was related but more specific. Rather than asking how they generally received information, the question asked participants how they *"formally engaged with other groups or organizations."* There were more similar responses to this question, as well as individual responses that were given by a greater number of interviewees. The most common responses were Conferences (18), Meetings (16), List-Serves (16), Emails (11), Newsletters (10), Facebook (6), Social-Media (5), One-on-One (5), Committees (5), Boards (5), Phone-Calls (4), and Workshops (4) are illustrated in the adjacent word cloud. The remaining answers were triplicate, duplicate or singular. Although the responses were very similar, there were a few notable differences. More participants used List-Serves and Facebook to *formally* engage with other groups or organizations and fewer used websites.

The last questions in this set asked the participant how connected they felt to EE/CE Educators within their scope and outside of their scope. Although respondents felt more connected to those EE/CE Educators within their scope, some noted that they felt as connected to those outside their scope as they wanted to be or that they didn't have time for more connections.

4) Conservation Education and/or Environmental Education Training in Iowa

The fourth set of questions was related to ongoing conservation and environmental education training in Iowa. The participants were asked if they currently either provide and/or receive training in CE or EE, where they receive or provide that training, and who they receive it from or provide it to. The majority, (30/33) provide training for others and the majority (30/33) receive training. Only two participants reported neither providing nor receiving training. The methods of providing and receiving training varied. Participants provided training to different audiences in different ways. As with previous questions, some felt very strongly that the audience they provided training for and/or the methods they used to provide training were very important.

5) Conservation Education and/or Environmental Curricula and Resource

The fifth question asked what, if any, curricula or resources that included CE or EE the participants had, or would, recommend. After they responded, they were specifically asked if they ever recommended ICEC resources. Very few (4/33) of the participants said they recommended ICEC resources. Several of the participants expressly noted they either knew nothing about ICEC or did not know that ICEC had curriculum. Some of the curricula and resources that were recommended by participants are listed below. (A number after the resource indicates more than one recommendation.) The answers varied greatly in terms of the specific recommendation but also in terms of the content and focus of the recommendations.

- The Projects – Wild, Wet, Learning Tree etc. x 6
- ISU Extension Experts and/or Publications x 4
- Iowa Learning Farms Resources x 3
- We develop our own curriculum x 3
- Iowa Ag Literacy Foundation Curriculum x 2
- Individual Experts x 2
- Water Rocks x 2
- NRCS x 2
- AASHE resources
- Prairie Resource Center
- Prairie Center at UNI
- Birds Eye View Publication
- My Healthy Woods Publication
- www.conservatondrainage.org
- USFW Service for Mississippi River Learning Book
- EPA Resources
- HUD Publications/Resources through Rockefeller Foundation
- Webinars (319/EPA)
- NAI Certifications
- Skills Trainings
- Fish Iowa
- Websites
- NWF Experts
- USFWS Experts
- ISU and other University's Experts
- CCB Directors and Naturalists
- The National Audubon
- Cornell Lab of Ornithology
- IAN series about Iowa
- Edible Plant Books
- Star Lab Curricula.
- https://northeastiowarcd.org/projects/stormwater/
- Ag Innovators Experience
- Monarchs on the Move
- The Native Bee Challenge
- Crops Feed the World available through Iowa State Extension Moodle
- Penn State's Stop the Invasion.
- ISDA Universal Calendar
- IDALS

- Nature Scope
- Water Rocks
- North American Association for EE (free topical webinars)
- IowaFarmBureau.com
- Iowanrec.org
- Cleanwateriowa.org
- ISU Iowa Nutrient Reduction Strategy Page
- Iowa Conservation Action Network
- Agricultures Clean Water Alliance
- Iowa Stormwater Education Partnership
- IDNR SWIM Workshop
- NADC has an Urban Stormwater Webinar Series
- ISU Extension/Texas A&M Extension - Living around An Urban Pond.
- Nutrients for Life

6) Conservation Education and Environmental Education Opportunities in Iowa

The sixth set of questions asked the interviewee to express their opinion about where they perceived the best opportunity to include Conservation Education or Environmental Education in Iowa's formal education system. They were prompted with examples including, "a specific grade level, a subject area, or some type of civic activity" but they were also encouraged to express other opportunities outside of those examples. After they had expressed their opinion, they were asked why they thought there was an opportunity in the area they had described. Then, they were asked where they perceived there is the best opportunity to include Conservation Education or Environmental Education in an informal setting, outside the schools.

Although the prompts were not intended to express bias toward a position, fifteen of the participants (15/33) noted that they felt that EE/CE should be targeted to all ages, and 10 (10/33) felt that EE/CE concepts should be tied to, influence, or be the focus of, multiple subject areas rather than just science. Ten (10/33) of the participants felt an age/class range between kindergarten and eighth grade was an important target group, noting that that age group has curious, impressionable, open minds, their teachers are more open and interested, and the curriculum is more open. Six (6/33) of the participants stressed the need for hands-on learning, in the field experiences, field trips and outdoor education.

7) Beneficial Resources

The seventh question asked the participants to identified three types of resources or *support for* teaching about nature and the environment that would be most beneficial to them. Not all participants provided three responses. Some participants declined to answer this question; others only provided one or two answers. The answers that were given are listed below.

The "#1" responses included the following.

- Increased Access to Resources for Habitat Management
- A Library of Project Ideas
- Ready Access to Quality Printed Resources
- List Serve or Website
- Webinars

- Field Guides
- Public access to a wide variety of (natural) sites
- Easily Accessible, Affordable Materials
- Updated information, facts, standards
- Full-color brochures, pamphlets, or high quality, identification guides
- Specific Professional Development that is Connected to Focus Areas
- Quantitative Analysis
- One-on-one Interactions
- Local Expert/Trained Experts
- Access to the Experts
- Prepared “Go-To” Lesson Plans or New Activities
- Training and Device Assistance for Adaptive Learning
- Ag Conservation Research
- Public Policy Change
- Web-Based Tools and Lessons
- Expert Speakers
- Environmental Educators Conference
- Meeting Awareness
- Website
- Blueprints for How to Host Events
- Marketing.
- Subject Area Experts who will go out in Nature with us
- Equipment
- Research
- Packed Curriculum
- Topical/Mission-Focused Workshops

The “#2” responses included the following.

- Increased Knowledge of Citizen Monitoring Opportunities
- Curriculum for K-12
- A Resource Guide
- Webinars
- Conferences
- USDA Plant Data Base
- Bodies in the field
- Having A State Standards Guide
- Documentaries or videos of specific parks or natural features that show how the river, watershed or natural area was created
- Increase access to or even existence of EE or CE People Who Are Great Communicators
- A Quantifiable Understanding
- List Serves
- Literary Source
- Kits

- Training from Experts
- Field Trials
- Continuing Education Opportunities for Teachers
- 10 am to 2 pm Workshop/Networking Sessions
- On-line Resources/Tools
- Networking Opportunities.
- Webinars
- A List of Field Days, Events, Conferences
- Sharable Videos
- Freedom to Explore New Ideas
- New Types of Programs
- How to Deal with Controversial Topics in a Positive Way
- Curriculum Based Programs
- On-Farm Trials
- Fun Things – Education Activities
- Written Documents/Research-Driven for Legislators

The "#3" responses included the following.

- Better Information on How Agencies Manage Public Land and Provide
- List Serve or Consistent
- Small Group Interaction
- Workshops
- Workshops
- What's New Information
- Environmental Education and Conservation Education as a cornerstone curriculum in our schools
- Easy Updates on Current Topics
- Short and Succinct and Engaging Social Media (accompanied with graphic or high quality photographs/visuals)
- Access to more well minded Planners
- Books and Field Guides, Curriculum Guides
- Direct Experience
- Half-day Workshop
- Increased Awareness of the Importance of Outdoor Ed.
- Boots on the Ground
- Access to Public Parks and Natural Areas and Outdoor Learning Environments at Schools
- Workshops, Field Trips and Materials
- An Up-to-Date, On-Line Guide
- A Consultant Who could do a Conservation
- Training on Specific Topics
- Networking
- Podcasts
- High Quality Natural Resources

- How to Identify and Conduct Outreach to Diverse Populations
- On-Site Natural Areas at Schools
- Farmer to Farmer Sharing.
- Outside Professionals Who Can Come in and Take Over a Class
- Newsletter

8) Support Network System

The eighth question asked participants to name the top three things they felt would be valuable to them or their organization/group as far a development of support network/system for EE/CE in Iowa, other than *time or money.* There were very few duplications in response, especially considering the accompanying detailed explanations. Not all participants provided three responses. Some participants declined to answer this question. The answers that were given are listed below.

The "#1" responses included the following.

- Openness to Input
- List Serve
- Sound, Factual Information
- A List Serve with Contacts and Places to Go
- Conferences
- Email: Networking through Email
- Improved Communication/Networking
- Marketing
- Help us in getting the word out
- Good Website
- ICEC should Collaborate with others to do something
- Subject Matter Experts
- Web interface/Web Database
- Website with Answers or Where I can Find Answers
- Organizing and Convene
- Tell Others About Our Resources
- Networking Opportunities
- Opportunities for True, Hard Conversations and Exchange
- 4-Hour Topical Workshops
- Partnership
- List of Who People Are and What They Do
- Meetings
- Networking with Peers
- Identify Commonalities
- List Serve
- Regional, Mini-Workshop with Experts
- Comparison of Programs
- This is happening today already and duplicating resources bifurcates all of these opportunities to get this stuff done

- SLACK - A Better Networking Platform
- Who's Who – Directory of Organizations – Public, NGOs and Foundation
- Awareness/Database of experts

The "#2" responses included the following.

- Affordable Inclusiveness - No annual membership fee
- Newsletter
- Unbiased Information
- Comprehensive Contact Network
- Webinars
- Facebook Page
- Consistent System Guidelines of Some Sort
- A Reference List of Organizations and People
- Email
- Increased Community Capacity to Plan
- List Serve
- List of Experts and Organizations.
- Figure out how all of us can work together
- Workshop for Agencies
- A Person that has All the Connections
- Focus Groups/or Focused Meetings
- List Serve
- Providing Contacts
- Conference
- Networking Opportunities
- A Community Blackboard/Central Event Source
- Identify High Priorities for Iowa
- Speakers Bureau
- Regional Networks/Working Groups within Iowa
- Mentoring Program/Shadowing Program between EE people and/or Naturalists
- Resource Linkage Platform
- List of people who are interested in improving land owner relationship
- Integration into Existing Systems

The "#3" responses included the following.

- Resources that are Flexible and Adaptable to the Regional and Local Level
- Annual Gathering
- A Way to Break Down Barriers
- Workshops
- Website
- Consistent Teacher Materials and Tools/Framework
- A Speaker Bureau

- Phone Call or In-Person Meeting
- Training Field Days/Workshop.
- Shared Projects
- Have a “Go-To” Person
- Corporate Connections
- Conference
- List Serve
- Promotion of EE/CE Ops
- More sharing of Information
- Resources About How Nature is Connected to Mental and Physical Health
- Website with a Clearinghouse for Resource Sharing
- Learning Opportunities related to Public Interaction
- A Directory of Educational Professionals
- Conference or other Education Endeavor

9) Potential Participation in EE/CE Activities

Question 9 asked participants to consider if a broader network of EE/CE exists in Iowa, if they felt it would be valuable for them to participate (contribute and/or engage) in several different types of opportunities. Their responses are detailed in the table below.

Opportunity	Yes	No	Maybe/Maybe if
Professional Development	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X	X, X, X, X, X, X, X
Conferences	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X, X, X, X, X	X, X, X, X, X, X, X
List Serves	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X, X, X, X, X, X	X, X, X, X, X
EE/CE Workshop or Networking Event	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X, X, X	X, X, X, X
Webinar or On-line	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X, X, X, X, X, X, X, X, X	X, X, X, X
Idea Sharing, Examples of great EE/CE Process or Case Studies	X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X, X	X, X, X	X
Other Ideas	Newsletter, Newsletter, Comprehensive Contact Network, Facebook Page, Speaker Bureau, Reference List, Project Event or Project Collaboration Opportunities, Lessons and Kits, One-on-one Assistance to Farmers, Central Event Source/Community Blackboard, SLACK, Dropbox/Linkage Platform/E Professional Directory, Directory of Organizations, Lists of People		

10) Final Participant Comments and Recommendations

The last question provided participants with an opportunity to give one final recommendation. They were asked, *"What can we do, where we are at, with what we have, to encourage EE and CE in Iowa?"* The answers/recommendations are provided below.

- The biggest thing would be to reach out to groups you normally don't work with, whether that is farm groups reaching out to the conservation board and vice versa, there is more common ground than we know, that lets us leverage resources and make our message go farther.
- I've only been in Iowa a few years but building relationships with the administration of K-12 schools so we can incorporate a more long-term sustainable program across the state to incorporate these things. Individual presentations can never reach everyone and they are a lot of time and effort but a teacher or principle can leave and you lose your connection. We need more support at the administrative level and have more teach the teacher sessions where we can teach them the curriculum. That higher-level support system would be great.
- Have a more concerted effort to educate policy makers. We also need to build a constituency but I feel like they are getting poor information and they have so much influence and impact. If we want to do something right now that is where we need to be, or a place we need to be more often. Have a more concerted effort to get information at that level….all policy levels – city, county, and state.
- We are all on a good track. I've seen a major increase in EE ad focus on getting EE out there. But, biggest challenge right now is funding. More help with lobbying and making it known to our political constituents that EE is important so we can fix gaps we have right now.
- Make one-on-one connections with the people that aren't on the land that aren't rural residents. Educate farmers – they DON'T know it. Put out stories and information. Connect with schools – not just farmers. Get to the next generation because they will be taking over the land. Keep making new connections and maintain the ones we have.
- Among educators continue to network. Even among naturalists when you get a chance to sit down with them – you realize they have a skill you didn't know about, like white water rafting/kayaking. Gee whiz moments understanding about other naturalists' skills and capabilities. This could be a skills survey. In the 1990s, I thought IAN or ICEC had a skill handout so we all knew who was good at what. So, we could find someone or help someone/contribute with tips pointers or assistance.
- There is so much going on. Look at some of the things going on and keep up the momentum, keep it in the forefront. I'm encouraged by CCBs who are adding naturalists, schools who are doing outdoor classrooms, organizations that are putting in habitat and others. Keep the momentum going. Every once in a while, there are opportunities like the Monarch Butterfly, Rusty Patch Bumble Bee, etc. that provide opportunity for funding – take advantage of those. Use some of the momentum and even some of the political pull that some of those issues have and turn them into opportunities for education.
- I think we have to take a step back and start with the basics. Kids today aren't outside as much, they haven't played in the dirt or looked under rocks, so they don't automatically have that connections. They don't have parents who hunted or trapped and they haven't eaten deer for supper. They don't have that connection so it's more difficult for them to make the decisions they need to make because they don't know all sides.

- I feel like we already have a good network. I'm not the ideas person on how to expand. Within our own system we are trying to manage what we have and not expanding, get numbers up and get people out to the properties we have and take care of what we have.
- There needs to be a greater awareness of the existing resources available. Before I joined ICEC I was unaware of their website and the resources that are available. The challenge is how do get people there to see the website and utilize the resources that already exist. We need to break down the barriers between industrial ag and tree huggers, we have more in common than we think we do and to try and stop categorizing us, although that is a natural human tendency. If we can keep communication going and for agriculturalists, farmers to visit the fishermen in the local lake, the local lake fishermen visit the farmers, farmers come to the classroom and talk about what they do to help the critters on the land and when they use pesticides or chemicals why they do that and why they have to do that from an economic standpoint. But, also have scientists come out to the farm to talk about using pesticides and what the result of that are to the pest but also to the beneficial insects and now the pest comes back more because there are no beneficial insects. A more wholistic approach.
- Come from a place of bi-partisanship. If you are looking at a new director, operate in the 'Middle Space' where you respect everyone and acknowledge that everyone is at a different place in learning. It should be about lifetime learning.
- We've done some really good partnership and strategic planning with partner organizations. I am impressed with WMA planning. What we can do now is use funding that is there and structures that exist to implement conservation/BMP for the purpose of water quality and water quality benefits. Any time we have a natural disaster/flood there is money if we're ready. We need to be ready. The worst thing is not being ready. You can be ready and not get the funding the first time but then you might get it the second or third time. The best thing we can do is be ready.
- I think we are in a good place. Iowa has a lot of interpreters and EE people. There is always room for improvement. The more the better. We visit all the Elementary schools in our county and 1 or 2 grades in every school do a field trip. We are connecting but I don't know about bigger cities. There is always room to do more. The more contact with student – through adults, immersion in nature, engaging in EE issues. I feel like we are doing an awesome job and I hope that momentum continue but I think there is always more we can do.
- Continue doing it. Encourage increased involvement. If 10 people are involved, if 5 can get 5 more that is even better. Bring more people in to provide more training. More people involved or capital would help life the wait.
- I think that's a great question. My personal orientation is that however we can draw the attention of the people we are working with - whether elementary, high school, college age or the general public, - drawing their attention to the home ground of the region we/they live, like their town, their county, region etc. We need to ask them, "How are we going to live in Iowa without causing so much damage?" The more we ask questions about living in Iowa and talk about what is going on in our own state, that is the only thing I know will work. There isn't a whole lot else we can do, given the fact that our state is being damaged by those here and from the outside by people and interests who want to suck out as much profit as possible. What is happening politically and in every other way, that is how we can draw attention to EE and Conservation in Iowa. Ask questions - about where we are, who we are, and what we can do here that would improve the state?

- Create an awareness of agencies that provide EE or CE and/or are engaged with this. We are all aware but we are all stretched as far as budget and time but are their ways we can partner to deliver the messages. A lot of times, as we know with WMAs, you have to have that person there who is facilitating and coordinating and pushing. Maybe that is what we need, a point person.
- Quality is the best thing we can bring because funding and staff are limited so be the best conservation professionals we can be, if that means attending more professional development because the more trust people have in us the more effective we will be. Science communication is extremely important and it has to be accurate. Incorrect information denigrates the profession as a whole. We also need energy. We can get bogged down. We need to bring energy to the table.
- Quit polarizing the topic and making it political and quite demonizing, don't make agriculture the enemy. That would open peoples mind to it and make the organization less of a threat to agriculture. EE should not be over simplified and just blame farmers.
- We support and promote public policies that communicate that science is taken seriously and that we act on what we know because if we do not act on what we know then the message that students get is that EE doesn't matter and we might as well be studying art history because actions speak louder than words. Go ahead and study EE but locally, state, and federally we are doing the opposite of what we are teaching.
- Facilitate communication with a wide variety of organizations and agencies. Teach people with different perspectives to sit down at the same table and respectfully talk to and listen to each other. We would need some great facilitation to make that happen but it is what Iowa needs….to remember how to present, respect and genuinely consider different perspectives.
- We need to become more aware of conservation and the impact we are all making. Specifically, for ICEC – become more well known.
- I think more sharing of resources. I think it is clear that there are good things going on that I don't know about and that I have resources as I've shared that others don't know about. So, more communication and more sharing of resources. I think that the biggest thing is going back and making sure that we are communicating it, there are many great meetings but the advertising for the event wasn't efficient or they didn't see it. Advertise in multiple avenues.
- I think that the biggest thing is going back and making sure that we are communicating it, there are many great meetings but the advertising for the event wasn't efficient or they didn't see it. Advertise in multiple avenues.
- It's a sliding scale. You can share one on one with your neighbor, put on a field day, talk to a classroom, talk to 500 people, but keep talking and sharing at every turn everywhere you go…and just repeat and keep beating the drum because eventually it will sink in and become an ethic and a way of doing business.
- Whoever works with people who can tell their stories, everyone has to encourage people that are leaders or passionate about the environment/conservation, we have to encourage them to lead events, tell their stories, talk in the media. They usually need a little push and I think everyone can help push them. The people that work in the organizations can push the people that are out there doing it every day.
- We are doing pretty good job – My struggle right now is how do I better connect with teachers. We have 10 different school districts, 80 different elementary.

- Create a positive connection through direct experience and get past the topic to the Conservation Action.
- Connect people with the existing programs that are out there. Get out and find out what the challenges are and what it going on and how some issues have been solved and what attempts have been made so you can deal with challenges. Get people who people like to provide leadership and encourage collaboration.
- Things are happening – plug into it!
- Make sure it is linked with STEM/STEAM initiatives. It resides inside that overall shell, if they are liked it lends strength to both. I haven't heard too much against STEM/STEAM from conservation professionals but there is some coming out of the science profession as a whole and it is very popular so you should capitalize on that. So, if STEM/STEAM is what everyone is talking about, then get in there even if it is not perfect. We'll see what the next generation or decade brings but don't shy away from it right now.
- I'm not necessarily aware of formal EE programs so I don't know what those curriculums look like but anything we can do to get kids excited about outdoors, conservation and climate change is imperative.
- You could go about it in one of two ways….develop an organization modeled after my own organization and develop lessons, materials, professional development for teachers or have ICEC become the pivotal center of EE by leveraging existing networks and programs and by injecting EE into STEM festivals and science teacher conference and other venues that might be receptive to it.