

Academic Performance of Texas 4-H Alumni

Alexandra Skrocki

Darlene Locke

Gary Ellis

Montza Williams

Follow this and additional works at: <https://scholarsjunction.msstate.edu/jhse>



Part of the [Education Commons](#), and the [Social and Behavioral Sciences Commons](#)

Academic Performance of Texas 4-H Alumni

Alexandra Skrocki

Clemson University

Darlene Locke

Gary Ellis

Texas A&M University

Montza Williams

Texas A&M AgriLife Extension Service

Academic achievement is one of the central outcomes targeted by all major models of youth development. Youth who succeed academically are well-positioned to thrive through meaningful careers, positions of community leadership, and fulfilling personal and family lives (Arnold, 2018). As such, the Texas Higher Education Coordinating Board (THECB) has established a set of ambitious goals for the postsecondary education of Texas youth. Almost in tandem with the establishment of these goals, outcomes of academic achievement in relation to membership in Texas 4-H have become a keen interest for stakeholders. Through our study, we compared postsecondary academic achievement of Texas 4-H Alumni who graduated from high school in 2013, 2014, and 2015 against the Texas population. Data sources included the National Student Clearinghouse (NSC), the THECB, and an online survey. Results found that Texas 4-H alumni substantially outperformed the population of Texas higher education students on completion rates, baccalaureate graduation rates, marketable skills, student debt, ACT scores, and dual credit enrollment. To provide further direction and context, opportunities for Texas 4-H to build upon this success are provided in the recommendations section.

Keywords: 4-H, impact, postsecondary academic success, college preparation, marketable skills, youth development

Introduction

The Texas Higher Education Coordinating Board (THECB) has established a set of challenging yet attainable goals for postsecondary education students. Its 60x30TX program defines four specific goals vital to the future of the state: attainment of certificates and degrees, timely completion rates, development of marketable skills, and minimizing student debt (THECB, 2020). According to THECB, “a more educated workforce leads to innovation and expansion and more economic opportunities” for the state of Texas (THECB, 2020). The postsecondary academic success of Texas students is likely impacted by both formal education and out-of-

school time (OST) programs (Ratkos & Knollenberg, 2015; Witt & Caldwell, 2018). Involvement in positive OST programs is known to lead to a variety of developmental outcomes, such as decreased failure and dropout rates, reduced school absences, increased academic achievement, and increased rates of enrollment in postsecondary education (e.g., Mahoney et al., 2005). As such, we compared the postsecondary academic success of Texas 4-H alumni to that of the overall population of Texas.

Context: 4-H and Academic Success

Texas 4-H is the youth-serving component of the Texas University System, the Texas Extension Service, and the Prairie View Cooperative Extension Program. Through the network of Extension agents and volunteers, the 4-H program is accessible to youth in all 254 counties through 250 county Extension offices. In 2018, enrollment in Texas 4-H reached 496,849 youth: 39% from cities, 32% from towns/suburbs, and 29% from rural communities. Youth in grades 3–5 made up the largest group, with 44% of youth reached, followed by 31% from kindergarten to 2nd grade, 13% from grades 6–8, and 12% from grades 9–12 (Texas 4-H, 2023). Ranging from robots to rabbits, Texas 4-H offers life-skill-gaining experiences to youth from kindergarten to 12th grade, preparing them for adulthood.

As the largest youth-serving organization in Texas, Texas 4-H has notable potential to impact success. Since 1908, youth involved in Texas 4-H have gained life skills through hands-on activities supported by caring adults. The longevity of Texas 4-H has resulted in a long history of cultivating and developing positive outcomes (Texas 4-H, 2023). Texas 4-H's OST, community-centered approach is assumed to facilitate developmental outcomes for youth that promote academic success (Arnold et al., 2016; Borden et al., 2014; Lerner & Lerner, 2013; Ratkos & Knollenberg, 2015) and is sustained through adulthood.

Academic success is among the developmental outcomes targeted by youth development frameworks, including (1) targeting life skills (Hendricks, 1996), (2) essential elements (Kress, 2005), and (3) developmental assets (Search Institute, 1997, 2007). While these frameworks slightly differ on anticipated outcomes, they all emphasize the positive impact the integration of these frameworks can have within OST involvement. Within the context of this study, success refers to the accomplishment of a valued goal. It is important to note that academic success and related outcomes are fostered both in-school and out-of-school settings. The literature surrounding the academic development of adolescents within school settings is vast and of a different nature. In this context, the in-school-time literature revolves around a particular school's culture, standardized testing, and educational gaps between and among special populations (Lindholm-Leary & Borsato, 2006; MacNeil et al., 2009; York et al., 2019).

Study Objectives

For the purposes of this study, we addressed and evaluated the academic performance of 4-H alumni according to goals for Texas higher education established by THECB (THECB, 2020).

1. Do Texas 4-H alumni perform better academically than the population of Texas postsecondary education students, with respect to the four THECB 60x30 goals:
 - a. 60x30 educated population (certificate or degree completion rates)?
 - b. Four-year baccalaureate degree graduation rates?
 - c. Marketable skills (gainfully employed or in graduate school)?
 - d. Debt per first-year wages (debt as a ratio to first-year income)?
2. Are Texas 4-H alumni better prepared for postsecondary education entry than the population of Texas higher education students?
 - a. Do Texas 4-H alumni have higher ACT scores at entry?
 - b. Do Texas 4-H alumni have higher levels of dual credit enrollment?

Method

Populations

Populations included (a) all students who graduated from Texas high schools between 2013 and 2015 and (b) 4-H alumni who graduated during the same years (two or more years of membership). Data for the first group were retrieved from the THECB databases. Data for the latter group were purchased from the National Student Clearinghouse (NSC).

A subset was comprised of 4-H alumni who had received scholarships administered by the Texas 4-H Foundation. Annually, the Texas 4-H Foundation awards \$2.5 million dollars in scholarships to over 200 graduating high school seniors. Scholarships are awarded based on an applicant's academic record, 4-H experience, and financial need.

We also surveyed 4-H alumni from the same graduation years to supplement data not available from the NSC. The sampling frame was assembled from email lists of all Texas 4-H alumni who graduated high school in 2013–2015. We sent questionnaires and reminders to this sample and specific email lists maintained by Texas 4-H.

Data Sources

THECB and its 60x30 Educated Population Goals

Established by the Texas Legislature in 1965, the THECB represents the highest authority in the state on matters of public higher education (THECB, 2023). The THECB's recent establishment of the "60x30TX" initiative provided the framework for our study. THECB also provided data

allowing us to compare the academic and professional success of Texas 4-H alumni with the overall population of Texas students. Under the 60x30TX plan, the THECB aspires to achieve a status in which 60% of Texas residents between the ages of 25–34 have earned a postsecondary credential by the year 2030. The 60x30TX initiative also establishes that 550,000 students in 2030 will complete a certificate or degree from a Texas college or university, graduates will have marketable skills, and a student’s debt at graduation will be less than 60% of their first-year wages.

NSC

NSC is the nation’s “leading provider of educational reporting, data exchange, verification, and research services” (National Student Clearinghouse, 2023, para. 1). NSC is a not-for-profit, non-governmental organization. It was founded in 1993 by the nation’s higher education community. The NSC Research Center (National Student Clearinghouse Research Center, 2023) maintains a StudentTracker database of nationwide enrollment records and accompanying data showing the completion of postsecondary certificates and degrees. We secured 4,259 4-H alumni records, including 566 4-H scholars from the high school graduation years of 2013–2015.

Supplemental Questionnaire

The NSC data did not include records needed to evaluate select facets of the academic performance of 4-H alumni: ACT scores, student debt, dual credit enrollment, and marketable skills. Thus, we conducted a supplemental survey of 4-H alumni. The questionnaire included 19 questions and was administered through an online Qualtrics application. Questions fell under the categories of basic information, academic performance, and preparation. Skip logic was used to ensure appropriate questions were answered by each participant. Twelve questions were multiple choice, and the remaining seven were slider scales. The questionnaire link was distributed by the Texas 4-H office. We received responses from 719 4-H alumni, including 201 4-H scholars.

Data Analysis

Data management strategies (i.e., extracting relevant data and aggregating NSC data per student) were used to organize the data into formats necessary for analysis. Data were then cleaned by evaluating central tendency, dispersion, and shape of distributions. Visual displays of data were constructed to facilitate a comparison of the academic performance of the population of Texas students with the 4-H alumni and 4-H alumni who were recipients of the major Texas 4-H Foundation scholarships. We calculated 95% confidence intervals (CI) for each subgroup (i.e., 4-H alumni and 4-H scholars) to facilitate comparison among the three groups (THECB population, 4-H alumni, and 4-H scholars).

Results

60x30TX Goal 1: Do Texas 4-H alumni perform better academically than the population of Texas postsecondary education students?

Figure 1 contrasts the Texas population with 4-H alumni and scholars on a four-year completion rate for a certificate or a degree. The progressive target established by THECB for this cohort is shown as a horizontal line. In order to achieve the 60x30TX goal, THECB projected that this cohort should achieve a completion rate of 45%. As Figure 1 shows, the population of Texas students fell slightly below the progressive target, 43.6% (3% below the progressive target). In contrast, the rate of success of 4-H alumni and 4-H alumni scholars substantially exceeded the progressive target: 78% completion (73% above the progressive target) and 88.8% completion (97% above the progressive target) for 4-H alumni and 4-H scholars, respectively. Thus, our data suggest that 4-H alumni and 4-H scholars perform much better than the overall population of Texas students.

Figure 1. Four-Year Completion Rate (2013–2015)

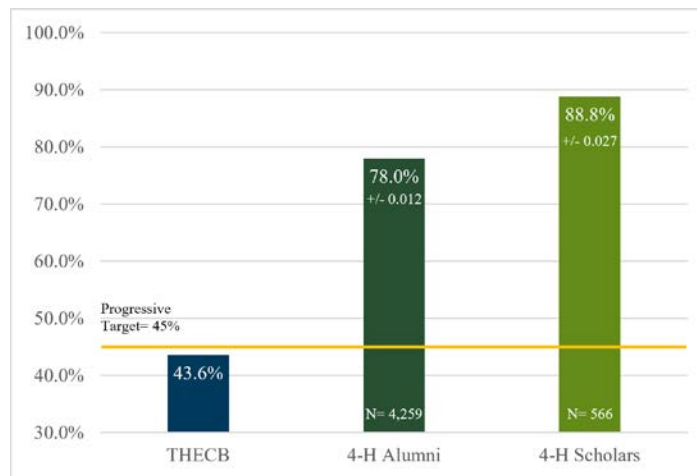


Figure 2 contrasts the Texas population with 4-H alumni and scholars on a five-year completion rate for a certificate or a degree. The THECB progressive target is increased to 46.4% for the five-year completion rate. Figure 2 shows the statewide population falling below the target at 43.7% (6% below the progressive target). In contrast, the 4-H alumni and 4-H alumni scholars are achieving a five-year completion rate of 95.2% (105% above the progressive target) and 97.4% (110% above the progressive target), respectively. Results, then, indicate that 4-H alumni and 4-H scholars have a much higher five-year completion rate than the overall population, as reported by THECB.

Figure 2. Five-Year Completion Rate (2013-2015)

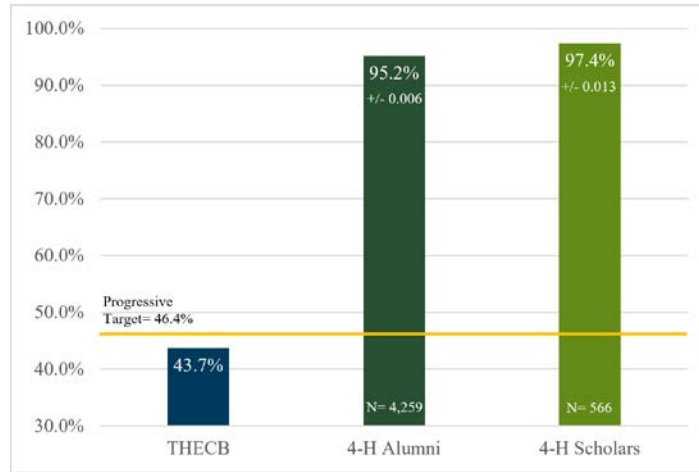


Figure 3 compares four-year graduation rates for a baccalaureate degree. Almost 39% of the Texas population is completing a baccalaureate degree in four years. 4-H alumni are performing much better. Eighty-three percent of 4-H alumni and 89.8% of 4-H alumni scholars are graduating with baccalaureate degrees in four years.

Figure 3. Four-Year Graduation Rate for a Baccalaureate Degree (2013-2015)

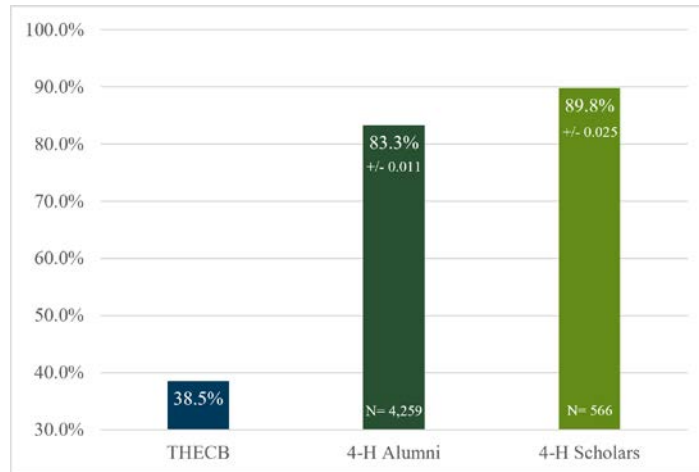


Figure 4 compares the acquisition of marketable skills. THECB defines marketable skills as being either enrolled in graduate school or employed one year following graduation with a certificate or a degree. The progressive target established by THECB for this metric is 100%, shown as a horizontal line in Figure 4. 4-H alumni who graduated from postsecondary education developed marketable skills at a rate of 98% (2% below the target), and 4-H alumni scholars developed those skills at a rate of 98.1% (1.9% below the target). The Texas population rate was 78.5% (22% below the target). None of the three groups are achieving the target of 100% marketable skills, but 4-H alumni and 4-H scholars are developing marketable skills at a higher rate than the overall population of Texas students.

Figure 4. Development of Marketable Skills (2013-2015)

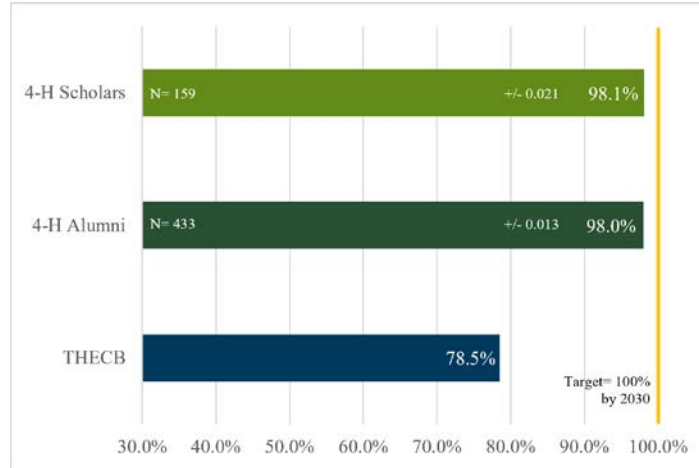
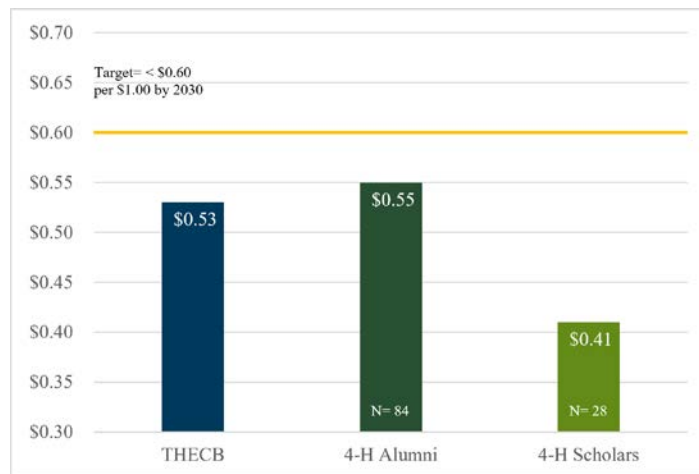


Figure 5 contrasts the Texas population with 4-H alumni and scholars on the average ratio of student loan debt to first-year gross income. For this metric, only high school graduates from 2013 were evaluated because data for other years were not available. The progressive target established by THECB for this metric is \$0.60 cents, shown as the horizontal line in Figure 5. All three populations are already under the target line for this metric, with \$0.53 for the Texas population and \$0.55 (95% CI [.39, .72]) and \$0.41 [.14, .67] for 4-H alumni and 4-H alumni scholars, respectively. Thus, although the mean debt ratios for 4-H alumni and scholars are less than the Texas population, these means do not differ significantly from the population mean. It is important to note that CIs are greatly influenced by the sample size. In this analysis, sample sizes were only $n = 84$ and $n = 28$ for 4-H alumni and scholars, respectively. The large range between the upper and lower limits of a CI is an empirical certainty when sample sizes are small.

Figure 5. Average Ratio of Debt to First-Year Income (2013)



Are Texas 4-H alumni better prepared for postsecondary education entry than the population of Texas higher education students?

In addition to the goals of THECB's 60x30TX, we evaluated ACT scores and enrollment in dual credit to compare preparation for postsecondary achievement. Questionnaire participants reported ACT scores based on recollection. In order to help participants recall their scores, the components of the test, scoring range, and average ACT score for Texas Residents in 2015 were provided. The question regarding dual credit was a simple yes or no question, consistent with the way dual credit is reported by THECB.

Figure 6 contrasts the Texas population with 4-H alumni and scholars on ACT scores. In 2015 for the state of Texas, the average ACT score was 20.9. Possible scores range from 1–36. The mean ACT scores of 4-H alumni were higher: 24.59 for 4-H alumni and 26.59 for 4-H scholars. It is important to note that the sample sizes were small ($n = 399$ for 4-H alumni; $n = 133$ for 4-H scholars). With these sample sizes, the 95% CI for ACT means were 24.12 to 25.07 for 4-H alumni and 25.88 to 27.31 for 4-H scholars. Thus, both 4-H alumni and 4-H scholars scored significantly higher than the Texas population on the ACT.

Figure 6. Composite ACT Scores (2013-2015)

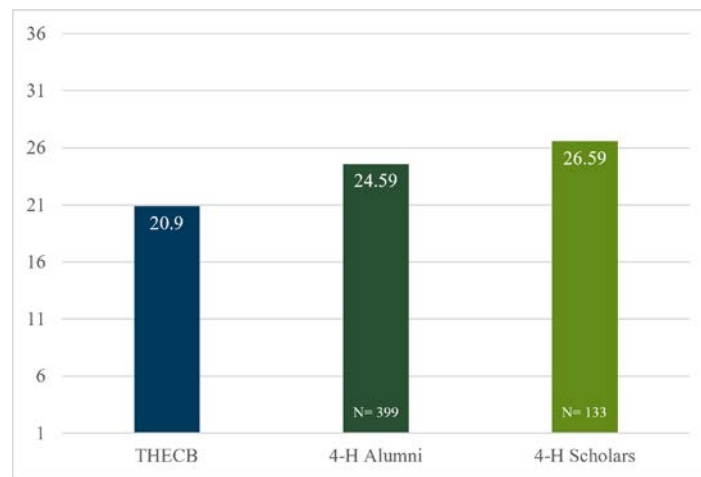
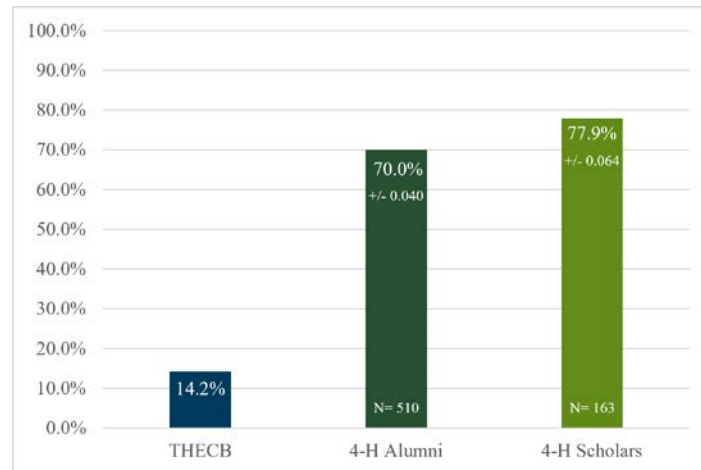


Figure 7 shows the percentage of dual credit enrollment. Although THECB 60x30TX priorities do not include an explicit goal for four or five-year completion, THECB monitors graduation rates and considers efficient completion of degrees to be very important. Fourteen percent of the Texas population enrolled in dual credit courses. Enrollment of 4-H alumni and 4-H scholars was much higher at 70% and 77.9%, respectively. Earning dual credit accelerates progress toward degrees and thereby advances the efficiency of the higher education system.

Figure 7. Percent of Students Enrolled in Dual Credit (2013-2015)



Discussion

Results consistently indicate that 4-H alumni and 4-H scholars are succeeding in postsecondary education at rates substantially exceeding the overall Texas population. Perhaps the most dramatic difference is in the four-year completion of a certificate or degree. THECB established a progressive target of 45% for the years for which data are available. The population of Texas postsecondary students fell slightly short of that goal, 43.6%. In contrast, both 4-H alumni and 4-H scholars substantially exceeded that goal, 78% and 88.8%, respectively. Differences were similarly dramatic for 5-year completion rates and for rates of completion of baccalaureate degrees. Both 4-H populations also performed better in acquiring marketable skills. Scholarships funded by the 4-H Foundation yield graduates less burdened with student loan debt. 4-H alumni and 4-H scholars score significantly higher on the ACT than Texas students overall.

Consistent with existing literature, within the substantial limits of attributing causation from correlational research, findings from our study support the notion that involvement in positive OST programs impacts developmental outcomes relating to academic motivation and success.

Similar results have been reported. In their study of preparation for postsecondary education, Ratkos and Knollenberg (2015) found “4-H can help meet the need of preparing students to navigate the demands, challenges, and rigor of college life.” Likewise, Hetherington (2020) found that Michigan 4-H alumni are more likely to have earned a college degree six years after high school than their same-age peers.

Limitations are notable. Data on completion rates for certificates or degrees were obtained from well-established sources widely used for policy decisions, but analyses involving ACT scores, dual credit, and debt-to-first-year income required a new self-report questionnaire of 4-H alumni. The precision of our measures is largely impacted by the accuracy of the memories of participants who were asked to recall information from several years previous. It is not clear if

people could accurately recall an ACT score from an exam completed as many as seven years earlier. Also, it is notable that not all postsecondary institutions report data to NSC. Thus, parameters based on NSC data are calculated from the universities that do report to NSC.

Recommendations for Practice

This research informs management action. For Texas 4-H, the following actions indicate appropriate initiatives.

1. Establish and manage in-house goals for 4-year and 5-year graduation rates, debt ratios, ACT scores, and dual-credit enrollment for 4-H members.
2. Develop curricula and train-the-trainer programs for 4-H alumni to address debt to first-year income ratios.
3. Create a 4-H alumni database to maintain up-to-date contact information. The management of this database would assist in improving response rates for future research.
4. Conduct research to determine the influence degree of engagement in 4-H (e.g., length of time, type of involvement, and program quality) has on academic preparation, postsecondary success, and marketable skills.

References

- Arnold, M. (2018). From context to outcomes: Adolescent thriving in 4-H youth development programs. *Journal of Human Sciences and Extension*, 6(1), 141–160.
<https://doi.org/10.54718/NBNL5438>
- Arnold, M., Silliman, B., Bledsoe, L., Diaz, L., Johnson, J., Lauxman, L., & White, D. (2016). *4-H Program Quality and Accountability Taskforce PYD Frameworks Committee final report* [Unpublished manuscript].
- Borden, L. M., Perkins, D. F., & Hawkey, K. (2014). 4-H youth development: The past, the present, and the future. *Journal of Extension*, 52(4), Article 35.
<https://tigerprints.clemson.edu/joe/vol52/iss4/35>
- Hendricks, P. (1996). *Targeting life skills model*. Iowa State University Extension.
- Hetherington, C. (2020). *Michigan 4-H Alumni College Access Project: 2019 results*. Michigan State University Extension.
https://www.canr.msu.edu/4h/uploads/files/College%20Access%20Report_2019_fixed.pdf
- Kress, C. (2005). Essential elements of positive youth development. In *Strengthening positive youth development environments* (pp. 20–23). University of Wisconsin Extension 4-H Program.
- Lerner, R. M., & Lerner, J. V. (2013). *The positive development of youth: Comprehensive findings from the 4-H study of positive youth development*. National 4-H Council.

- Lindholm-Leary, K., & Borsato, G. (2006). Academic achievement. In F. Genesee, K. Lindholm-Leary, W. M. Saunders, & D. Christian (Eds.), *Educating English language learners: A synthesis of research evidence* (pp. 176–222). Cambridge University Press.
- MacNeil, A. J., Prater, D. L., & Busch, S. (2009). The effects of school culture and climate on student achievement. *International Journal of Leadership in Education*, 12(1), 73–84. <https://doi.org/10.1080/13603120701576241>
- Mahoney, J. L., Larson, R. W., Eccles, J. S., & Lord, H. (2005). Organized activities as development contexts for children and adolescents. In J. Mahoney, R. Larson, & J. Eccles (Eds.), *Organized activities as contexts for development: Extracurricular activities, after-school and community programs* (pp. 3–22). Lawrence Erlbaum Associates.
- National Student Clearinghouse. (2023). *About the Clearinghouse*. <https://www.studentclearinghouse.org/about/>
- National Student Clearinghouse Research Center. (2023). *About us*. <https://nscresearchcenter.org/aboutus/>
- Ratkos, J., & Knollenberg, L. (2015). College transition study shows 4-H helps youth prepare for and succeed in college. *Journal of Extension*, 53(4), Article 24. <https://doi.org/10.34068/joe.53.04.24>
- Search Institute. (1997). *40 developmental assets for adolescents (ages 12-18)*. Search Institute.
- Search Institute. (2007). *40 developmental assets for adolescents (ages 12-18)*. Search Institute.
- Texas 4-H. (2023). *About Texas 4-H*. <https://texas4-h.tamu.edu/about/what-is-4-h/>
- Texas Higher Education Coordinating Board. (2020). *2015-2030 Texas higher education plan, 60x30TX*. https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/the_cb-60x30-strategic-plan/
- Texas Higher Education Coordinating Board. (2023). <https://www.highered.texas.gov/>
- Witt, P. A., & Caldwell, L. (Eds.). (2018). *Youth development: Principles and practices in out-of-school time settings*. Sagamore-Venture.
- York, T. T., Gibson, C., & Rankin, S. (2019). Defining and measuring academic success. *Practical Assessment, Research, and Evaluation*, 20(1), Article 5. <https://doi.org/10.7275/hz5x-tx03>

Alexandra Skrocki is a Ph.D. student at Clemson University where she is focusing on Youth Development. Her applied research interests include positive youth development and evaluation of out-of-school time programs. Please direct correspondence about this article to Alexandra Skrocki at askrock@g.clemson.edu.

Darlene Locke is an assistant professor and extension specialist (youth development) with Texas A&M AgriLife Extension. She has served with the Texas 4-H Youth Development program for more than 30 years, with 11 of those as director of the Texas 4-H Conference Center.

Gary Ellis is a professor and Bradberry chair for the Agricultural Leadership, Education, and Communications Department at Texas A&M. He has an extensive track record of publications,

presentations, and keynotes addressing immediate experiences for youth, tourists, and other recreationists.

Montza Williams is the current Texas 4-H Program Director with over 30 years of service. Prior to his current position, he served as an assistant professor and Extension youth development specialist coordinating Texas 4-H leadership and citizenship programs for Texas 4-H.