

EXECUTIVE SUMMARY

Stanford University Study Finds That Environmental Education Programs Can Support Positive Youth Development-Related Outcomes

A research team from Stanford University conducted a systematic mixed-studies review of the literature to identify environmental education (EE) program outcomes that contribute to positive youth development (PYD).¹ PYD is an approach to youth education that aims to strengthen skills and attributes that contribute to youth wellbeing, such as resilience, self-efficacy, and the ability to get along with others. One of the most popular models for PYD is known as the 5Cs, which emphasizes competence, confidence, connection, caring, and character, all of which work together to support contribution.² Many of these goals are common in EE programs, suggesting there is likely to be substantial overlap in program outcomes.

After following the conventional steps of a systematic review to search for relevant studies,³ the Stanford researchers identified 60 peer-reviewed articles that reported on PYD outcomes among young people following participation in an EE program. Researchers coded 45 PYD-related outcomes using the 5C model and synthesized key findings. The programs included in the analysis took place around the world, occurred in a range of formal and nonformal settings, involved diverse audiences (from birth to 24 years), and generally lasted between one and nine months. All 60 studies reported some level of positive findings with competence, confidence, and connection being the most common outcome categories. The team also examined reported program strategies for educational approaches that practitioners should consider when designing or adapting EE programs to better support PYD-related outcomes.

What Is Positive Youth Development, and How Does It Relate to Environmental Education?

The research team noted that conceptual frameworks and definitions for understanding PYD emphasized several core concepts focusing on participants' strengths, personal competencies, and the brain's malleability or ability to change. After-school programs, youth clubs and camps, and community-based

activities and settings that achieve PYD goals tend to purposefully address some of the personal and social assets in four domains that improve adolescent wellbeing and development (Box 1).⁴ Team-building programs such as sports activities and nonformal youth clubs such as Scouts and 4-H are often designed to strengthen those assets through activities, modeling, and community service.



BOX 1:
Personal and Social Assets that Facilitate Positive Youth Development

Physical development: good health habits and health risk management skills

Intellectual development: life skills, vocational skills, critical thinking and reasoning, decision-making skills, cultural knowledge and skill

Psychological and emotional development: positive self-regard, emotional regulation skills, coping skills, conflict resolution skills, self-efficacy, optimism and realism, personal responsibility, sense of larger purpose in life, strong moral character, planfulness, and time efficiency

Social development: good relationships with peers and adults, sense of social networks, attachment to prosocial institutions, commitment to civic engagement, and ability to navigate multiple cultural contexts



Environmental education programs are likely to also achieve these outcomes, even if such outcomes are not specifically part of their objectives. The research team aligned the 5C outcomes of PYD programs (competence, confidence, connection, caring, and character) with EE objectives: environmental awareness, knowledge, attitudes, skills, and citizen participation (Table 1). Although the EE field as a whole has not made a concerted effort to consistently recognize PYD outcomes, residential EE programs more often focus on several PYD assets, and some researchers have noted the overlap between EE and PYD. This review suggests ways to improve alignment between the two fields.

Table 1. Practices and Intended Outcomes of PYD and EE, Compared

Positive Youth Development, 5Cs (LERNER ET AL., 2005)	Environmental Education Basic Principles (UNESCO, 1978)	Environmental Education Strategies (MONROE ET AL., 2008)
Competence	Knowledge and Skills	Convey information
Confidence	Awareness and Attitudes	Improve skills
Connection	Awareness and Attitudes	Build understanding
Caring	Awareness and Attitudes	Build understanding
Character	Awareness and Attitudes	Enable sustainable actions



KEY FINDINGS



The 60 articles analyzed in this research review were published over the course of a decade (2011 to 2021), occurred mostly in North America (29) and Europe (15), and engaged participants who were mostly secondary-school age: 10-to-14 years old (43) and 15-to-19 years old (32). The programs tended to be extended in length, with 22 lasting between 1 and 8 months, and 14 extending for an entire academic year. Youth often interacted with these programs on a weekly, not daily, basis. Forty programs were offered through a school system, while 21 were sponsored by parks or nonprofit organizations. These basic descriptors largely align with the broader field of PYD research.

KEY FINDINGS #1

All 60 (100%) of the EE studies reported some level of positive findings for the five PYD outcomes, with competence, confidence, and connection being the most frequently reported outcomes.

- Table 2 illustrates how many of the studies reported each PYD outcome category and provides examples of the individual codes assigned to each category.
- Caring was the least-frequently documented PYD outcome as PYD programs generally refer to caring for human beings, rather than for the physical world and animal inhabitants that are often the focus of EE programs.
- PYD and EE outcomes occurred simultaneously in 32 studies suggesting that synergy is possible and appropriate. In these programs, PYD assets were strengthened while building environmental knowledge, pro-environmental attitudes and behaviors, and/or connection to nature.

Table 2. Frequency of PYD Outcomes Based on the 5Cs Model

PYD Outcome (5Cs Category)	# of Studies (n = 60)	Definition from Lerner et al.	Examples of Associated Codes
Competence	40	Positive view of one's actions in domain-specific areas including social, academic, cognitive, and vocational.	Academic achievement, social development, leadership, career planning, critical thinking, decision-making
Confidence	33	An internal sense of overall positive self-worth and self-efficacy; one's global self-regard, as opposed to domain-specific beliefs.	Self-efficacy, agency, empowerment, sense of accomplishment or pride, action competence
Connection	25	Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship.	Social connections, sense of belonging, sense of community
Character	16	Respect for societal and cultural rules, possession of standards for appropriate behaviours, a sense of right and wrong (morality), and integrity.	Civic responsibility, citizenship, moral development
Caring	7	A sense of sympathy and empathy for others.	Forming caring relationships, empathy for others, care and consideration for others



KEY FINDINGS #2

Researchers identified 7 frequently used educational practices from the 60 studies. EE practitioners could consider implementing those practices when developing or adapting their programs to support PYD outcomes. The practices include the following:

- emphasizing relevance through creating meaningful connections to the daily lives of young people, such as through place- and community-based approaches;
- developing opportunities for leadership through programs that are youth-centered or youth-led;
- providing opportunities for teamwork and collaboration;
- focusing on environmental action or action strategies;
- conducting part or all of the program in a nature-rich and/or outdoor setting;
- giving explicit, direct instruction to develop desired, targeted knowledge, skills, and dispositions; and
- creating interdisciplinary and holistic programs that blend science and engineering with environmental issues and the humanities, such as art, theatre, music, and literature.



KEY FINDINGS #3

Most of the studies identified in this review were based in Western countries and many used qualitative research designs to obtain self-reported outcomes with youth from 10 to 19 years of age. This suggests additional research opportunities could be explored.

- More than 75% of the articles were based on studies conducted in North America, Australia, New Zealand, and Europe. Additional work conducted in Africa, Asia, and Latin America would help enrich understanding of the intersections between EE and PYD outcomes.
- More than half of the studies used qualitative research designs, such as case studies, action research, and community-based research. Few studies used strategies such as photo elicitation, word association, visual mapping, and repertory grids. Diversifying research designs would augment the knowledge base of EE and PYD connections.
- The majority of studies involved young people between the ages of 10 and 19, even though the range for PYD includes birth to 24 years. Additional work on both ends of this range would be helpful.
- Two-thirds of the studies reported on programs that occurred in schools, where participation may be required. Additional work that explores participant motivation and those who engage voluntarily may lead to new insights.

Summary

Findings from the Stanford team's review indicate that EE programs can effectively support and encourage PYD outcomes, and vice versa. EE programs may be particularly effective at achieving outcomes related to competence and confidence; in addition, programs designed to build problem-solving skills and efficacy can work toward strengthening confidence, connection, and contribution. If the caring outcome is defined broadly, it may be met with a connection-to-nature focus. It is unclear what percentage of the programs in the 60 reviewed studies required youth participation or to what extent the programs attracted and sustained interest from those with the freedom to choose to attend; therefore, it is challenging to know whether the outcomes are likely to be achieved by all who participate. To this point, exploring youth motivation could generate additional research findings.

The overlap between these two fields suggests the following:

- Youth educators from 4-H, Scouts, and other institutions that value PYD, could consider leveraging EE programs and strategies to achieve PYD-related goals. By building toward an environmentally literate citizenry, EE encourages youth to contribute to the wellbeing of their community and environment.
- EE programs that include civic engagement and action projects could explicitly assess for PYD outcomes. This would facilitate clearer connections between the fields and perhaps allow for deeper understanding of which strategies are effective at achieving desired outcomes.

¹ Ardoin, N. M., A. W. Bowers, A. Kannan, and K. O'Connor. 2022. "Positive Youth Development Outcomes and Environmental Education: A review of research." *International Journal of Adolescence and Youth* 27(1), 475–492. <https://doi.org/10.1080/02673843.2022.2147442>

² Lerner, R. M., J. V. Lerner, J. B. Almerigi, C. Theokas, E. Phelps, S. Gestsdottir, S. Naudeau, H. Jellic, A. Alberts, L. Ma, L. M. Smith, D. L. Bobek, D. Richman-Raphael, I., Simpson, E. D. Christiansen, and A. von Eye. 2005. "Positive Youth Development, Participation in Community Youth Development Programs, and Community Contributions of Fifth-Grade Adolescents: Findings from the first wave of the 4-H study of positive youth development." *The Journal of Early Adolescence* 25(1), 17–71. <https://doi.org/10.1177/0272431604272461>

³ For more information on the research review process used in this study and how it relates to the reviews completed for other outcome areas in the eeWORKS project, see the methods section Ardoin, Bowers, Kannan, and O'Connor (2002) (see n.1) and [From Anecdotes to Evidence: Diving into the Research Review Process](#).

⁴ Adapted from Eccles, J. and J. A. Gootman, (Eds.). 2002. *Community Programs to Promote Youth Development*. National Research Council and Institute of Medicine, Washington DC: National Academy Press. <https://doi.org/10.17226/10022>