1 From Quality to Outcomes: A National Study of Afterschool STEM Programing

The article titled "From Quality to Outcomes: A National Study of Afterschool STEM Programming" by Allen et al. (2019) explores the impact of STEM-focused afterschool programs on youth outcomes across the United States. The study highlights the significant benefits of extracurricular activities, particularly those centered around science, technology, engineering, and math (STEM).

One of the key findings is that participation in high-quality STEM afterschool programs leads to substantial improvements in students' STEM engagement, identity, career interest, and knowledge. These programs also foster critical thinking, perseverance, and positive relationships with adults and peers. The hands-on, inquiry-based nature of these activities helps students develop a deeper understanding of STEM concepts and practices, making learning more relevant and engaging. Additionally, the study underscores the importance of program duration, with students participating for four weeks or more reporting the most significant gains.

Moreover, the article emphasizes the synergy between STEM learning and interpersonal skills. Extracurricular activities that integrate STEM with interpersonal skills not only enhance academic outcomes but also support the development of essential life skills such as teamwork, collaboration, and problem-solving. This holistic approach to education helps prepare students for future success in both academic and professional settings, highlighting the critical role of afterschool programs in bridging the STEM opportunity and achievement gaps.

Reference: Allen, P. J., Chang, R., Gorrall, B. K., Waggenspack, L., Fukuda, E., Little, T. D., & Noam, G. G. (2019). From quality to outcomes: A national study of afterschool STEM programming. *International Journal of STEM Education*, *6*(1), 1–21. https://doi.org/10.1186/s40594-019-0191-2

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2 Participation in School-based Extracurricular Activities and Adolescent Adjustment

The article “Participation in School-Based Extracurricular Activities and Adolescent Adjustment” by Darling et al. (2005) explores the impact of school-based extracurricular activities (ECAs) on adolescent adjustment, including academic performance and attitudes toward school. The study found that participation in ECAs is positively associated with higher grades, more favorable attitudes toward school, and greater academic aspirations, even after controlling for demographic variables and prior adjustment. The study also found that students involved in non-sport ECAs generally exhibited better academic outcomes than those involved in sports or those not participating at all.

The authors argue that ECAs offer structured environments that promote autonomy, identity development, and social integration, which are crucial for adolescent development. These activities provide opportunities for youth to engage with peers and adults outside the classroom, fostering emotional bonds to school and reinforcing adult-sanctioned values. Despite small effect sizes, the consistent positive associations between ECA participation and academic outcomes underscore the developmental value of these programs. The findings support the notion that ECAs can serve as a protective factor, particularly for at-risk youth, by enhancing school engagement and reducing the likelihood of negative behaviors.

Reference: Darling, N., Caldwell, L. L., & Smith, R. (2005). Participation in school-based extracurricular activities and adolescent adjustment. *Journal of Leisure Research*, *37*(1), 51–76. https://doi.org/10.1080/00222216.2005.11950040

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3 A Meta-Analysis of After-School Programs That Seek to Promote Personal and Social Skills in Children and Adolescents

"A Meta-Analysis of After-School Programs That Seek to Promote Personal and Social Skills in Children and Adolescents" by Durlak et al. (2010) examines the impact of after-school programs (ASPs) on the personal and social development of students. The meta-analysis reveals that participation in ASPs leads to significant improvements in self-perceptions, bonding to school, positive social behaviors, school grades, and academic achievement. Additionally, these programs are associated with reductions in problem behaviors. The study highlights the importance of incorporating four recommended practices for effective skill training: sequenced, active, focused, and explicit (SAFE). Programs that followed these practices showed more positive outcomes compared to those that did not.

The benefits of clubs and extracurricular activities are evident in the findings of this meta-analysis. ASPs provide structured environments where students can engage in meaningful activities supervised by adults, fostering personal and social growth. These programs offer opportunities for young people to develop new skills, build relationships, and enhance their self-esteem and self-efficacy. Furthermore, the study underscores the importance of program quality and the implementation of SAFE practices to maximize the positive impact on youth development. By participating in high-quality ASPs, students can experience holistic growth that supports their academic, social, and emotional well-being.

Reference: Durlak, J. A., Weissberg, R. P., & Pachan, M. (2010). A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology, 45*(3–4), 294–309. https://doi.org/10.1007/s10464-010-9300-6

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4 Is Extracurricular Participation Associated with Beneficial Outcomes? Concurrent and Longitudinal Relation

"Is Extracurricular Participation Associated with Beneficial Outcomes? Concurrent and Longitudinal Relations" by Fredricks and Eccles (2006) explores the impact of high school extracurricular activities on adolescent development. The study examines the relationships between participation in school clubs, organized sports, and prosocial activities, and various developmental outcomes among African American and European American youths. The findings indicate that participation in these activities is generally associated with positive academic, psychological, and behavioral outcomes. Specifically, involvement in school clubs and sports is linked to higher grades, educational expectations, and self-esteem, as well as lower levels of depression and externalizing behavior. Additionally, participation in prosocial activities is associated with higher educational status and civic engagement in young adulthood.

The benefits of clubs and extracurricular activities are highlighted through their role in fostering academic and psychological adjustment. These activities provide structured environments where adolescents can develop a sense of belonging, build supportive relationships, and enhance their self-worth. The study also emphasizes the importance of breadth of participation, suggesting that involvement in a variety of extracurricular contexts can lead to more favorable developmental outcomes. By engaging in multiple activities, students have opportunities to develop a range of competencies and interests, which can contribute to their overall growth and success. The findings underscore the value of extracurricular participation in promoting holistic development and preparing adolescents for future educational and civic involvement.

Reference: Fredricks, J. A., & Eccles, J. S. (2006). Is extracurricular participation associated with beneficial outcomes? Concurrent and longitudinal relations. *Developmental Psychology, 42*(4), 698–713. https://doi-org.ezproxy.lib.ou.edu/10.1037/0012-1649.42.4.698

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5 In School for After School: The Relationship between Extracurricular Participation and School Engagement

In a 2020 study, Karlyn J. Gorski explores how participation in extracurricular activities—specifically high school debate—enhances students' school engagement across behavioral, emotional, and cognitive domains. Drawing on ethnographic observations and interviews with members of two debate teams in Chicago Public Schools, Gorski demonstrates that debate fosters strong peer and adult relationships (emotional engagement) and cultivates a deeper appreciation for learning (cognitive engagement). Students described their debate teams as "families" and safe spaces where they could express themselves, receive personalized feedback, and develop leadership skills. These relationships and experiences helped students feel more connected to their schools and more motivated to engage with academic content.

Gorski also highlights how debate encourages cognitive engagement by promoting self-directed learning, critical thinking, and intrinsic motivation. Students reported that debate helped them value the learning process, become more resilient, and apply their debate-acquired skills to classroom settings. The study suggests that the structure and culture of certain extracurricular activities—especially those offering sustained adult mentorship, skill-building, and leadership opportunities—can significantly enhance students' academic engagement and performance. These findings underscore the importance of considering the quality and design of extracurricular programs when aiming to support positive youth development and educational success.

Reference: Gorski, K. J. (2021). In school for after school: The relationship between extracurricular participation and school engagement. *Sociological Forum*, *36*(1), 248–270. https://doi.org/10.1111/socf.12671

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6 SEL-Focused After-School Programs

In their article, Hurd and Deutsch (2017) explore the role of after-school programs in fostering interpersonal skills among students. These programs, which historically aimed to support positive youth development, are uniquely positioned to promote these skills due to their flexibility, focus on personal growth, and opportunities for meaningful relationships with adults. The authors emphasize that high-quality after-school programs can enhance leadership skills such as self-confidence, empathy, teamwork, and problem-solving. Key to this success are strong student-staff relationships, structured yet flexible environments, and practices that foster a sense of belonging and personal agency.

Despite their potential, after-school programs face challenges such as inconsistent attendance, high staff turnover, and pressure to prioritize academic outcomes over students' personal development. Hurd and Deutsch (2017) argue that policy should support the professionalization of after-school staff, provide better evaluation tools focused on continuous improvement, and recognize student personal growth as a critical outcome alongside academic achievement. By investing in staff development and creating supportive evaluation frameworks, after-school programs can more effectively nurture the interpersonal skills that help youth thrive both in and out of school.

Reference: Hurd, N., & Deutsch, N. (2017). SEL-focused after-school programs. *The Future of Children*, *27*(1), 95–115. http://www.jstor.org/stable/44219023

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Microsoft. (2025). *Copilot* (May 13 version) [Large language model]. https://copilot.microsoft.com/

7 STEM Clubs and Science Fair Competitions: Effects on Post-Secondary Matriculation

In the article by Sahin (2013), the impact of STEM-focused extracurricular activities—particularly science fairs and after-school clubs—on students' post-secondary education choices is explored within a Texas-based charter school system. The study found that students who participated in multiple years of science fairs and engaged in STEM-related clubs such as Robotics, MATHCOUNTS, and Science Olympiad were significantly more likely to pursue STEM majors in college. These after-school programs provided students with hands-on, inquiry-based learning experiences that fostered scientific reasoning, collaboration, and a sense of belonging, all of which contributed to increased interest and persistence in STEM fields.

The findings suggest that structured extracurricular STEM activities not only enhance academic achievement but also play a crucial role in shaping students' career aspirations. Participation in these clubs allowed students to explore real-world applications of science and mathematics, develop problem-solving skills, and experience intrinsic motivation through achievement and recognition. The study emphasizes the importance of offering various engaging and sustained STEM opportunities outside the traditional classroom to cultivate long-term interest in STEM careers, especially among underrepresented and economically disadvantaged students.

References: Sahin, A. (2013). STEM clubs and science fair competitions: Effects on post-secondary matriculation. *Journal of STEM Education: Innovations and Research, 14*(1), 5–11.

Summarized with the help of Microsoft Copilot.
Microsoft. (2025). *Copilot* (May 13 version) [Large language model]. https://copilot.microsoft.com/