

From Theory to Practice - Research of Education at the Faculty of Architecture and Urban Planning - Cluj-Napoca

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Abstract

This study investigates the integration of architectural education with public sector technology through a collaboration between the Faculty of Architecture and Urban Planning and Cluj County Council. Concentrating on the digitalization of local urban plans, particularly in rural areas, it offers a practical case study for students to involve them in public practice. This partnership allows students to acquire skills in urban planning, territorial management, and compliance with environmental and professional standards. The research studies how students attain expertise in spatial organization, urban functionality, and the wider professional scope of architecture and urbanism. The study emphasizes that real-world, hands-on experiences are indispensable for training future urban planners. It highlights the necessity of merging theoretical education with practical application, showcasing the value of collaborative educational models in architectural training, particularly in public sector contexts by introducing students and the urban actors of the county administration in a fruitful practice.

Keywords: Urban planning; Education; Digitalization; Collaboration; Architecture.

1. Introduction - Overview of the Digitalization Initiative

This research stems from a collaborative internship program developed between the Faculty of Architecture and Urban Planning Cluj-Napoca Romania and the Urban Planning Department of the Cluj County Council.

As part of their academic requirements, students from the faculty are required to complete 50 hours of practical experience, which can be gained either through internships at architecture firms, public administration offices, or participation in relevant workshops.

Given my dual roles within the university and the county council where I work as an architect for the Urban Planning Department, alongside my colleagues Dr. Arch. Alice Maria Oprică, and under the guidance of Chief Architect of Cluj County Claudiu Daniel Salanță, we identified an opportunity to establish a connection between the academic and public sectors, leveraging the ongoing digitalization project at the council to actively involve students in integrating urban planning principles and practices with real-world projects and administrative procedures.

The collaboration internship program between the Faculty of Architecture and Urban Planning and Cluj County Council is focusing on familiarizing the students with the workings of the public sector by merging theoretical education with practical application providing practical case studies but also, by equipping them with skills in urban planning and territorial management. This collaboration introduces students to specific examples of current practice, essential for their future roles in architectural training, particularly in public sector contexts.

2. Materials and Methods - Internship program

In 2022, the Cluj County Council initiated a significant digital transformation by launching the "Integrated Service Portal," marking a groundbreaking development in Romania's public administration. This portal streamlines the complete online management of urban planning documentation, including the issuance of permits, certificates, and approvals, thereby revolutionizing the administrative processes involved. (Figure 1)

Integral to this initiative is the incorporation of the **Territorial Atlas** within the Integrated Service Portal. The Territorial Atlas serves as an expansive digital map encompassing the entirety of Cluj County and its 65 communes, which collectively cover an area of 6,674 square kilometres, amounting to 2.8% of Romania's total territory. It meticulously integrates administrative and constructed area boundaries for cities and communes, and it catalogues permits issued within the county's jurisdiction. Furthermore, the Atlas includes data from the national land registry related to land parcelling and delineates forested regions, protected natural environments, and zones designated for public or utility purposes. It also identifies areas marked for future urban development projects, offering a comprehensive tool for strategic planning and development within Cluj County. This digital resource is instrumental in facilitating enhanced decision-making and planning accuracy, serving as a vital asset for urban management and development initiatives. (Figure 2)

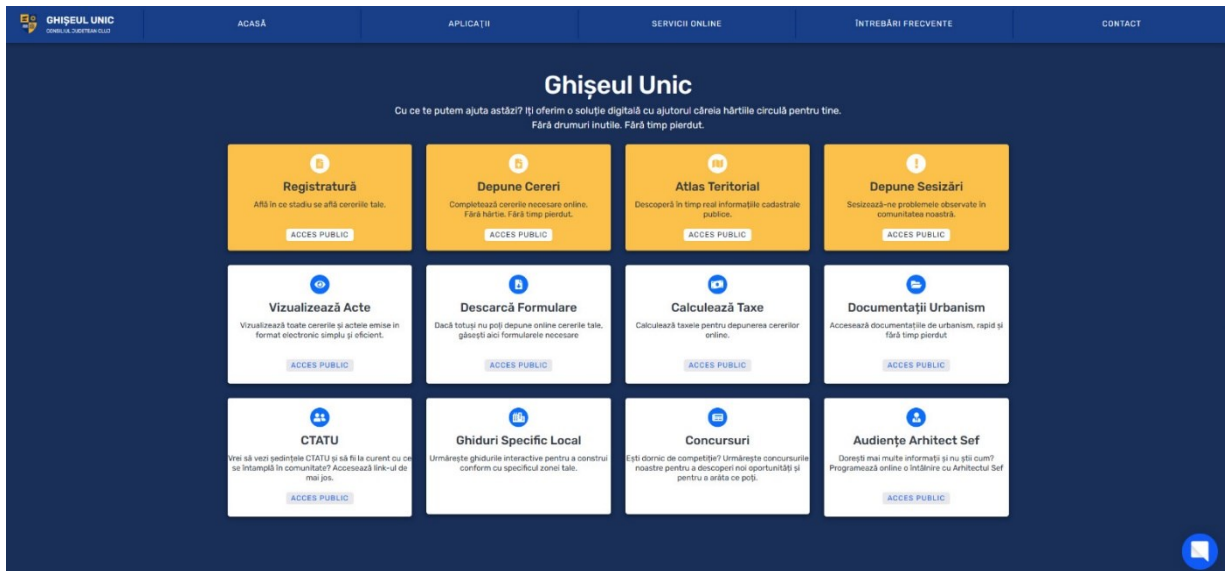


Figure 1. The Integrated Service Portal browser interface - <https://cluj.archi/>

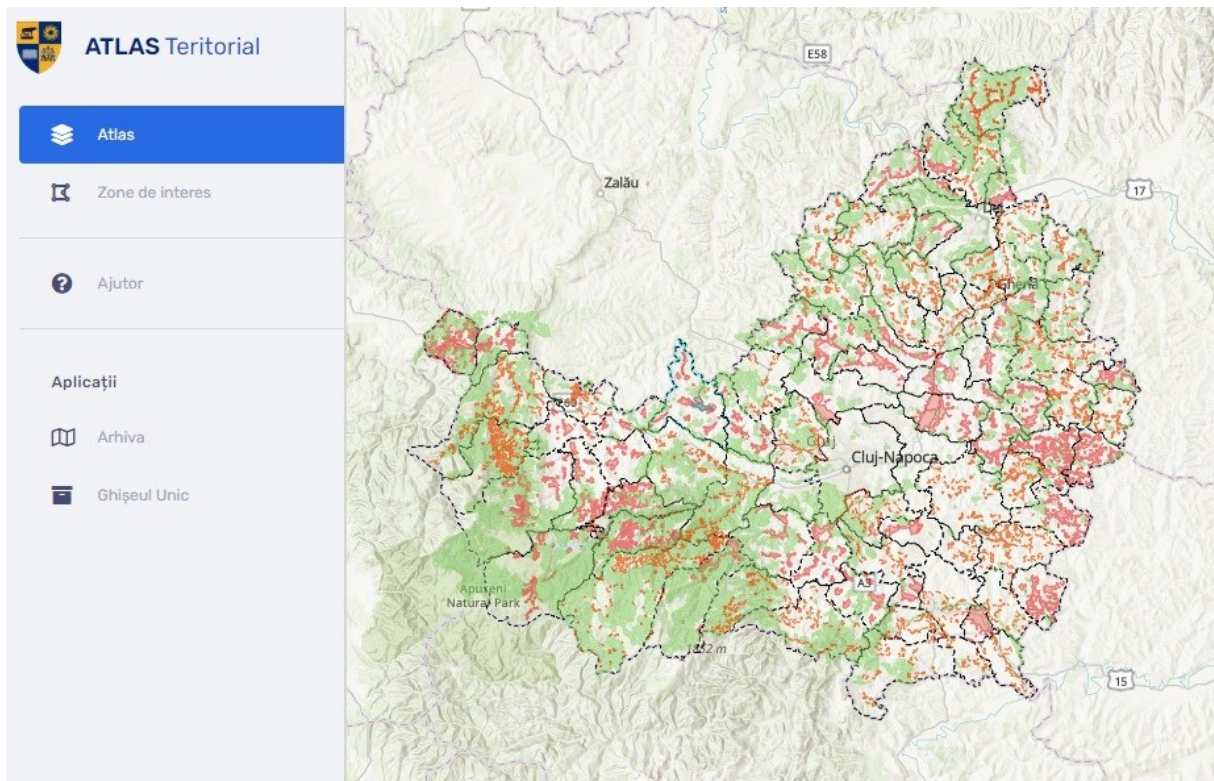


Figure 2. The Territorial Atlas browser interface - <https://cluj.archi/despre/atlas>

2.1. Program design

The internship program aims to involve the students in updating the atlas database. The initial group of 8 students was selected across various levels of academic years based on their interest in urban planning. They conducted the internship program at the Cluj County Council headquarters between February and April 2024.

This is an ongoing collaboration, for this specific program we have ongoing enrolment for the upcoming period extended until September which serves as the final deadline for completing their annual practical experience program.

2.2 Collaboration Framework

The Cluj County Council provided access to data, supervisory support, and necessary tools. Students were supervised by a team of experienced architects and planners from the county council, as well as faculty members from the university. This provided a balanced perspective of academic theories and practical applications.

2.3. Practical Activities

This process involves a detailed analysis and digitization of urban planning regulations and zonings into digital formats. Additionally, students participate in strategic territorial analysis, proposing urban design solutions for areas lacking regulation.

The approach combined academic coursework with practical field experience in urban planning, emphasizing the integration of digital tools into public sector projects, making extensive use of GIS software and the ArchiCAD program to facilitate the digitization of urban plans.

The internship program is structured into three distinct modules, each tailored to equip students with specific knowledge and skills, according to the following:

- Module 1 – Introduction to Urban Planning Documents and Approval Process
- Module 2 – Interpreting and Digitally Transposing Current General Urban Plans Regulations
- Module 3 – Proposal of urban design solutions in Developing Areas

2.3.1. Module 1 – Introduction to Urban Planning Documents and Approval Process

In the introductory module of the internship program, students were comprehensively familiarized with the various types of urban planning documents that are integral to the approval processes in Cluj County. This process included a detailed exploration of the necessary paperwork and documentation required to secure permits, certificates, and approvals. Through this exposure, students developed a robust understanding of the procedures involved in the approval process, emphasizing the critical importance of adhering to relevant regulations and legislation.

This module was strategically designed to enhance students' comprehension of the current methodologies, conventions, and regulatory frameworks utilized in urban planning. Additionally, it equipped students with valuable knowledge regarding the specific types of documents and detailed specifications they are expected to prepare and manage in their future professional practices as architects.

The educational objectives of this module were twofold:

- To cultivate a deep understanding of contemporary urban planning methods and the regulatory documents associated with them, thereby ensuring that students are well-prepared to navigate the complexities of the field.
- To provide students with the necessary knowledge and skills to competently prepare various urban planning documents, a crucial competency for their forthcoming careers in architecture.

Through this structured educational approach, the module aims not only to inform but also to empower students, preparing them to effectively contribute to the field of urban planning with a clear grasp of procedural and regulatory requirements.

2.3.2. Module 2 – Interpreting and Digitally Transposing Current General Urban Plans Regulations:

In the context of urban development, cities regularly undertake revisions of their general urban plans to align with evolving urban dynamics and regulatory requirements; such revisions ensure that the documentation is maintained in a digital format. However, the pace of updates tends to be slower in rural areas, resulting in some plans becoming outdated and remaining in non-digital formats. Addressing this challenge, the Cluj County Council, which oversees the administration of the communes within the county, is committed to digitizing these plans to modernize and streamline urban management processes.

During this module, each participating student was tasked with analysing the General Urban Plan of a designated commune, including its constituent villages. Their primary objective was to interpret and digitally transform these plans using ArchiCAD software, a process that involves translating complex urban planning regulations into functional zoning maps that are easier to manage and update. (Figure 3)

The Urban Planning Department of the county council played a pivotal role in this module by digitally transforming the built area boundaries and integrating this data into the Territorial Atlas. Students utilized the digital plans provided by the County Urban Planning Department, which included detailed parcel demarcations and urban area boundaries, to convert static regulations into dynamic, functional zoning layouts within the architectural program's interface. These transformed zoning maps are slated for future incorporation into the Territorial Atlas, enhancing the resource's utility and accuracy.

The objectives of this module were multifaceted:

- Facilitate Familiarization with Urban Regulations: The module is designed to immerse students in the practical aspects of urban regulation and functional zone design, helping them navigate and apply complex urban planning rules.
- Provide Knowledge of Territorial Arrangement: Students gain crucial insights into the methods of territorial management, understanding how to effectively arrange and plan space within urban and rural settings.

- Enhance Understanding of Regulatory Frameworks: By engaging directly with the planning documents, students develop a comprehensive understanding of the regulatory frameworks governing each area, as well as insights into the developmental intentions and priorities of these regions under the current planning context.

This educational approach not only equips students with the technical skills required for digital transformation in urban planning but also deepens their understanding of the strategic considerations involved in managing urban and rural development.

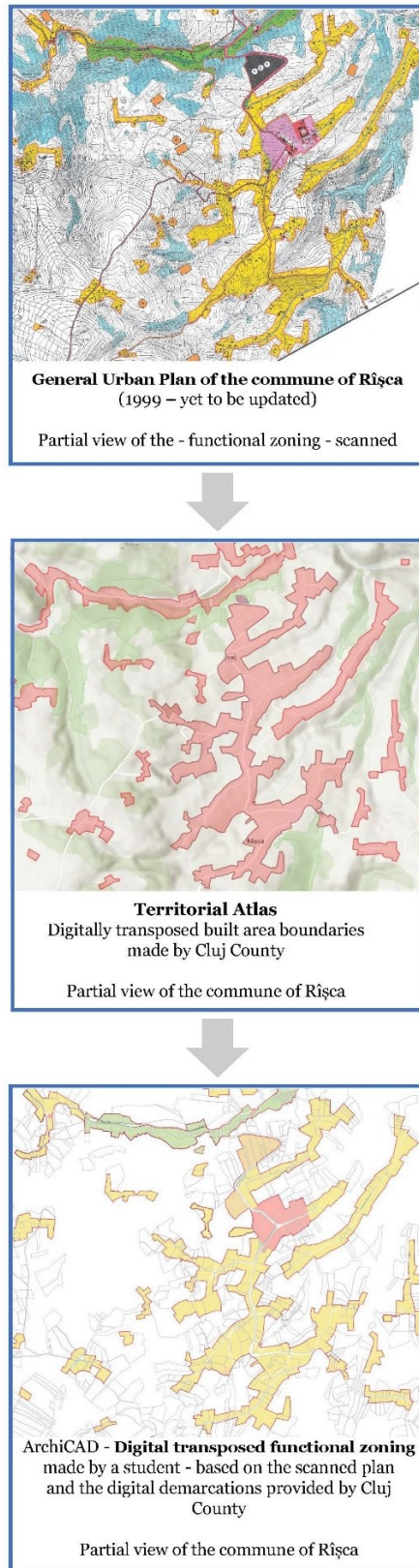


Figure 3. The process of digitizing a General Urban Plan - digitized version of its scanned functional zoning plan – processed by 5th year student

2.3.3. Module 3 – Proposal of urban design solutions in Developing Areas

In regions within the urbanized boundaries of Cluj County that were not governed by specific construction regulations, students engaged in the development of innovative urban design proposals. This component of the internship focused on applying theoretical knowledge to practical challenges in urban planning, particularly in areas requiring regulatory and developmental clarity.

An illustrative case involved the General Urban Plan for the commune of Mica, specifically the village of Manastirea. Here, students had access to a partially digitized version of the existing functional zoning plan. Utilizing this document as a base, the students were tasked with crafting three distinct conceptual urban design solutions aimed at enhancing the community's residential areas. (Figure 4)

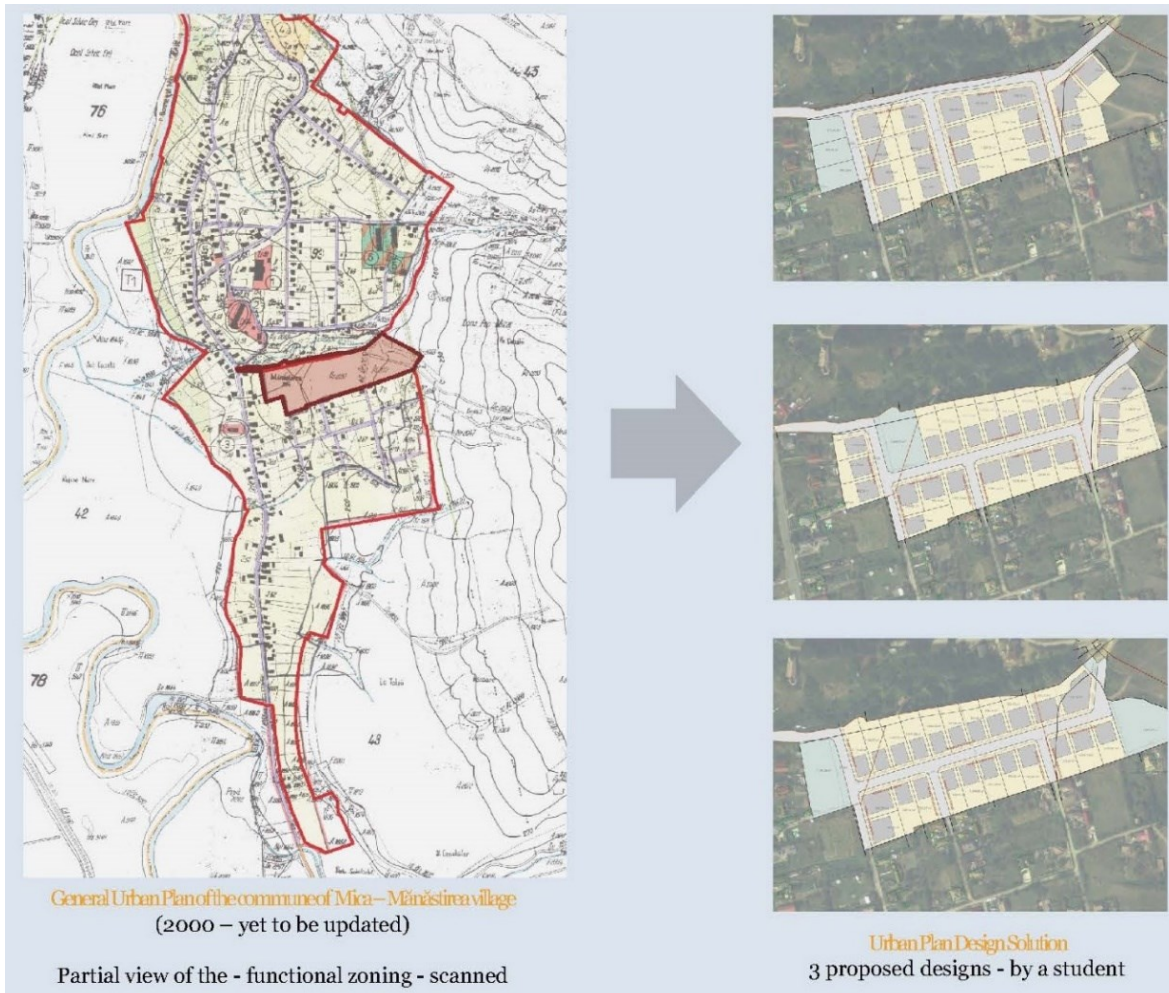


Figure 4. Conceptual urban design proposals in the Manastirea village – processed by a 4th year student

The proposals centred on the expansion of the existing residential functional zone. Each design strategically planned for the inclusion of single-family housing parcels, thoughtfully sized to foster community cohesion and ensure environmental sustainability. Adjacent to these residential parcels, the plans also incorporated significant green spaces, designed to enhance the ecological value of the area and provide communal recreational opportunities.

This module's activities were instrumental in fostering a deeper understanding of sustainable urban development practices among the students. By engaging in this real-world application, they were encouraged to think critically about the integration of ecological considerations into urban planning. The process of designing context-adapted solutions allowed them to explore innovative ways to balance development needs with environmental stewardship, thus cultivating a comprehensive approach to sustainable urban design.

Through these practical exercises, students not only honed their technical skills in designing and planning urban spaces but also embraced the broader principles of sustainability that are increasingly crucial in contemporary urban development. The module reinforced the importance of creating adaptable and resilient urban environments that can meet the evolving needs of their populations while respecting and enhancing the natural landscape.

2.4 Evaluation Methods

The assessment of student performance in the internship program was conducted using a combination of qualitative and quantitative methods. These included evaluating the completion rates of projects, the accuracy of the data entry, and the creativity of the urban design proposals submitted by students.

Regular feedback sessions were also a crucial part of the evaluation process. These sessions involved both students and their supervisors, providing a platform for discussing the experiences gained during the internship. The feedback helped assess how well students were learning and performing, and it also identified where the program or the students' skills could be improved.

This approach to evaluation allowed for continuous refinement of the internship program, ensuring it meets the educational needs of the students while keeping up with the professional standards required in urban planning.

2.5. Ethical Considerations

Prior to engaging in the internship program, all participating students were thoroughly instructed on the critical importance of maintaining confidentiality and strict adherence to data protection regulations while handling sensitive urban planning data. This training aimed to foster a high level of integrity and professionalism, which is essential when dealing with confidential and personal data involved in urban planning projects.

The ethical guidelines provided to the students ensured that they were well-aware of the legal and ethical responsibilities involved in their work. Emphasizing these principles was crucial for preventing potential data breaches and ensuring that all information was handled with the utmost respect for privacy and security.

Incorporating these ethical considerations into the internship program helped ensure that the activities not only fostered the personal and professional growth of the students but also aligned with the best practices and legal standards required in urban planning and public administration. This approach not only benefitted the students by providing them with a realistic understanding of the ethical dimensions of their future professions but also supported the public sector's digitalization efforts by upholding rigorous standards of data handling and confidentiality.

Ultimately, by integrating ethical training into the curriculum, the internship program created a comprehensive educational experience that contributed positively to the broader goals of urban planning and digital transformation in the public sector.

3. Results - Student Engagement and Learning Outcomes

The internship program had a profound impact on student engagement and their learning outcomes, equipping them with a broad set of skills crucial for careers in architecture and urban planning. Students not only gained essential professional knowledge but also developed a deeper understanding of the various aspects of the field, including geography, topography, ecology, urban infrastructure, and environmental protection.

During the program, students demonstrated their ability to perform professional tasks independently while meeting specific requirements and deadlines. They adhered to professional ethics, followed detailed plans, and operated under the guidance of experienced professionals, preparing them for the realities of professional work environments.

Furthermore, students applied their theoretical knowledge in practical settings, analysing urban areas and developing detailed urban design proposals. This hands-on experience was key in helping them connect academic theories with practical applications, enhancing their problem-solving skills.

The program also emphasized the importance of teamwork and professional networking. Through collaborative projects, students improved their communication skills and built connections that are valuable for their future careers.

An important benefit of the internship was how it deepened students' understanding of the link between academic learning and its application in real-world scenarios. They reported feeling more equipped to handle urban planning challenges, showing a significant boost in their readiness for professional roles.

Overall, the internship served as an effective bridge between theoretical knowledge and practical application, providing students with a comprehensive experience that prepares them well for their future careers in urban planning and related fields.

Feedback from Participants

Feedback gathered from the students involved in the internship program underscored the immense value of the hands-on experience they gained. They expressed a strong appreciation for the opportunity to engage directly with the real-world challenges and complexities that come with urban planning, particularly within the context of government operations. This direct exposure not only enhanced their understanding of the field but also allowed them to apply their academic knowledge in tangible settings, deepening their educational experience.

Similarly, faculty members and administrative staff from the Cluj County Council expressed their satisfaction with the students' performance during the internship. They were particularly impressed with the students' innovative problem-solving skills and their ability to adapt to professional work environments. The staff noted that the

students brought fresh perspectives to projects and demonstrated a high capacity for integrating into and contributing to complex urban planning tasks.

These positive outcomes highlight the success of the collaborative approach used in the program, which integrates educational objectives with practical experience. This strategy not only enriches the students' learning and development but also significantly contributes to the public sector's capabilities in managing urban planning and governance. Through such initiatives, the partnership between academic institutions and governmental bodies proves to be a powerful tool in advancing both educational programs and public administrative functions, fostering a productive exchange of knowledge and practical skills.

4. Discussions

This section evaluates the outcomes of the collaborative internship program, situating them within broader academic discussions and public sector practices, highlighting both the advancements and challenges encountered.

4.1. Integration of Academic and Practical Learning

The results of the program demonstrate a successful integration of academic knowledge with practical application. This hybrid model enhances student readiness for professional challenges, echoing findings from similar studies that advocate for experiential learning within urban planning education. The practical skills gained, particularly in digital tools and urban management, align with contemporary demands in urban planning fields and underscore the benefits of real-world learning environments.

4.2. Student Development and Professional Preparedness

Student feedback reflects significant benefits in terms of professional growth and development, a recurring theme in research on the impacts of internships. The practical experience gained has provided students with a nuanced understanding of the urban planning domain, equipping them better to navigate the complexities of careers in architecture and urban planning.

4.3. Challenges and Limitations

While the program has seen considerable success, it has not been without its challenges - such as resource allocation, integration of digital tools into existing systems, and the steep learning curve for students were evident. These reflect broader issues often encountered in public sector digitalization projects and in the implementation of experiential learning programs.

4.4. Implications for Future Research and Practice

This program serves as a potential model for other educational institutions and public agencies considering similar partnerships. Future studies could focus on the long-term effects of such collaborations to gauge their sustained impact on students' careers and public sector advancements. Exploring the implementation of this model in diverse contexts or at different scales could also shed light on its adaptability and scalability, providing valuable insights for policymakers and educators aiming to merge educational objectives with practical professional experiences.

5. Conclusions

The collaborative internship program between the Faculty of Architecture and Urban Planning at Cluj-Napoca and the Cluj County Council has demonstrated significant successes in aligning educational processes with practical urban planning experiences. By integrating rigorous academic coursework with hands-on application in a public sector environment, the program has effectively prepared students for the complexities of the urban planning and architecture fields.

Key conclusions from the program include:

- **Enhanced Professional Readiness:** Students emerged from the internship with a solid foundation in both the theoretical and practical aspects of urban planning, evidenced by their ability to handle real-world projects effectively. This readiness is crucial as they transition from academic settings into professional roles.
- **Valuable Public Sector Insights:** The exposure to public sector operations provided students with a unique perspective on the challenges and demands of urban planning within governmental frameworks. This experience is invaluable in cultivating a comprehensive understanding of the field.
- **Recommendations for Future Implementations:** Given the success of the program, it is recommended that similar collaborative models be considered and implemented by other educational and governmental institutions. Such initiatives can serve as powerful catalysts for bridging the gap between education and practical application, benefiting both students and the public sector.

The program's outcomes suggest that the blend of theoretical knowledge and practical experiences creates a robust platform for student development and public sector enhancement. Future initiatives should continue to build on this model, possibly expanding it to include more diverse and complex projects, to further enrich student learning and contribute to the evolution of urban planning practices.

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Conflict of Interests

The Authors declare that there is no conflict of interest.

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