Striving for Excellence

An Overview of Yosemite National Institutes' Educational Framework & Evaluations

Yosemite National Institutes

"Are We the Best We Can Be?"

As a learning community, Yosemite National Institutes challenged itself to answer this difficult question. With over 30 years of experience, we have considerable evidence that our science-based environmental education programs change students' lives in a positive way, and can instill a lifelong commitment to conservation of natural resources and encourage them to pursue careers in scientific fields. Like so many other environmental educators, we had informal assessments by internal staff and participants, but lacked a formal independent evaluation of our programs. Without knowing exactly where we were, it was difficult to identify progress, success, and areas for improvement as we aimed to increase our programs' impact on the 30,000 young people we serve every year.

This document has two parts:

1. Present Yosemite National Institutes' (YNI) educational program and framework, as well as the milestones highlighting our educational evolution.

2. Share key findings and recommendations from two evaluations commissioned by YNI and conducted by faculty and students from Stanford University's School of Education in 1998-1999 and 2001-2002.

Following each evaluation, YNI has responded to the evaluation findings in a variety of forms: creating trainings, adapting and updating curricula, and forming new educational partnerships. The evaluations have been a springboard for educational improvement and innovation within the organization and the field of environmental education.

YNI's Educational Program

As a Park Partner of the National Park Service, YNI has campuses in three parks: Yosemite Institute in Yosemite National Park, CA; Headlands Institute in Golden Gate National Recreation Area, CA; and Olympic Park Institute in Olympic National Park, WA.

The Field Science Program

Over 30,000 youths from over 500 K-12 public and private schools experience our programs each year. YNI's participants are different ages, and they come from varying backgrounds and communities. Across all campuses, roughly 60% of the schools are public schools; the other 40% are private. Yosemite Institute and Olympic Park Institute serve mostly students of middle school age and older. Headlands Institute serves mostly K-5 students. Approximately 50% of the students are Caucasian, over 20% are Hispanic, around 12% are Asian-American, and roughly 8% are African-American. One third of all schools involved in the program, representing approximately 10,000 students, receive scholarships from YNI to attend its programs.

Teachers who bring their classes to YNI believe in the value of learning that takes place outside a classroom. Schools attend YNI for one- to five-day field science programs; a typical program is three to five days long. YNI program staff work closely with classroom teachers before the trip so that the YNI curriculum supports the teachers' classroom objectives.

School groups divide into hiking groups – twelve to fifteen students, a school chaperone and/or a schoolteacher – and each hiking group is assigned to a YNI field science educator. Each day, the YNI educator orients the group to the day's activities, which are always planned around a central teaching theme. Areas of study depend on the campus location, but usually include general ecology, forest ecology, earth science, plant and animal communities, or watershed studies. Activities take place primarily outdoors, but can also occur in indoor settings such as the lab.

While at YNI, students explore the natural world, learn scientific principles, form a closer community with their classmates, and gain a deeper understanding of their role as stewards, which they bring back to their classrooms and communities. YNI's goal is to inspire in young people a personal connection to the natural world and responsible actions to sustain it.

Other Programs

In addition to its field science program for schools, YNI extends its mission by also offering pre- and post-trip classroom visits, professional development for teachers, summer youth programs, adult and family field seminars, and community outreach programs.

The Core Educational Framework

YNI constructs each program around the Core Educational Framework, which is composed of three central themes: Developing a Sense of Place, Understanding Interconnections, and Fostering Stewardship. These themes unite the three campuses by providing a common foundation. YNI's theme-based approach reflects current beliefs about what constitutes best practices in science education reform. Thematic teaching weaves the separate educational activities of a day and week into larger, transferable learning.

Evolving the Framework

The Core Educational Framework is evolving as YNI reviews its role within the larger continuum of student experience. This involves taking into account what students bring with them to YNI such as cultural experience, cognitive development stages, and the curriculum students are studying in school. With this information, YNI field science educators select appropriate and challenging activities that meet students' needs and result in the desired outcomes of improved classroom performance, increased responsible environmental behavior, and enhanced personal and inter-personal relationships.

A Continuum of Learning

The following timeline shows major educational milestones, including organizational initiatives that inform our education goals.

1990: YNI initiates the Core Educational Framework to unite its curriculum.

Fall 1997: Ongoing revisions to the Core Educational Framework are completed.

May 1998: YNI launches its scholarship and outreach program known as the Diversity Initiative. DI begins to influence educational goals.

October 1998: YNI commissions Stanford University School of Education faculty and graduate students to assess its programs over the 1998-1999 school year, as a one-year pilot study.

September 2000: "Raising Standards in Environmental Education," the Executive Summary of the 2000 Stanford Evaluation is published. YNI receives validation on its strengths and understands the need to evolve its programs in light of its changing demographics and new education theory.

March 2001: Education Committee re-evaluates the impact of the Diversity Initiative and begins to formally integrate it into the educational fabric of the organization.

April 2001: National Park Service and YNI hold a summit to work towards common goals by sharing educational program information.

Spring 2001: YNI awarded $2.5 million in U.S. Department of Education funding for a full evaluation of its programs by the Stanford evaluation team, and student scholarships.

July 2002: Results of the 2002 Stanford Evaluation, "Changing Lives: Summary of a Comprehensive Evaluation of Yosemite National Institute's Programs with Recommendations for its Science-based Environmental Education," are published.

November 2002: YNI and National Geographic Education Foundation partner to improve tools and methods for assessing student learning.

YNI formally integrates both the Diversity Initiative and the Internal Diversity Initiative into its educational goals.

December 2003: Release a new update of the Core Educational Framework, shifting its focus to students and their home communities, given YNI's understanding of its role in the larger context of students' life experiences.

Key Evaluation Findings & Recommendations

A pilot 2000 Evaluation and a full 2002 Evaluation by faculty and students from Stanford University's School of Education yielded substantial information about YNI's programs. For the pilot study, researchers spent almost 200 hours observing programs and interviewed teachers, instructors, and campus education directors, as well as over 30 schoolteachers. For the 2002 study, they greatly expanded their research to include approximately 850 observation hours, interviews with 34 schoolteachers, focus groups with 170 students, and formal and informal interviews with instructors and campus education directors.[1]

Some program areas were unique to each study, while others were examined by both. As expected, YNI has both successes and challenges to share with the environmental education learning community.

Key findings from the evaluations are arranged thematically: Engaging Students, Increasing Relevancy, Learning Life Lessons, and Impacting Classroom Teachers. If applicable, evaluator recommendations and YNI's actions follow each finding.

> "My students will never be the same after this trip. I have really seen what a 'school without walls' can do for kids. Our school is surrounded by tall fences to keep out the gangs."
>
> – High school teacher, Leuzinger High School

[1]For more information about evaluation methodologies, see Appendix A.

Engaging Students

Student-Centered & Inquiry-Based Learning

YNI is committed to student-centered and inquiry-based instruction, the basis for building a personal and practical awareness of natural systems, which is the foundation of environmental education. Inquiry-based learning is encouraged in the science education field, which includes the National Science Education Standards. YNI adapted an approach for inquiry-based learning in non-formal science programs, which includes developing investigative questions, understanding the scientific process, and performing student-selected as well as teacher-selected scientific research.

Evaluators found that, overall, 77% of the observed field science programs contained some elements of inquiry. This is greater than in traditional classroom settings. However, the amount and quality of inquiry varied by the science orientation of the instructor and campus, as well as the realities of a YNI field experience, which is constrained by time, physical setting, and material resources. [2002 Evaluation]

Recommendations

- Build among all YNI educators a clearer understanding of the philosophy and application of inquiry in its programs.

YNI Actions

- Adjust the Core Educational Framework to reflect the additional time needed to study fewer topics in greater depth with this approach.
- Supplement existing staff training with increased applications for the teaching in the field, and increase peer observations.

Multiple Intelligences

Of particular interest to YNI are students' verbal participation and YNI educators' use of pedagogical techniques that address multiple intelligences. These have remained consistently high since the first evaluation. In 100% of programs, evaluators observed that at least three out of eight intelligences were addressed (e.g., verbal-linguistic, bodily-kinesthetic, visual-spatial).[2] [2002 Evaluation]

High Student-Engagement Rate

The 2000 evaluation found that virtually all students were active and engaged in the learning process, a unique and laudable outcome. Several different areas provided evidence: First, over 93% of all students actively communicated during activities; second, the percentage of student engagement was 90%; and third, the ratio of boy talk/girl talk was 0.96.[3] The number of times girls spoke during programming was virtually equal to the frequency that boys spoke. This is a marked contrast from traditional classroom settings. (Experts in this area note that the more students talked and worked together, the higher their gains on standardized tests.) Notable as well is that not only were students "on task" participants, where they actively communicated and participated in activities, they were also genuinely enthusiastic and happy. [2000 Evaluation]

[2]The eight intelligences are: verbal-linguistic, interpersonal, intrapersonal, bodily-kinesthetic, musical, visual-spatial, mathematical-logical, and naturalistic.

[3]For a table showing evidence of equity, see Appendix B, Table 1.

Increasing Relevancy

YNI's students come from a wide range of ethnicities, races, and ages, as well as a diversity of socioeconomic and geographic backgrounds. Educating all students about our environment and national parks requires the ability to make the YNI experience relevant to students' homes, communities, and classrooms, so that lessons learned at YNI transfer to the experiences students have and decisions they make in school and at home. Like many others, addressing greater diversity in participants has been an enormous area of challenge and growth for the organization.

To support educators in meeting the needs of diverse students, YNI has dedicated substantial resources to diversity training. Staff training days included such programs as "Cultural Information," and "Appropriate English Language Learner Techniques." However, conversations with staff suggest that, while educators found trainings information-rich and indicated their intentions to use this new knowledge in programming, many still needed help to implement training insights into daily activities. [2002 Evaluation]

Recommendations

- Provide assistance to educators to implement their diversity training into their daily teaching.
- Use opportunities, such as pre- and post-trip classroom visits and community programs, to encourage students to connect their YNI experience back to their communities; during these visits, also gather information about communities to inform programs.

YNI Actions

- Evolve the Core Educational Framework to address the greater diversity of participants.
- Continue to provide training and follow-up support to build the cultural competence and awareness of its educators.
- Integrate culturally relevant topics and approaches.
- Develop systems for gathering information about students' experiences, (e.g., access to public parks/open spaces, information on local environmental issues, class- or school-wide initiatives).
- Dovetail with YNI's Internal Diversity Initiative so that the whole organization is learning more about the cultural backgrounds of our students.

Learning Life Lessons

Stewardship

Stewardship of the natural and built world is one of YNI's core educational themes. YNI models different ways of being good stewards within the national park community by using sustainable energy (where possible), conserving water and electricity, recycling, and working with the National Park Service to develop ongoing research and restoration projects. Through this modeling, YNI seeks to inspire students and teachers to develop similar activities in the classroom and home community.

YNI is faced with two primary challenges in teaching stewardship: moving beyond appreciation of the natural world and presenting environmental issues in a value-fair manner. While some high-quality stewardship education was observed, the specific definition of stewardship and corresponding teaching activities often varied among instructors. Evaluators found that this variation in stewardship education can be partially attributed to requests from visiting schools. For example, on pre-trip forms, schools requested different degrees of stewardship. [2002 Evaluation]

Additionally, because of an organizational preference to approach environmental issues in a manner that considers multiple perspectives and encourages individuals to make their own decisions, some YNI educators felt unprepared to address these discussions confidently and so avoided them. [2002 Evaluation]

Recommendations

Evaluators recommend that YNI move beyond "appreciation" and increase the concrete examples of stewardship that can be effectively implemented in its programs. In addition, YNI should provide students with even more opportunities to explore stewardship with real-world examples such as service learning projects, debates, and decision-making that will help students learn these skills and transfer them to their home life.

YNI Actions

- Develop and give full-day training on teaching environmental issues from a critical perspective.
- Increase collaboration with National Park Service on habitat monitoring and restoration projects.

Communication

The YNI experience seems to have a major positive effect on the academic and home communities of students. Communication and group problem-solving skills taught at YNI were, according to schoolteachers, put to use by students in their classrooms. The improved skills that students develop at YNI programs strengthen their classroom community and can also directly improve student academic performance. [2000 Evaluation]

Impacting Classroom Teachers

Based on interviews with participating teachers, it appears that one of YNI's potentially most powerful long-term impacts is how influential the YNI experience, instructors, and educational methods are on classroom teachers.[4] In some instances, the YNI program content and/or pedagogy is so effective and relevant that it becomes a part of the teacher's daily classroom activity.[5] In many instances, participating schools build a substantial part of their own curriculum around the YNI experience. [2000 Evaluation]

YNI offers formal training to classroom teachers in a week-long professional development course. In a survey, 100% of teacher participants in these YNI professional development programs felt they were provided access to valuable content and pedagogy that could apply directly to their classroom teaching. This is likely due to YNI's inclusion of some key success factors in the professional development program, including creating a support network for participants, scheduling follow-up events and providing the extended training. [2002 Evaluation]

"My students now seem more aware of themselves and the critical importance of their own place on this planet."

– 5th grade teacher,
San Francisco Day School

[4]As the 2000 Evaluation noted, "YNI emphasizes excellence in its hiring, training and developing of instructors. All instruction occurs in small-group settings; the teaching staff is remarkable. As a group, YNI instructors are informed, committed professionals dedicated to the continuing development of their craft."
[5]For a table showing examples of program integration and changes in teachers, see Appendix B, Table 2.

Implications for the Field

Evaluators emphasized that YNI should consider sharing the successes and challenges encountered throughout our change process. YNI has a unique opportunity, perhaps obligation, to disseminate what we have learned through this process with those working in environmental and formal educational settings. Both internal and external evaluation findings could serve as the basis for research publications, editorial submissions, and educational symposia.

Recommendations

The YNI experiential learning approach has untapped significance for the larger field of educational pedagogy, in particular, YNI's high levels of student participation and school retention. The YNI model can offer insight into how schools may more fully utilize non-formal centers as learning resources. [2000 Evaluation]

Related to this, it would also be beneficial to give more attention to developing a portrait of how YNI programs affect teaching and learning in participating schools. This might be done by a more intensive longitudinal study. Research on non-formal science education has not considered how effects on students are, or could be, leveraged by schoolteachers over time. [2000 Evaluation]

YNI Actions

- YNI shares its evaluation information with other educators, including this educational overview.
- YNI is working on a plan to enable independent graduate students the opportunity to study our programs.

Ensuring Success: Continued Program Evaluation

Yosemite National Institutes is committed to ongoing evaluation of its educational programs in order to deliver the best programs possible. Each of YNI's three campuses uses internal evaluation tools to provide ongoing feedback regarding instructor performance, staff training effectiveness and overall program quality. Evaluation documents are completed by supervisors, staff and participants.

While the 2002 evaluators commended YNI for its responsiveness to the first study's findings, they did recommend concentrating resources and training efforts on a smaller number of targets and examining program impact over a greater length of time. As they noted, rarely can an organization expect to successfully re-train educators and implement and assess the effects of training and implementation on participants all within the scope of one academic year.

In response, YNI has created an integrated evaluation plan, which includes a rotating internal audit of the three campuses' programs, field testing of new common internal evaluation tools, and planning for the next external evaluation. We look forward to the opportunity to learn from and improve our students' experiences.

Appendix A

Evaluation Methods

The evaluation teams employed a mixed-methods research process including observations, document analysis, surveys, focus groups and interviews. This evaluation targeted all of Yosemite National Institutes' (YNI) educational programs at all three campuses: Headlands Institute, Olympic Park Institute, and Yosemite Institute.

A thorough review of YNI's program documents as well as materials provided by schools' preceded site visits. These documents included pre-trip questionnaires, training materials, evaluation forms, funding proposals, and curricular materials.

All observations were recorded on protocol sheets, which closely mirror protocols developed by the National Science Foundation for mixed-methods evaluation. These observation protocols provide a structure for systematically examining the nature of YNI's learning experiences.

2000 Evaluation Details

In the pilot 2000 study, evaluators spent more than 185 hours in the field, mostly at Headlands Institute, assessing a variety of schools and programs, as well as participating in educational staff trainings and interviewing teachers, instructors, and campus education directors. Interviews were conducted with 31 schoolteachers.

2002 Evaluation Details

For the full 2002 evaluation, evaluators spent more than 850 hours at all three campuses observing YNI's primary offering, field science programs, as well as educational staff trainings, bilingual programs, teen programs, and teacher professional development programs.

Program Observation

Campus	Field Science	Other Programs
Headlands Institute	22 Days	19 Days
Olympic Park Institute	24 Days	13 Days
Yosemite Institute	30 Days	9 Days

Interviews/Focus Groups/Surveys

The team conducted interviews, focus groups and surveys in order to understand the relationship between YNI and schools and to see how YNI programs affect teachers and students back in their classroom settings.

Interview Details
34 Teacher Interviews
170 Students in Focus Groups
Teacher Surveys During and After Professional Development Training
Interviews and Informal Conversations with Educators
Formal and Informal Conversations with YNI Education Managers

Appendix B

Table 1.

Evidence of equity determined through YNI program observations during the 1998-99 academic year. [2000 Evaluation]

Percentage of Different Students Talking	Percentage of Student Engagement	Ratio of Boy Talk/Girl Talk	Ratio of Teacher Centered/Student Centered Activities
93% (78/83 Students)	90%	0.96/1 (255/266)	3/2 (56/40)
8 days of program evaluations	69 data points over 16 days of program observations	18 days of program observations	21 days of program observations

Table 2.

Examples of program integration and changes in teachers. Data were derived from 31 Headlands Institute teacher participant interviews conducted during the 1998-99 academic year. [2000 Evaluation]

Pedagogy	Curriculum	Behavorial/ Skills-Based	Personal Changes
Increased use of student-led activities Use of "mind maps"* and multiple intelligence theory to organize and structure curriculum Improved questioning techniques Use of group challenges and community-building activities	Implementation of environmental kit-based programming Student-generated research Emphasis on multidisciplinary and thematic teaching Emphasis on real-world science content and activities Connecting school and informal content	Increased stewardship at school site Able to introduce new content with enhanced effectiveness Participation in other environmental education trips	Broader view/new awareness of science resources Increased confidence in own science teaching Enhanced perceptions of individual students' abilities

*Mind maps are visual arts displays depicting the central theme and planned activities for a specific day.

Acknowledgements

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Yosemite National Institutes is a Park Partner and assists the National Park Service in caring for special places preserved by and for the American people so that all may experience our heritage.

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