



INTEGRATING UNIVERSITY SOCIAL RESPONSIBILITY INTO HIGHER EDUCATION: A DESIGN THINKING APPROACH TO RURAL COMMUNITY INNOVATION

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Abstract

This study examines the integration of University Social Responsibility (USR) into higher education through a case study of the "Creativity Design" course at National Chiayi University. The course, supported by Taiwan's National Science and Technology Council, aimed to address challenges faced by Haomeili, a remote village facing the Taiwan Strait to the west in Chiayi County. Utilizing a Design Thinking framework, 54 students engaged in developing innovative tourism solutions for the community. The course structure included technical training, fieldwork, and project execution, with students collaborating with local stakeholders and industry experts. Despite successful project outcomes, including tourism videos, digital maps, and social media campaigns, the study revealed challenges in long-term sustainability and adoption of innovations, particularly due to the community's limited technological familiarity. Logistical issues, such as transportation and coordination, also emerged as significant hurdles. The research highlights the potential of USR courses in fostering meaningful university-community engagement while emphasizing the need for sustained partnerships beyond academic semesters. It underscores the importance of aligning innovative solutions with community needs and technological capacities. The study concludes by suggesting refinements in course planning, the establishment of inter-semester continuity, and the development of strategies to ensure the long-term impact of student projects, providing valuable insights for future USR initiatives in higher education.

Keywords: University Social Responsibility, community innovation, rural development, design thinking, creative design.

Introduction

University Social Responsibility (USR) has emerged as a crucial concept in higher education institutions, emphasizing the responsibility of universities to utilize their resources and knowledge for sustainable societal development. USR extends beyond traditional social services, focusing on innovation, sustainability, and civic engagement (Chen et al., 2015). Through USR initiatives, universities play a significant role in supporting social sustainability across multiple dimensions, including social equity, economic development, and environmental protection (Giuffr  & Ratto, 2014).

In the educational domain, USR courses integrate students' academic learning with real-world societal issues. These courses emphasize interdisciplinary learning and civic engagement throughout the teaching and learning process, encouraging students to become agents of social

change (Wigmore-Álvarez & Ruiz-Lozano, 2012). USR courses highlight universities' role as catalysts for community development, fostering meaningful social practice engagement both inside and outside the classroom for students and faculty (Toker et al., 2016). The design of such socially impactful courses enables students to address real-world problems while cultivating a sense of global citizenship (Mohamed, 2015).

Research has demonstrated the positive influence of USR activities on students' university experiences. Gallardo-Vázquez et al. (2020) have shown how social responsibility practices improve learning outcomes, with students participating in USR activities reporting higher levels of satisfaction with their learning and a stronger sense of community belonging. Similarly, Coelho and Menezes (2020) have explored university students' perceptions of USR projects, highlighting how these initiatives foster leadership, teamwork, and social awareness. Their findings suggest that participation in USR projects bridges the gap between academic learning and practical application, preparing students to become actively engaged citizens after graduation.

However, implementing USR courses faces several challenges, particularly in course design and execution. Key difficulties include embedding social responsibility into existing curricula while maintaining academic rigor, adjusting teaching methods, overcoming faculty hesitation to adopt new approaches, and helping students see the connection between social responsibility and their career goals (Do & Huang, 2023). Resource limitations and manpower shortages also pose threats to USR course implementation (Chen et al., 2015). Additionally, the lack of standardized evaluation metrics makes it challenging to track progress, assess impact, and showcase outcomes to stakeholders (Wigmore-Álvarez & Ruiz-Lozano, 2012). The development of USR courses remains in its early stages, indicating the need for more case studies and established models (Liu, 2022).

Recognizing the university's potential and responsibility in promoting social progress, National Chiayi University (NCYU) has launched a series of USR initiatives aligned with the United Nations Sustainable Development Goals (SDGs). Supported by the Humanities Innovation Project funded by the National Science and Technology Council, NCYU has implemented various USR-related activities, including this study.

This research aims to address several aspects related to the implementation of Design Thinking and USR in higher education. The study explores how the Design Thinking framework can be effectively implemented within higher education curricula to promote USR initiatives and identifies challenges arising during this process. It investigates the impact of USR course participation on student learning outcomes and satisfaction. Furthermore, the research examines how USR courses can better align academic outputs with the technological capacities and cultural preferences of target communities. Lastly, it explores key challenges in ensuring long-term sustainability and adoption of student-developed innovations in rural communities through USR courses. These research questions collectively aim to provide a comprehensive understanding of the integration of Design Thinking and USR in higher education, its impact on students and communities, and the challenges that need to be addressed for successful implementation.

Research Methodology

Background

This study employed a mixed-methods approach, combining qualitative and quantitative data collection and analysis techniques to provide a comprehensive understanding of the integration of University Social Responsibility (USR) into higher education through the "Creativity Design" course offered by the Department of E-learning Design and Management at

National Chiayi University (NCYU). During the fall semester of 2022, both enrolled students' and the community's feedback, and the challenges encountered through the process were collected and recorded for further analysis.

Research Design

For this study, a case study methodology was adopted, allowing for an in-depth exploration of the course within its real-world context (Yin, 2018). This approach enabled a focused investigation of the course's structure, implementation, and outcomes, providing detailed insights into the challenges and opportunities associated with integrating USR into higher education curricula.

Participants

54 students, predominantly in their second year of studies, enrolled in the course. The average age of the students was 20.3 ± 0.3 years, with more than 65% being female. One course lecturer with over 20 years of experience in design education and three guest lecturers specializing in community development and tourism were involved in the course design and development. Four professionals with expertise in photography, social media, website development, and visual design were invited to assist the students with their works during the project phase. Local leaders, business owners, and residents of Haomeili Village were interviewed to provide insights into the region's social, economic, and cultural challenges.

Procedures and Instruments

The research process comprised three stages as follows.

(1) Preparation: This stage involved defining research questions and conducting a literature review to guide the study's direction. Interview guides and surveys were developed to collect data.

(2) Implementation: The course supervisor (the key lecturer for the course) arranged schedules with community participants on the dates to visit. Students and photography professionals attended the event venues and proceeded with planned tasks, such as field observation, interview and leading group activities. And,

(3) Data collection: Fieldwork, observations, surveys and interviews with students and local community members, and student projects were conducted and collected for data analysis.

The research instruments for this study include a questionnaire and a set of semi-structured interview questions. The questionnaire, which contains 15 items, was designed to evaluate students' perceptions of expert contribution, teaching method and course management, and overall satisfaction. The semi-structured interviews, conducted with students, provided qualitative information on the learning experience, course management, the course's practicality, satisfaction, and challenges or suggestions for improvement from the students' point of view.

Data Analysis

The collected data was analyzed using both qualitative and quantitative methods:

(1) Qualitative Analysis: Thematic analysis was employed to identify key themes related to the course implementation, student learning experiences, and community impact. This involved coding interview transcripts, observation notes, and open-ended survey responses.

(2) Quantitative Analysis: Descriptive statistics were used to analyze the survey data, including measures of central tendency and frequency distributions for Likert-scale items.

Research Results

Course Background

The "Creativity Design" course, offered as part of NCYU's USR initiative, was designed to integrate creative problem-solving with community innovation efforts in Haomeili, a rural village in Budai Township. Haomeili is a small village located in the southwestern corner of Budai Township, facing the Taiwan Strait, with a population of approximately 1,400 people (Budai Township Office, 2023). It is about an hour's drive from Chiayi City, making it a typical remote community in the region. With changes in the knowledge economy and modern industrial lifestyles over the past decades, Haomeili faces challenges such as population outflow and aging and finds it difficult to develop tourism industry.

The course adopted Design Thinking, a well-known problem-solving framework that consists of four main steps: discover, define, develop and deliver (British Design Council, 2005). This process allows students to develop creative solutions that address real community needs. The course was structured into several phases, including technical training, fieldwork, and project execution, where students collaborated with local stakeholders and industry experts to develop tourism-related innovations.

Course Structure and Phases

Introduction to Design Thinking and Community Innovation

In the initial phase, students were introduced to the core principles of Design Thinking and community innovation. Expert guest lecturers presented real-world cases and shared their experiences, giving students a practical understanding of the course's objectives and preparing them for fieldwork.

Group Formation and Technical Training

Students were organized into four specialized groups—Photography, Social Media, Website Development, and Visual Design—according to their interests. Each group was assigned an industry expert for mentorship. Over the three-week period, students underwent intensive technical training to acquire the necessary skills in their chosen focus areas, ensuring they were well-prepared for the subsequent stages of the project.

Fieldwork and Community Engagement

Field visits to Haomeili were arranged throughout the course, allowing students to engage with local stakeholders, including village heads and community members. These visits enabled students to gain deeper insights into the local challenges through interviews and observations. The use of collaborative tools like Line groups facilitated continuous communication and coordination between the students, instructors, and community members.

Mid-term Project Presentations and Feedback

At mid-term, students presented their initial project ideas, receiving feedback from peers, instructors, and industry experts. This stage allowed for refining project scopes and aligning objectives with real community needs.

Project Execution and Consultation

Students began implementing their projects using the Design Thinking approach, moving from problem definition to prototyping and testing. Industry experts remained involved as consultants, offering feedback and helping students navigate challenges in real-time. This phase was crucial for translating theory into practice, as students worked directly on community-driven innovations.

Lab Production and Group Collaboration

During these weeks, students focused on finalizing their projects, engaging in lab work and group discussions. Mentorship continued through online consultations with industry experts, and the course instructor provided additional support to ensure the projects were polished appropriately and met the community's expectations.

Final Presentations and Exhibition

The final weeks of the course were dedicated to showcasing the students' projects. Presentations were delivered to industry experts, community members, and peers, highlighting both the process and outcomes of their Design Thinking projects. This was followed by a public exhibition where students displayed their work, including tourism videos, digital maps, websites, and social media campaigns promoting local life in Haomeili. This phase allowed students to reflect on their learning process, receive final feedback, and gain insights into presenting innovative solutions in a professional setting.

Course Process and Outcome

The course was designed to foster innovative thinking and practical skills in design within the context of community innovation, focusing on the rural area of Haomeili.

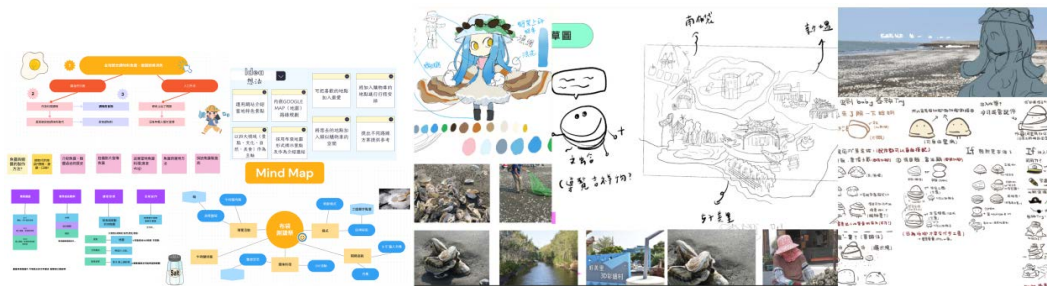
Initial Phase: The course commenced by bringing in expert practitioners to share real-world examples of community engagement. Additionally, design professionals conducted workshops on various topics, including social media marketing, website design, and visual storytelling. These sessions were designed to equip students with the technical expertise required for successful project execution.

Mid-phase: In this phase, students conducted visits to significant local sites to gain deeper insights into community issues such as historical development and ecological challenges. Activities included interviews with community leaders, participation in local environmental initiatives, and visits to cultural and historical landmarks. Students collaborated in interest-based groups, performing their own field research. Common tools used for brainstorming and idea development included mind maps, flow charts, whiteboards, and sticky notes. Furthermore, collaborative digital platforms, such as Moodle, Canva, and Google Cloud, were leveraged to facilitate the sharing and presentation of data and resources across groups, promoting collective problem-solving and project development. Figures 1 and 2 illustrate the students' field visits for data collection and examples of their thinking maps and sketches.

Figure 1
Students Conducting Field Visits for Research and Data Collection



Figure 2
Examples of Students' Thinking Maps and Sketches



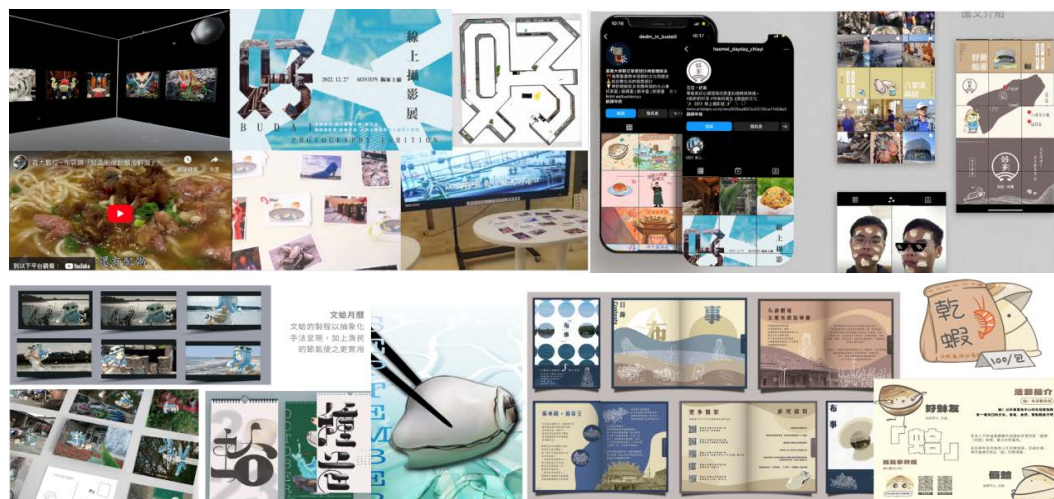
Final Phase: Integrating theoretical knowledge, field research, and technical skills, students created a variety of innovative outputs. These included a tourism video, digital maps, a community website, an Instagram account promoting local life, and several digital products like stickers and e-books (Figures 3 and 4). The course concluded with a public exhibition where students showcased their solutions, prototypes, and final designs to an audience of invited guests. They also engaged in reflection on their learning experiences, discussing the challenges encountered during various stages of the project.

Figure 3
Examples of Students' Works—Tourism Maps, DM, Logo, Media posts, Copywriting



Figure 4

Students' Design Works—Postcards, e-books, Videos, Photos, Social Media Related Designs



Difficulties Encountered and Tackled

Transportation Issues

The major challenges encountered were transportation between campus and community, and establishing connections with local residents. Haomeili, located in Budai Township, is a remote area approximately an hour's drive from Chiayi City, which made it difficult for students to access. To deal with the contact problem, members of the research team acted as liaisons between students and the local community. For the transportation issue, they organized vehicles to drive students to the area in batches and pre-arranged meetings with key local stakeholders, such as the village head, members of the community development association, and business owners. This allowed students to dive directly into observations and interviews upon arrival.

The interview guidelines were shared and coordinated through a Line messaging group. Additionally, if any student had special requests regarding specific personnel or locations, the research team facilitated those needs. For students unable to participate in group activities due to scheduling conflicts, alternative independent visit arrangements were made to ensure they could still engage with the project.

Challenges in Resource Sharing and Task Collaboration

With a large class of 54 students, maintaining effective communication and ensuring cohesive group collaboration presented significant challenges. To address these issues, the course heavily relied on a resource-sharing mechanism facilitated by a cloud platform set up and managed by the course's teaching assistant.

This cloud-based system allowed groups to upload and share collected materials such as ideas, photos, texts, sketches, voice recordings, and design elements. Students were encouraged to not only upload their own materials but also to explore and build upon the work of other groups. This approach encouraged collaboration and resource interaction across groups, fostering a supportive learning environment where students could assist one another in overcoming challenges.

To monitor progress and ensure uniformity across groups, students were required to submit initial, mid-term, and final reports through the system. This process helped minimize discrepancies in work quality between different groups and allowed for consistent tracking of project development.

Course Feedback

The teaching evaluation (conducted by the university each semester) of this course yielded an average score of 4.67 out of 5.0, which is notably high for this social participatory project being applied in the course for the first time. Following the course completion, an anonymous survey using a 5-point Likert scale was conducted to gauge industry experts' contributions, teaching methods and course management, and overall satisfaction. The survey results are 4.6 ± 0.48 , 4.5 ± 0.54 , and 4.6 ± 0.5 , respectively, reflecting a positive reception of this course.

In the qualitative feedback, students frequently used terms like "excellent," "gained a lot," and "I am dedicated" to describe their experience. The practical project was particularly well-received, with comments such as: "Producing real outputs that everyone can see motivated me to complete them," "The course provided clarity on regional innovation, which was extremely beneficial," and "The promotion of Chiayi Budai's spirit added meaning to the course." Regarding course design, students praised it, stating, "The course was well-structured!" and "This was my first experience working on a large-scale project with the entire class, divided into four groups, supplemented by external resources and professionals. The course's resources were comprehensive."

In terms of the course's practicality and overall satisfaction, students remarked: "The course content was well-matched to our needs," "Collaborating with team members and other groups to create tangible outcomes was very educational," and "The teachers' feedback and assistance during the project were highly valuable and applicable for future job prospects."

However, students did offer suggestions for improvement in three key areas:

Group Discussion: "With students from various grades, it took time to communicate and coordinate," and "Grouping by interest and expertise was fine, and working with seniors was not difficult. However, the group leader's planning and leadership were crucial to the group's functioning. I hope more time can be allocated for the execution phase next time."

Transportation Issues: "Convenience should be considered for on-site interviews," and "The only drawback was that students without transportation or unable to match the teacher's departure time found participation challenging, which occasionally delayed the project's progress."

Course Time Management: "The time allocated for discussions with industry experts could be optimized for more effective exchanges. Experts could help in both initial direction-setting and final output adjustments," and "Students should plan earlier and establish a timeline."

In conclusion, students highly appreciated the course's content, structure, and the instructors' teaching methods. They recognized the value of practical design skills and felt that the integration of promoting Chiayi Budai added significance to the course. The involvement of industry professionals provided valuable, actionable feedback, which students found helpful for both academic and professional development. On the other hand, students highlighted logistical challenges such as transportation and scheduling, which affected participation. Additionally, the tight timeline made it difficult to manage multiple projects simultaneously, which sometimes led to compromises in quality or progress.

Project Outcomes vs. User Adoption

The "Creativity Design" course aimed to address community innovation challenges in Haomeili through a series of digital design projects, including a website, social media campaigns, LINE stickers, and marketing videos. Students employed on-site observations and interviews to inform their designs, emphasizing local engagement and aesthetics. However, post-course evaluations revealed a gap between the intended project outcomes and actual user adoption.

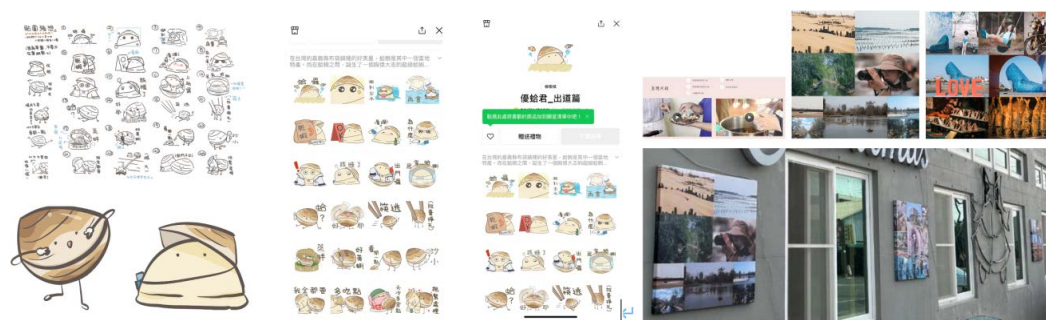
One notable example is the clam-themed LINE stickers (see Figure 5). Although these were positively received for their design, their actual use by the community was limited. Haomeili's elderly population, which constitutes a significant portion of the demographic, did not commonly use stickers for communication, preferring simple text-based greetings. Additionally, purchasing the stickers required mobile payment setups, a challenge for older users unfamiliar with the technology. The option to make the stickers free involved a complex and costly process that was not initially anticipated.

Similarly, the video-guided tours, though requested by local residents, encountered practical limitations. Despite the team's significant effort in production, including data collection, interviews, and editing, playback limitations and lack of appropriate equipment hindered the effectiveness of the videos. Instead, the users reinvented the innovation, enlarged still images from the tour videos were displayed on community building walls, providing a more interactive and accessible experience for local tour guides (see Figure 5).

These findings highlight the complexities of implementing digital innovations in a community with distinct socio-cultural and technological contexts. The disparity between the design intentions and user adoption underscores the importance of continuous feedback and adaptability in community-based projects.

This analysis shows that while digital innovations may meet design objectives, their success depends on aligning closely with the community's technological capacities and cultural preferences.

Figure 5
LINE Stickers Used by Residents and Image Works Displayed on Resident Buildings



Discussion

This study on integrating University Social Responsibility (USR) into higher education through the "Creativity Design" course offers valuable insights into the potential and challenges of fostering community-engaged learning. The findings reveal several key points for discussion:

Effectiveness of Design Thinking and Technology in USR Courses

The implementation of the "Design Thinking" framework in the course structure, coupled with the use of technology, proved to be an effective approach for addressing real-world community challenges. This aligns with previous research highlighting the value of problem-based learning in fostering social responsibility among students (Wigmore-Álvarez & Ruiz-Lozano, 2012). The students' ability to develop innovative solutions for Haomeili Village tourism-related issues demonstrates the potential of this methodology in bridging the gap between academic learning and practical application.

Technology played a critical role in facilitating the course. The use of cloud-based platforms for resource sharing and collaboration was particularly instrumental in overcoming logistical challenges and fostering teamwork among the large group of students.

Challenges in Sustainable Implementation and Technology Adoption

While the course successfully facilitated the development of creative solutions, the study revealed significant challenges in ensuring long-term sustainability and adoption of these innovations. This finding echoes concerns raised by Do and Huang (2023) regarding the implementation of USR initiatives. The limited technological familiarity and resources in rural communities like Haomeili pose additional barriers to the adoption of digital innovations, highlighting the need for more context-specific and user-centered design approaches in future iterations of the course.

The disparity between the innovative solutions developed by students and their actual adoption by the community raises important questions about balancing creativity with practicality in USR initiatives. This reflects the broader issue of aligning academic outputs with community needs and capabilities, a concern echoed in the literature on university-community partnerships (Toker et al., 2016).

Importance of Continuous Engagement and Logistical Considerations

The study underscores the necessity for sustained engagement between universities and communities beyond the academic semester. This finding supports the argument made by Chen et al. (2015) that effective USR initiatives require long-term commitment and partnerships. The logistical issues encountered, particularly regarding transportation and coordination, highlight the practical difficulties in implementing USR courses in remote communities. These challenges are not unique to this study and have been noted in other USR initiatives (Liu, 2022). Addressing these logistical barriers is crucial for enhancing both the student learning experience and the practical outcomes of such projects.

Student Learning and Satisfaction

The high course evaluation scores and positive qualitative feedback from students align with findings from Gallardo-Vázquez et al. (2020), who noted increased student satisfaction in USR-related activities. The practical nature of the course, the opportunity to work on real-world problems, and the use of modern technology appear to have contributed significantly to student engagement and learning outcomes. This highlights the potential of technology-enhanced USR courses in preparing students for future professional challenges while fostering a sense of social responsibility.

In summary, this study was conducted in a specific rural context (Haomeili Village) with a small sample size of 54 students, which may limit the findings' generalizability to other settings or larger populations. The short-term nature of the course (one semester) restricted the ability to assess long-term impacts and sustainability of the implemented projects. The study

relied heavily on self-reported data from students and community members, which may be subject to bias. Future research should address these limitations to provide more comprehensive insights into the effectiveness of USR initiatives in higher education.

Conclusions

While this research demonstrates the potential of integrating USR into higher education through innovative course design, it also highlights the complexities and challenges involved in translating academic projects into sustainable community development. Future research should focus on developing models for sustained university-community partnerships that extend beyond single-semester courses, addressing logistical challenges, and enhancing the alignment between innovative solutions and community technological capacities and cultural preferences. By addressing these aspects, USR initiatives can more effectively bridge the gap between academic learning and meaningful community impact, fostering a new generation of socially responsible professionals.

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Declaration of Interest

The authors declare no competing interest.

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