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High-Impact Service-Learning

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College Student Reflections on Out-of-School Programming for Youth with Type 1 Diabetes

Eddie Hill, Ron Ramsing, Christina Aguilar, Rowan Williams, and Carla Cox

Abstract
This qualitative study examined college students' reflections on their participation in high-impact, service-learning courses in which they designed, implemented, and evaluated a diabetes day camp for youth with type 1 diabetes (T1D). Situated within a four-year Mountain West university in the United States, the course intentionally integrated collaborative assignments, service-learning, and undergraduate research to address a community need while supporting student learning. Across two academic semesters, eight undergraduate students completed semi-structured written reflections focused on planning, facilitation, evaluation, and personal growth. Data were analyzed using Braun and Clarke's reflexive thematic analysis. Four themes were identified: collaborative experiential learning, understanding and empathy for youth with T1D, creating belonging and supportive communities, and professional growth and program development. Findings suggest that integrating multiple high-impact practices within recreation courses can deepen student learning while expanding responsive, community-based programming for youth with T1D.

Keywords: *high-impact practices, service-learning, community engagement, type 1 diabetes, recreation, undergraduate research*

Aprendizaje y servicio de alto impacto

Reflexiones de estudiantes universitarios sobre programas extracurriculares para jóvenes con diabetes tipo 1

Eddie Hill, Ron Ramsing, Christina Aguilar, Rowan Williams, y Carla Cox

Resumen
Este estudio cualitativo examinó las reflexiones de estudiantes universitarios sobre su participación en cursos de aprendizaje y servicio de alto impacto, en los cuales diseñaron, implementaron y evaluaron un campamento diurno para jóvenes con diabetes tipo 1 (T1D) (por sus siglas en inglés). El curso, desarrollado en una universidad de cuatro años en la región de Mountain West (Estados Unidos), integró intencionalmente tareas colaborativas, aprendizaje y servicio e investigación estudiantil para atender una necesidad comunitaria, al igual que fomentó el aprendizaje de los estudiantes. A lo largo de dos semestres académicos, ocho estudiantes universitarios completaron reflexiones escritas semiestructuradas centradas en la planificación, la facilitación, la evaluación y crecimiento personal. Los datos se analizaron mediante el análisis temático reflexivo de Braun y Clarke. Se identificaron cuatro temas: aprendizaje experiencial colaborativo; comprensión y empatía hacia los jóvenes con T1D; creación de comunidades de apoyo y sentido de pertenencia; y crecimiento profesional y desarrollo de programas. Los hallazgos sugieren que la integración de diversas prácticas de alto impacto en cursos de recreación puede profundizar el aprendizaje de los estudiantes, a la vez que amplía la oferta de programas comunitarios adaptados a las necesidades de los jóvenes con T1D.

Palabras clave: *prácticas de alto impacto, aprendizaje y servicio, vinculación comunitaria, diabetes tipo 1, recreación, investigación de pregrado*

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Introduction

Youth living with type 1 diabetes (T1D) encounter distinct physical, emotional, and social challenges that influence daily functioning, psychosocial well-being, and broader developmental outcomes. Managing this chronic condition requires constant attention to blood glucose monitoring, insulin administration, nutrition, physical activity, and symptom management. This ongoing burden can contribute to elevated stress, social stigma, feelings of difference and isolation, anxiety related to managing their condition, and increased vulnerability to health-related risks (Flatt et al., 2020; Ginnard et al., 2021; Monaghan et al., 2022). Globally, an estimated 9.5 million individuals live with T1D, including approximately 1.85 million youth under the age of 20, many of whom face an increased risk of health complications when away from home (Gregory et al., 2022; Ogle et al., 2025).

Medical specialty camps and related recreation programs have demonstrated positive effects on diabetes self-management, peer support, social connection, and emotional well-being (Bultas et al., 2016; Kietaibl et al., 2024; Nagl et al., 2022; Williams et al., 2024). These programs provide medically supported, developmentally appropriate environments where youth can build confidence, reduce feelings of isolation, strengthen independence, and engage in meaningful recreation alongside peers with shared lived experiences.

Although organized camp and out-of-school recreation programs are well-positioned to support positive youth development and well-being, youth with diabetes participate in traditional recreational programming at lower rates than their peers without diabetes (Huerta-Uribe et al., 2023). This disparity may be driven by the logistical and psychosocial challenges of managing T1D in settings that may lack the specialized knowledge to support intensive medical needs that change by the moment (Majidi et al., 2021; Monaghan et al., 2022). Consequently, the complexities of T1D management may exceed the perceived or actual capacity of general recreation staff (Schmeltz & Kasim, 2024). Following diagnosis, youth may also encounter barriers that affect their participation in recreation and physical activity, including fear of hypoglycemia, concerns about glucose levels, perceived stigma, and limited knowledge of how to prevent or manage hypoglycemia (Huerta-Uribe et al., 2023). Few youth with T1D meet the recommended physical activity guidelines (Tanenbaum et al., 2024). These constraints can limit access to play, recreation, and peer-based developmental experiences essential to social–emotional well-being (Flatt et al., 2020; Ginnard et al., 2021; Sallay et al., 2021).

Addressing disparities in access to recreational programming requires a well-prepared workforce that is capable of serving medically complex populations. Higher education programs in recreation, outdoor education, leadership, and related fields play an important role in this preparation. This is especially relevant given that many recreation graduates work in camp and youth-serving settings (Seaman et al., 2017), and the number of recreation-related academic programs in the United States has continued to grow across areas such as outdoor recreation, education, recreation management, and leadership (Turner et al., 2022). Integrating college students with camp professionals and medical staff may offer reciprocal benefits by expanding program capacity for youth while also providing students with meaningful practice-based learning. Despite this growth, a critical question remains about how recreation students translate classroom learning into practice in complex, real-world settings, such as medical specialty camps. Recreation education scholars emphasize that professional readiness requires applied learning, professional preparation, and intentional connections between theory and field-based experience (Cottrell & Cottrell, 2020; Mahon & Smith, 2020).

One promising approach to preparing workforce-ready professionals is the intentional integration of high-impact practices (HIPs) into undergraduate education. HIPs, such as collaborative projects, community-based learning, diversity and global learning, capstone projects, and undergraduate research, offer a robust framework for enhancing student engagement and educational effectiveness (Association of American Colleges and Universities, n.d.; Kuh, 2008). These HIPs offer structured experiential learning opportunities that can strengthen student learning while simultaneously addressing community needs. Within recreation and allied disciplines, HIPs provide students with a pathway to bridge the gap between theory and practice in authentic community contexts (Hill et al., 2023). By addressing real-world needs

alongside community partners, students develop teamwork, communication, problem-solving, and reflective capacities that are essential for ethical, inclusive, and evidence-informed programming. Through these experiences, HIPs prepare future recreation professionals to address complex social and health-related challenges (Hill et al., 2023; Mahon & Smith, 2020; Marten et al., 2025).

While HIPs are widely recognized for their ability to bridge the gap between theory and practice (Kuh, 2008; Hill et al., 2023), their influence on recreation students working with medically complex populations, such as youth with T1D, remains underexplored. Questions remain regarding recreation students' perspectives on inclusion, professional responsibility, and program facilitation in medically sensitive contexts following theory-to-learning experiences.

To address this gap, this study explored the experiences of college students participating in HIP-based courses designed to support youth with T1D. Specifically, the study examines how integrating applied learning and reflective practice influences students' perspectives on their learning and their professional readiness to serve a medically complex population in a community-engaged setting. This research seeks to inform pedagogical strategies that better prepare the future recreation workforce for inclusive, evidence-informed practice.

Methods

This study was conducted in partnership with the Center for Community-Engaged Learning (CCEL) at a four-year Mountain West university in the United States. The institution prioritizes access and inclusion, serves a high proportion of first-generation college students, and focuses on enhancing student engagement. Participants were enrolled in an undergraduate course in Adventure Programming, in which students collaboratively designed, implemented, and evaluated a day camp tailored to youth with T1D. The course intentionally integrated multiple HIPs into a curriculum designed to prepare preservice recreation professionals to serve communities through the design, implementation, and evaluation of outdoor and community-based programs. The course aimed to help students: (a) develop conceptual knowledge related to community and recreation programming, (b) apply that knowledge through the development of a program plan, and (c) deepen their understanding through implementation, evaluation, and guided reflection. Throughout the semester, students also received diabetes education from a diabetes educator. HIPs included collaborative assignments, service-learning, and undergraduate research, integrated within a single semester-long experience.

Course Context

In this CCEL-designated course, students developed both theoretical and applied understandings of Adventure Programming within outdoor and community recreation. Through individual and collaborative learning experiences, students explored program planning, preparation, facilitation, and implementation. By the end of the course, students created a comprehensive program plan that integrated the theoretical foundations and logistical components essential to effective outdoor and community recreation programming. The course also included an applied adventure program field experience. As part of the service-learning component, students supported Recreate, Educate, Advocate, and Climb Higher (REACH Weber), a year-round, campus-based recreation program for youth aged 11–17 living with T1D and their families. REACH Weber is volunteer-run and utilizes community members and grants for its success. Health-care professionals, service organizations (e.g., Lions Club), and other community partners help to run the year-round diabetes program. The community members also offer continuous mentorship for students in classes who connected to REACH Weber through service-learning. Over the course of the semester, each student contributed approximately 18 hours of community-engaged service.

The diabetes day camp functioned as a scaffolded capstone experience. Students worked in small groups to complete major course requirements, collaborated with community partners, and participated in the dissemination of evaluation findings. Through these experiences, the course integrated several HIP

elements, including common intellectual experiences, collaborative assignments and projects, diversity and global learning, service-learning, undergraduate research, and capstone work (Marten et al., 2025).

Across two academic semesters, eight of 10 students completed semi-structured, written reflections at the conclusion of the course. Reflection prompts invited students to describe their experiences with the planning, facilitating, and evaluation of the diabetes day camp, as well as their perceived learning outcomes, challenges, and personal growth. Written reflections were intentionally selected as the primary data source because they aligned with the study's purpose of understanding students' perceptions of their learning experiences and professional development. The semi-structured format ensured that all participants addressed the same core areas while allowing them to elaborate on experiences they perceived as most meaningful. Accompanying sub-questions provided opportunities for deeper reflection and richer descriptions of their experiences. Responses were narrative in nature and demonstrated substantial depth and engagement.

Five primary prompts, each with sub-questions, were used to further explore the service-learning experience: 1) Identify and describe a collaborative learning experience you had, either in a study group, team-based assignment, or cooperative project in this course. 2) Identify and describe a field-based "experiential learning" experience you have participated in with community partners as part of this course. 3) Describe your experience with undergraduate research/program evaluation in this course. How did this experience engage you in evaluation and research? 4) How did this experience impact your understanding of diversity and difficult differences, such as living with chronic conditions including diabetes? 5) What is the biggest takeaway from your overall course experience?

Data Analysis

Data were analyzed using Braun and Clarke's reflexive thematic analysis (Braun & Clarke, 2022). The research team engaged in repeated readings of participants' written responses to build familiarity with the dataset and then generated initial codes across the full set of responses. Codes were iteratively compared and organized into broader patterns, which were subsequently reviewed, refined, and defined as themes. Throughout the process, the team moved recursively between individual responses and the dataset to ensure that the analysis remained grounded in participants' accounts and aligned with the study purpose.

Although the dataset consisted of brief written responses rather than interview transcripts, reflexive thematic analysis was appropriate because it supported the identification of patterned meaning across participants' accounts while acknowledging the interpretive role of the researchers. Consistent with Braun and Clarke's (2022) approach, the study did not rely on triangulation or participant validation as evidence of a single, objective interpretation of the data. Rather, themes were developed through the research team's sustained and reflexive engagement with the dataset and were understood as interpretive products of that analytic process rather than objective findings to be verified. Accordingly, member checking was not used as a means of validating the researchers' thematic interpretations. Instead, analytic rigor was supported through sustained engagement with the data, reflexive interpretation, and collaborative discussion among the research team. Quotations are presented verbatim, with minor spelling corrections made only to improve readability.

Trustworthiness and Reflexivity

Trustworthiness was strengthened through prolonged engagement with the data, peer review of coding and theme development, attention to disconfirming evidence, and maintenance of an audit trail documenting analytic decisions. Rather than relying on convergence across multiple data sources as a primary marker of credibility, the research team emphasized transparency and rigor throughout the analytic process. Because members of the research team were also involved in program development and evaluation, reflexivity was especially important. The team engaged in ongoing discussions about how their commitments to recreation-based health programming, youth development, and diabetes support might shape their interpretations.

These discussions provided opportunities to question assumptions, consider alternative interpretations, and refine themes through sustained engagement with the data.

Ethical Considerations

The study received university Institutional Review Board approval prior to data collection. Parent or guardian consent and youth assent were obtained in accordance with approved procedures. Participation was voluntary, and responses were de-identified prior to analysis.

Results

Analysis generated four interrelated themes that capture how students constructed meaning from their experiences in both the Adventure Programming course and the diabetes day camp: (1) collaborative experiential learning; (2) understanding and empathy for youth with T1D; (3) creating belonging and supportive communities; and (4) professional growth and program development. Although reflections predominantly emphasized positive and transformative outcomes, several students also identified challenges related to medical responsibility, parent expectations, and program logistics. These tensions highlight the importance of intentional scaffolding, risk management training, and mentorship when engaging students in community-based work with medically complex populations.

Collaborative Experiential Learning

Students consistently identified hands-on, team-based learning as a central and distinguishing feature of the course. Designing, implementing, and evaluating a real-world program required students to move beyond theoretical understanding and engage in applied problem-solving, communication, and adaptability. Many described this experience as more impactful than traditional coursework, as it demanded accountability to both peers and community participants. Student A shared, “It was really beneficial to implement a REAL plan and go through with it because we were able to learn by actually doing it.” Similarly, Student B shared, “There have been many collaborative learning experiences in this class so far but one example that sticks out to me is when we all used the white board to plan out how our day was gonna look. This was a particularly good experience because we were able to collaborate on what we thought the day should look like.” Student C reflected, “It made me realize that combining everyone’s ideas leads to a much better final product in the end. By having multiple perspectives on an issue or task it creates more diversity in the ideas leading to better decisions in the end.” Student D added, “I believe having different personalities and working methods aided us in this situation.” Students emphasized shared responsibility, navigating differing perspectives, and responding to unexpected challenges (e.g., schedule changes and participant needs) as critical to their development. These experiences reflect key elements of HIPs, including active learning, collaboration, and sustained engagement.

Understanding and Empathy for Youth with T1D

Engagement with youth and families living with T1D significantly deepened students’ understanding of chronic illness and its daily implications. Prior to the course, many students reported limited knowledge of T1D; through direct interaction, they developed a more nuanced awareness of the constant vigilance required for disease management and the emotional and social dimensions of living with a chronic condition. Student A shared, “I was never very educated or aware of type 1 diabetes until this course . . . . I did not realize how much these kids go through.” Student B reflected, “I was able to understand the true depths of the disease, the steps that individuals have to take in order to manage it, and how emotionally draining it can be.” Student C emphasized the value of direct interaction, “Conducting the interviews and talking one on one with the participants of the camp was the most helpful factor in understanding what living with T1D is like.” Student D highlighted the potential impact on participation, noting, “I did not realize how limited a child’s life can be if they do not have a parent willing to come with them and instead

just tells them no. This can create patterns in the child's mind that they cannot do things because they are different." Students also described increased empathy for families and a stronger recognition of the importance of designing inclusive, flexible, and supportive recreation environments. These reflections suggest meaningful growth in perspective-taking and cultural humility.

Creating Belonging and Supportive Communities

Students observed that the camp environment fostered a strong sense of belonging, connection, and normalization for youth participants. Opportunities for peer interaction and shared experiences appeared to reduce feelings of isolation often associated with managing T1D. Students frequently described moments when youth expressed joy, confidence, and comfort while around others with similar experiences. Student A highlighted, "My biggest takeaway was how important REACH actually is . . . . Seeing how happy they were and how normal the activities made them feel really opened my eyes." Student B shared, "This space of competence, autonomy, and relatedness allows kids to grow and expand their skills with the reassurance that that thing that usually makes them the odd one out, is the thing that this group all has in common." Student C emphasized connection, "This program benefits kids by providing a space for them to gather and connect with others who have type 1 diabetes. This program helps kids feel like they belong." Student D shared, "One girl that I interviewed told me that nobody at her school understands what diabetes is and that they tease her for her glucose monitor that she must have. She then told me that she loves REACH because she can be herself and not worry about someone asking her 'what's on your arm?'. This made me appreciate the impact of having a community that you belong to." Through these observations, students came to understand recreation not only as activity programming but also as a mechanism for psychosocial support, identity development, and community building.

Professional Growth and Program Development

Students reported substantial growth in professional competencies, including leadership, communication, teamwork, program planning, and evaluation. Many described increased confidence in facilitating activities, making decisions under pressure, and working with medically complex populations. Several reflections connected the experience directly to future career aspirations in recreation, health, or youth development fields. Student A shared, "This experience taught me that I feel more comfortable in a leadership role." Student B shared, "This gave me a great foundation of future programs that I may be planning in a professional career. I now have a pretty good idea of what the before, during, and after research programming can look like." Student C shared, "It has helped me understand that there are more things that go into planning an outdoor outing, trip, excursion, or any activity regarding the recreation industry." Student D reflected, "This experience has taught me how to properly construct a program, particularly in the recreational industry . . . . I believe this class has greatly improved my grasp of how to plan a program in the future. I now possess the skills needed to implement and plan activities when I go into my future career." Additionally, involvement in program evaluation and reflection enhanced students' understanding of evidence-based practice and the importance of continuous improvement. Collectively, these findings suggest that the course not only supported immediate skill development but also contributed to the formation of professional identity and readiness for community-engaged practice.

Discussion and Implications for Practice

This study demonstrates the value of intentionally integrating multiple HIPs within undergraduate recreation courses to advance both student learning and community health goals (e.g., Goff et al., 2020; Hill et al., 2023). The coordinated use of service-learning, collaborative projects, and undergraduate research supported meaningful experiential learning while fostering empathy, professional skill development, and the capacity to design inclusive programming for youth with T1D. For example, integrating a program evaluation provided an additional layer of reflection, allowing students to develop a

deeper understanding of their service-learning project and learning outcomes. The findings suggest that HIP-based course design can promote deep student investment when experiential components are carefully scaffolded and explicitly connected to course content. At the same time, student reflections describing stress and uncertainty underscore important considerations for practice in medically sensitive settings. Clear role delineation, structured reflection, close mentorship, and collaboration with medical professionals appear essential for supporting student well-being and ethical practice. Such support can help mitigate anxiety while strengthening confidence and competence in applied settings.

Diabetes camps have long served as important developmental contexts for youth with T1D by fostering peer connection, normalization, and self-management skill development (John, 1946). Higher education institutions are well positioned to sustain and expand these opportunities by preparing recreation professionals to serve diverse, medically complex populations. University–community partnerships can serve as effective clinical interventions for youth with T1D (Collins et al., 2021). Partnerships among universities, health-care providers, and community agencies offer reciprocal benefits by providing youth with high-quality programming while providing students with robust community-engaged learning experiences. Furthermore, these partnerships help prepare students to become competent recreation professionals who can effectively meet the needs of medically complex campers.

Several limitations should be acknowledged. The study drew on reflections from a small sample within one course at one institution, and the data consisted of written reflections rather than interviews or observations. As a result, the findings should be understood as context-specific and interpretive rather than broadly generalizable. Future research might examine similar HIP-based models across multiple sites, include longitudinal follow-up, or incorporate additional data sources to better understand how service-learning and undergraduate research shape student learning and community outcomes over time. Despite these limitations, the findings offer a practical model for leveraging HIPs to address community needs through recreation and youth development. For faculty and practitioners, the findings highlight the value of intentionally pairing service-learning with evaluation, reflection, and strong community partnerships when preparing students for inclusive and ethically grounded professional practice.

A Community of Practice (CoP) is an effective framework that may help support how these university–community partnerships function and thrive. Wenger (1998) conceptualized CoPs as groups organized around a shared domain, mutual engagement, and shared practices. The REACH Weber CoP program includes participants, health-care providers, volunteers, service organizations, and university students who collectively contribute experiences (e.g., undergraduate research), knowledge, and expertise that support learning. This specific approach is particularly effective because it embeds the high-impact experience when multiple parties (e.g., health-care professionals, students, volunteer organizations) are involved. An additional effective approach is that REACH Weber's mission and vision are also closely aligned with the university, volunteer organizations, and other community partners. Recent research has applied a CoP framework to university-based diabetes camp programming, demonstrating how shared purpose, mutual engagement, and practice-based interaction can support youth outcomes and program delivery (Hill et al., 2026).

Reciprocity within this CoP extends beyond benefits to participants and students; the university has also strengthened sustained partnerships with local hospitals, Lions Clubs, and other service-based organizations through continued collaboration around REACH Weber. The university has a rich and long history of community-engaged learning, which is only amplified through REACH Weber. These long-standing relationships have expanded program capacity, secured additional resources, and enhanced community connections while providing students with repeated opportunities to learn alongside working professionals. In turn, students contribute programming, facilitation, and evaluation support while developing durable skills—such as leadership, communication, professionalism, teamwork, and career readiness—through authentic community-engaged experiences. The CoP perspective frames this [HIP]-integrated service as a reciprocal process in which the university, students, and community partners each contribute resources and expertise while benefiting from the shared, positive impact on youth with T1D and their families.

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