

BREWING INTERDISCIPLINARY COLLABORATION IN HIGHER EDUCATION: THE CENTRO DE ENSEÑANZA TÉCNICA Y SUPERIOR (CETYS) BrewEd INITIATIVE AS A MODEL FOR COMMUNITY-DRIVEN LEARNING

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Abstract

The Centro de Enseñanza Técnica y Superior (CETYS) BrewEd Initiative demonstrates the transformative power of interdisciplinary collaboration by merging entrepreneurship education with the Mexicali region's craft brewing industry. This innovative model transforms local businesses into experiential learning environments, integrating academic theory with hands-on practice. Through co-curricular workshops, industry partnerships, and cultural programs, students gain direct exposure to entrepreneurial challenges while reinforcing community ties and fostering sustainable business practices. Early findings underscore BrewEd's effectiveness in equipping students with applied business skills, fostering awareness of community-driven economic development, and providing a scalable framework for interdisciplinary education. By blending experiential learning with meaningful industry engagement, BrewEd offers a replicable model for universities aiming to connect education, industry, and cultural heritage—contributing to global conversations on entrepreneurship education, sustainability, and community-driven learning.

Keywords: Interdisciplinary Collaboration, Entrepreneurship Education, Experiential Learning, Community Engagement, Sustainable Development

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Introduction

In today's interconnected world, interdisciplinary collaboration is essential for fostering innovation and addressing real-world challenges in higher education. By integrating diverse perspectives and methodologies, universities can create dynamic learning environments that better prepare students for contemporary professional landscapes (Klein, 2010). The Centro de Enseñanza Técnica y Superior (CETYS) BrewEd Initiative exemplifies this approach, merging entrepreneurship education with the Mexicali region's craft brewing industry to provide students with immersive, hands-on experiences that bridge academic theory and practical application.

CETYS Universidad, located in Mexicali, Baja California, is recognized for its commitment to innovation and community engagement. Through initiatives such as the Center for Excellence in Competitiveness and Entrepreneurship (CECE), the university supports programs integrating academic learning with industry-driven experiences. BrewEd embodies this vision by providing students and community members with co-curricular workshops, direct industry involvement, and cultural programming that enhance entrepreneurial skills while fostering deeper connections to the local economy and heritage (CETYS Universidad, 2023).

BrewEd's interdisciplinary framework unites business, cultural studies, marketing, engineering, and sustainability, fostering a holistic educational experience. Through co-creating knowledge with industry professionals and incorporating experiential learning, the initiative enriches students' entrepreneurial understanding while aligning with broader trends in higher education that emphasize university-industry collaboration as a driver of innovation and sustainable development (DeZure, 2010). Additionally, BrewEd builds on educational research highlighting the value of experiential learning in enhancing student engagement and skill acquisition (Kolb, 1984). This model provides a replicable framework for integrating local entrepreneurship ecosystems into academic settings, positioning itself as an exemplary model for bridging education, industry, and community impact.

Theoretical Framework and Conceptual Foundations

The CETYS BrewEd Initiative is anchored in a robust set of educational theories and conceptual frameworks that inform its design, implementation, and scalability. These theoretical underpinnings provide a structured lens through which to understand BrewEd's interdisciplinary, experiential, and community-driven approach to entrepreneurship education.

At the core of BrewEd's model is Kolb's Experiential Learning Theory (1984), which posits that knowledge is created through the transformation of experience. Kolb emphasizes a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. BrewEd exemplifies this cycle by engaging students in real-world entrepreneurial settings where they interact with local brewers, participate in marketing and production processes, reflect on their learning, and propose innovative solutions.

Complementing Kolb's model is Lave and Wenger's (1991) Situated Learning Theory, which asserts that learning is inherently social and context-bound. According to this perspective, students learn best when they participate in authentic practices within a community. BrewEd operationalizes this through the creation of communities of practice, where students, faculty, and industry partners co-construct knowledge and share responsibilities in solving real business challenges. These situated experiences increase the relevance and applicability of academic content.

In addition, BrewEd aligns closely with Place-Based Learning (Gruenewald, 2003), an approach that uses the local community and environment as a starting point to teach concepts in various subjects. This pedagogy emphasizes the importance of grounding learning in the historical, cultural, and economic context of a specific place. By embedding entrepreneurship education within Mexicali's craft brewing industry, BrewEd fosters a deeper connection between students and their regional heritage, thereby enhancing engagement and cultural literacy (Gruenewald, 2003).

Furthermore, BrewEd reflects principles from Entrepreneurial Ecosystem Theory (Isenberg, 2010), which underscores the importance of interconnected institutional actors such as universities, businesses, policymakers, and support organizations in fostering entrepreneurship. BrewEd acts as a catalyst within Mexicali's entrepreneurial ecosystem by strengthening industry-academia collaboration, building human capital, and enhancing access to resources and networks for local entrepreneurs. This systems-oriented perspective ensures that the initiative not only benefits students but also contributes to regional economic development (Roundy et al., 2018).

By integrating these theoretical perspectives, the CETYS BrewEd Initiative offers a comprehensive educational model that combines experiential, place-based, and ecosystem-driven learning. These frameworks reinforce BrewEd's capacity to serve as a replicable and scalable model for institutions seeking to bridge academic learning with local industries and community development.

Focus and Importance of the CETYS BrewEd Initiative

The CETYS BrewEd Initiative is an innovative educational model that integrates interdisciplinary collaboration, entrepreneurship education, and community engagement by immersing students in Mexicali's craft brewing industry. At its core, the initiative transforms local businesses into real-world learning environments, providing students with firsthand exposure to entrepreneurial practices, industry challenges, and sustainable development strategies.

BrewEd's interdisciplinary approach brings together students, faculty, and industry professionals from diverse fields such as business, engineering, marketing, cultural studies, and sustainability. By breaking down traditional academic silos, the initiative fosters a collaborative learning experience that allows students to apply theoretical concepts to tangible industry problems. This hands-on engagement cultivates critical thinking, innovation, and problem-solving skills while strengthening connections between academia and the local entrepreneurship ecosystem.

Signature programs within BrewEd, such as co-curricular workshops, immersive industry experiences, and cultural events like the *Barriles de Memoria* talks, serve as platforms for knowledge exchange and historical preservation. *Barriles de Memoria* specifically celebrates the identity and history of Mexicali through the voices of historians, specialists, and key community figures, fostering dialogue around memory, territory, and craft (Núñez Tapia, 2025). These initiatives not only support students' academic and professional growth but also contribute to cultural identity by documenting and celebrating the evolution of Mexicali's craft brewing scene. Additionally, the publication of *Entre el sol y la espuma*, a book chronicling this legacy of craft brewers, reinforces BrewEd's role in merging education with industry-driven storytelling.

Beyond skill-building, BrewEd emphasizes social responsibility and sustainability, encouraging students to consider the economic and environmental impact of local entrepreneurship. By engaging with industry professionals and real-world business challenges, students develop a holistic understanding of innovation, ethical entrepreneurship, and community-driven economic development.

The CETYS BrewEd Initiative stands out as a replicable model for community-driven learning in higher education. We have identified six key factors that highlight its significance both locally and globally:

1. ***Bridging Academia and Industry.*** Many entrepreneurship programs struggle to offer real-world applications, but BrewEd transforms local businesses into interactive learning spaces. This partnership benefits students by enhancing their practical skills while providing local entrepreneurs with fresh perspectives and access to academic research.
2. ***Promoting Interdisciplinary Collaboration.*** By involving students and faculty from multiple disciplines, BrewEd fosters cross-disciplinary learning experiences that encourage diverse perspectives on entrepreneurship, marketing, production, and

sustainability. This prepares students for professional environments where interdisciplinary teamwork is crucial for problem-solving and innovation.

3. ***Fostering Experiential Learning and Entrepreneurial Mindsets.*** Unlike conventional classroom-based learning, BrewEd encourages students to experiment, take risks, and engage directly with business operations. Through this learning-by-doing approach, students acquire essential skills such as business model development, brand storytelling, consumer engagement, and ethical decision-making.
4. ***Strengthening Community Engagement and Cultural Identity.*** BrewEd aligns with place-based learning by emphasizing the historical and cultural significance of Mexicali's craft beer industry. By collaborating with regional entrepreneurs, students gain a deeper appreciation for their community's heritage, economy, and social fabric. Initiatives like the *Barriles de Memoria* talks and historical documentation projects further contribute to cultural preservation and identity.
5. ***Advancing Sustainable Development and Ethical Business Practices.*** The initiative highlights the role of sustainability in entrepreneurship, exploring how small businesses can adopt environmentally and socially responsible practices while remaining profitable. By integrating sustainability into business education, BrewEd fosters an ethically conscious generation of entrepreneurs committed to responsible innovation and long-term community well-being.
6. ***Global Relevance and Replicability.*** While rooted in Mexicali, BrewEd's adaptable model offers valuable insights for universities worldwide looking to integrate academic learning with local industries. The initiative contributes to global discussions on entrepreneurship education, interdisciplinary learning, and university-industry collaborations, making it a relevant framework for educators, researchers, and policymakers.

By merging education, industry, and community engagement, the CETYS BrewEd Initiative provides a forward-thinking approach to entrepreneurship education. It not only prepares students for the complexities of the business world but also reinforces the role of universities as key players in fostering innovation, sustainability, and cultural preservation.

Interdisciplinary Collaboration

Interdisciplinary collaboration is a cornerstone of innovation and effective problem-solving in higher education. By integrating knowledge from diverse disciplines, universities can foster creativity, critical thinking, and holistic approaches to complex challenges (Klein, 2010). This cross-disciplinary approach is particularly relevant in today's interconnected world, where addressing real-world problems requires expertise that spans multiple fields (Singh, 2023).

The CETYS BrewEd Initiative exemplifies this model by integrating entrepreneurship education with Mexicali's craft brewing industry. This initiative not only enhances students' business and entrepreneurial skills but also strengthens community engagement and promotes sustainable business practices. Through interdisciplinary partnerships, BrewEd creates a learning environment where academia and industry collaborate to co-develop knowledge and practical solutions (CETYS Universidad, 2023).

Interdisciplinary collaboration in higher education offers several key benefits:

Expanding Perspectives and Enhancing Critical Thinking

By exploring subjects from multiple angles, students develop a deeper understanding of complex issues. This broad approach encourages critical thinking and problem-solving skills essential for today's professional landscape (Singh, 2023).

Preparing Students for Real-World Challenges

The ability to work across disciplines equips students with essential workplace competencies, such as adaptability, teamwork, and effective communication. These skills are increasingly in demand in global industries (Rossi, 2024).

Encouraging Creativity and Innovation

In fields like art, design, and entrepreneurship, interdisciplinary collaboration provides a broader range of inspiration and methodologies, fostering creative solutions that transcend traditional disciplinary boundaries (Wan, 2023).

Moreover, interdisciplinary education bridges gaps between academic fields, integrating knowledge from business, STEM, and the humanities. This approach is particularly valuable in addressing complex social and economic challenges, as seen in the CETYS BrewEd Initiative. While implementing interdisciplinary programs can pose institutional challenges, the benefits in terms of student outcomes and innovation make it a vital pursuit for higher education (Collaborative on Academic Careers in Higher Education, 2014). By leveraging interdisciplinary collaboration, BrewEd serves as a model for how universities can create dynamic, real-world learning experiences that equip students with the skills needed to navigate today's complex professional and entrepreneurial landscapes.

The Significance of Interdisciplinary Collaboration through a Multidisciplinary Approach

In the evolving landscape of higher education, interdisciplinary collaboration has become essential for equipping students with the knowledge, skills, and perspectives needed to address complex real-world challenges. By integrating multiple disciplines and fostering partnerships between academia and industry, universities can create dynamic learning environments that drive innovation, critical thinking, and entrepreneurial development. The CETYS BrewEd Initiative exemplifies this approach

by combining business, cultural studies, marketing, engineering, and sustainability to provide students with a holistic, applied learning experience.

Interdisciplinary collaboration serves as a catalyst for knowledge integration, enabling students and faculty to analyze complex problems from multiple perspectives. Traditional academic disciplines often operate in isolation, limiting opportunities for cross-disciplinary innovation (Fiore et al. 2019). However, by fostering collaboration across fields, universities can ensure students develop a comprehensive understanding of challenges that transcend singular disciplines.

Entrepreneurship education, in particular, benefits from multidisciplinary approaches that incorporate diverse areas such as business strategy, financial literacy, cultural studies, engineering, and sustainability. The intersection of these disciplines ensures that students acquire a well-rounded entrepreneurial mindset, preparing them to navigate the complexities of launching and managing a business. Through interdisciplinary learning, students strengthen their problem-solving abilities, develop innovative solutions, and gain essential workplace skills such as adaptability, communication, and teamwork—competencies that are increasingly in demand in today's global economy (Rossi, 2024).

Furthermore, entrepreneurship is inherently multidisciplinary, requiring insights from various fields to address the challenges of business creation and sustainability. Research indicates that students engaged in interdisciplinary entrepreneurship programs develop stronger decision-making skills and greater innovative capacity. By integrating elements such as business model development, brand storytelling, consumer engagement, and sustainability practices, these programs enhance both creativity and practical business acumen.

Beyond fostering entrepreneurial thinking, interdisciplinary collaboration expands creative capacity by exposing students to diverse methodologies and perspectives. This broadens their ability to think beyond conventional business models and encourages

them to apply innovative problem-solving approaches. Additionally, experiential learning opportunities—such as direct engagement with industry professionals, real-world business challenges, and hands-on projects—provide students with a practical understanding of market dynamics, product development, and consumer behavior. These experiences cultivate an entrepreneurial mindset that extends beyond the classroom, preparing graduates to navigate uncertainty, embrace innovation, and contribute meaningfully to economic and social development (Glen et. al, 2014).

Through its interdisciplinary and multidisciplinary approach, the CETYS BrewEd Initiative demonstrates how universities can bridge academic learning with industry engagement to create transformative educational experiences. By integrating diverse fields of study, the initiative not only enhances students' entrepreneurial competencies but also strengthens their ability to address broader societal challenges, making interdisciplinary education a vital component of modern higher education.

Experiential and Community-Based Learning in Practice

The CETYS BrewEd Initiative brings theoretical models into practice by creating immersive, community-based learning experiences rooted in the local craft brewing industry. Through direct collaboration with industry professionals, cultural actors, and academic staff, students engage in diverse real-world projects that promote skill development, cultural literacy, and ethical entrepreneurship.

Signature programs such as the *Barriles de Memoria* cultural talks, *BrewArts* workshops, and *The Alchemy of Nature for the Senses* exhibitions provide hands-on learning environments that fuse storytelling, branding, and community engagement. These activities not only deepen students' understanding of marketing and entrepreneurship but also highlight the value of local heritage in modern business contexts—demonstrating how place-based learning can reinforce identity and innovation (Radu-Lefebvre et al., 2021).

Through its hybrid model of in-person workshops, fieldwork, and online programming (e.g., BrewEd Talks webinars), the initiative broadens its accessibility and impact. The digital sessions offer training in digital marketing, e-commerce, and brand positioning, helping students and local entrepreneurs navigate contemporary business landscapes while developing transferable skills. These engagements mirror Kolb's (1984) experiential learning cycle and Lave and Wenger's (1991) concept of situated learning by providing active, reflective, and socially embedded educational experiences.

Moreover, BrewEd prioritizes inclusivity by inviting participants from diverse disciplines and professional backgrounds, including women brewers and underrepresented groups. Events such as the Women Brewers Talks amplify marginalized voices and foster a more inclusive entrepreneurial culture, aligning with the values of community-based pedagogy (Neck et al., 2014).

In addition to hands-on learning, BrewEd incorporates cultural and historical preservation into its curriculum. Mexicali's brewing industry has played a significant role in shaping the city's economic and social fabric, and BrewEd seeks to document and celebrate this heritage. The initiative's publication of *Entre el sol y la espuma*, a book chronicling Mexicali's craft beer history, reinforces the importance of integrating historical narratives into modern business education (Núñez Tapia & Vargas Larraguível, 2024).

The initiative's strategic partnerships with local breweries, cultural organizations, and national trade expos (e.g., Expo Cerveza México) further position CETYS students at the intersection of education and industry. These collaborative efforts strengthen the local entrepreneurial ecosystem and reflect the systemic approach advocated by entrepreneurial ecosystem theory.

Ultimately, BrewEd's experiential and community-oriented programming embodies the theoretical foundations of the initiative. By transforming Mexicali's craft brewing industry into a 'living laboratory,' CETYS provides students with meaningful learning

experiences that foster innovation, sustainability, and cultural engagement, creating a model of higher education that is both impactful and replicable.

Challenges Addressed by the CETYS BrewEd Initiative

The CETYS BrewEd Initiative was designed to address several key challenges faced by both CETYS Universidad and Mexicali's growing craft brewing industry. One of the primary issues was the lack of structured academic support for the region's emerging craft beer sector, which required resources for sustainable growth and professionalization. BrewEd bridges this gap by connecting students with industry professionals, providing brewers with actionable business insights while offering students hands-on experience in a dynamic entrepreneurial ecosystem.

A significant challenge in higher education is the disengagement between theoretical learning and real-world application. Many academic programs focus on conceptual knowledge without engaging students in practical, industry-relevant experiences (Lave & Wenger, 1991). BrewEd overcomes this limitation by creating a 'living laboratory' where students work alongside industry experts, applying entrepreneurship concepts in meaningful, real-world contexts. This model not only enhances students' understanding of business operations but also strengthens CETYS Universidad's role in local economic and cultural development.

One example of BrewEd's real-world application is its collaboration with Fauna Brewery, where students in the International Business Global Program used divergent thinking and problem-solving techniques to identify areas for improvement in the brewery's operations, products, and services. Their innovative proposals were presented to a panel of industry experts, one of them being the owner of the brewery, demonstrating how academic-industry partnerships can drive innovation and create tangible business solutions (Estudiantes de Negocios Internacionales, 2024).

Another challenge addressed by BrewEd is the need for adaptability in an evolving industry. Initial feedback from local brewers revealed gaps in digital marketing

knowledge and software management—critical areas for business growth in today’s marketplace. In response, BrewEd introduced specialized webinars and workshops focused on digital marketing strategies and e-commerce solutions (CETYS Universidad, 2023). This adaptability ensures that BrewEd remains relevant to both students and industry professionals, aligning with broader trends in higher education that emphasize co-creation and student-industry collaboration as key drivers of learning and innovation (Bryson & Callaghan, 2021).

Logistical Coordination and Stakeholder Collaboration

The success of the CETYS BrewEd Initiative depends on effective coordination between multiple academic departments, industry partners, and community stakeholders. Managing these collaborations required a structured approach to project management, ensuring smooth communication, resource allocation, and event execution. Given the complexity of interdisciplinary initiatives, BrewEd implemented a strategic framework to streamline logistics, optimize stakeholder engagement, and enhance overall program efficiency (CETYS Universidad, 2023).

One of the primary logistical challenges was organizing large-scale educational events that integrated academia, industry, and community participation. This required aligning schedules across multiple sectors, securing funding, and coordinating event logistics. By adopting best practices in interdisciplinary project management, the BrewEd team ensured that each event—ranging from co-curricular workshops to cultural heritage discussions—was executed seamlessly, maximizing student and industry involvement.

Effective stakeholder collaboration was also critical to BrewEd’s impact. By fostering strong relationships with local brewers, business leaders, and academic experts, the initiative facilitated knowledge exchange between students and industry professionals. This approach not only enriched student learning but also provided tangible benefits

for local businesses, as they gained access to fresh perspectives, research insights, and innovative solutions.

Moreover, BrewEd's adaptability allowed it to respond to emerging industry needs. Initial feedback revealed gaps in digital marketing and software management among local brewers, prompting the initiative to introduce targeted training sessions in these areas. This responsiveness demonstrates the value of ongoing communication and collaboration between academia and industry in shaping relevant, high-impact educational experiences.

By integrating strategic project management with active stakeholder engagement, the CETYS BrewEd Initiative has established itself as a sustainable, scalable model for university-industry collaboration. Its success highlights the importance of coordination, adaptability, and interdisciplinary teamwork in developing educational programs that create lasting academic, economic, and cultural impact.

The Impact of the BrewEd Initiative on Entrepreneurship Education

The CETYS BrewEd Initiative is reshaping entrepreneurship education by bridging the gap between academic learning and real-world business challenges. Unlike traditional programs that focus primarily on theoretical instruction, BrewEd immerses students in hands-on experiences with industry professionals, providing direct exposure to business operations, marketing strategies, and sustainable entrepreneurship practices. This experiential approach equips students with the critical thinking, adaptability, and problem-solving skills necessary to navigate today's complex business environments.

A key strength of BrewEd is its ability to evolve in response to industry needs. Unlike static academic programs, BrewEd continuously integrates feedback from students, faculty, and local entrepreneurs to ensure its curriculum remains relevant. The initiative has addressed pressing business challenges such as digital marketing, software management, and consumer engagement, ensuring that students gain practical skills directly applicable to emerging business trends. This adaptability serves as a model for

other educational institutions seeking to align entrepreneurship education with real-world industry demands.

Beyond skill development, BrewEd reinforces the importance of collaboration and networking in entrepreneurial success. By forming strategic partnerships with organizations such as the Union of Brewers of Mexico and other regional stakeholders, BrewEd expands students' professional networks while demonstrating the value of industry alliances. Through these collaborations, students gain firsthand insight into sustainable business ecosystems and learn how collective efforts drive regional economic growth.

In addition to its academic and economic contributions, BrewEd highlights the role of entrepreneurship in cultural preservation and community identity. Programs such as BrewArts, BrewEd Talks, and cultural exhibitions showcase how entrepreneurship can go beyond profit generation to support local heritage and community engagement. This holistic perspective broadens students' understanding of entrepreneurship as both a business endeavor and a means of cultural storytelling and social impact.

By integrating academic knowledge with practical industry experience, strategic partnerships, and cultural awareness, the CETYS BrewEd Initiative offers a transformative model for entrepreneurship education. Its success demonstrates how universities can create interdisciplinary, industry-driven learning experiences that prepare students for the evolving demands of the entrepreneurial world. As a scalable and replicable framework, BrewEd provides valuable insights for institutions seeking to foster innovation, sustainability, and community-driven economic development through entrepreneurship education.

Conclusion

The CETYS BrewEd Initiative exemplifies the power of interdisciplinary collaboration in higher education, demonstrating how academia, industry, and community can converge

to create transformative learning experiences. To date, BrewEd has collaborated with 18 of the 30 major local breweries, creating a dynamic learning environment where students apply theoretical knowledge to real-world challenges. By integrating entrepreneurship education with Mexicali's craft brewing sector, BrewEd fosters practical skill development for more than 400 students, supports cultural preservation through historical documentation initiatives, and promotes sustainable business practices that benefit both students and industry partners. This hands-on approach not only equips students with essential entrepreneurial competencies but also strengthens local economic ecosystems, reinforcing the value of experiential learning beyond traditional classroom settings.

Moreover, BrewEd serves as a scalable and replicable model for universities seeking to merge academic theory with real-world applications. Its emphasis on industry engagement, cultural storytelling, and sustainability highlights the broader impact of interdisciplinary education in fostering innovation, strengthening industry-academia partnerships, and driving community-driven economic development. By combining research, entrepreneurship, and cultural heritage, BrewEd positions itself as an innovative case study for universities worldwide looking to integrate local industries into academic programs. As higher education continues to evolve, initiatives like BrewEd illustrate how strategic partnerships can bridge knowledge gaps, empower future entrepreneurs, and contribute to a more inclusive and dynamic learning landscape.

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