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The City as a Learning Platform: Student Projects and Knowledge Creation in Small Municipalities

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ABSTRACT

This article examines collaboration between the City of Heinola and higher education institutions as a learning and development platform in the context of a small municipality and as a mechanism of municipal competence and knowledge management. Between 2021 and 2025, approximately 120 student projects (n ≈ 400 students) were implemented, linked to the city's strategic objectives such as sustainability, service renewal, and strengthening participation. The study is a qualitative case study combining document analysis, survey data, and strategic and financial documents, complemented by a self-assessment–based maturity analysis. The case is analyzed through the frameworks of the learning organization and the SECI knowledge-creation model, supplemented by helix thinking. The findings indicate that Heinola's model is positioned at maturity level 3/4 ("partnership and systematization"), suggesting that collaboration has become institutionalized within municipal governance structures. Student projects support service development and organizational learning, and the phases of the SECI cycle are identifiable, although the systematic embedding of results varies. Evidence of long-term impact remains limited. The theoretical contribution of the article lies in demonstrating that student-project-based micro-interventions can form the core of a small municipality's learning infrastructure and generate a lightweight helix-type mini-ecosystem without heavy institutional structures.

Keywords: Agile municipality, Higher education collaboration, Learning organization, Open innovation, Helix, Maturity model, Competence management

INTRODUCTION

Small municipalities face increasing pressures to renew services, advance sustainability transitions, and operate cost-efficiently under constrained resources. While urban innovation and governance ecosystems have been widely examined in large metropolitan contexts, considerably less attention has been given to how small municipalities develop structured capacities for organizational learning and knowledge creation. In particular, the institutional mechanisms through which small municipalities embed external knowledge into everyday governance processes remain underexplored.

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Previous research on higher education collaboration has primarily focused on university-centered innovation ecosystems and regional development in large cities. However, systematic analyses are lacking on how recurring student-project-based collaboration may function as an operational learning structure within resource-constrained municipal organizations. This gap concerns not only collaboration as a pedagogical activity but as a mechanism of competence management, knowledge conversion, and institutional stabilization.

This article examines collaboration between the City of Heinola and higher education institutions as a municipal learning platform. The case is analyzed through an integrated theoretical framework combining the learning organization concept, the SECI knowledge-creation model, helix thinking, and maturity theory. Rather than treating these perspectives as competing explanations, they are used as complementary analytical lenses for examining how recurring micro-level student projects may accumulate into a structured learning infrastructure.

The study makes three theoretical contributions. First, it extends the application of learning organization and SECI frameworks to the context of small municipalities. Second, it conceptualizes student-project portfolios as a lightweight municipal learning infrastructure embedded within everyday governance processes. Third, it operationalizes a four-level maturity model as a heuristic tool for assessing the institutionalization of higher education collaboration.

The analysis focuses on operational and institutional collaboration rather than on the financial value or long-term strategic depth of partnerships. The findings position Heinola primarily at maturity level 3, approaching level 4, indicating that collaboration has become structurally stabilized and strategically anchored, while systematic portfolio-level impact monitoring and embedding practices remain under development.

RESEARCH OBJECTIVES, QUESTIONS, AND APPROACH

The objective of this study is to analyze the conditions under which collaboration between a small municipality and higher education institutions becomes institutionalized as part of municipal strategic development, competence management, and knowledge utilization structures. Particular attention is given to how student-project-based collaboration evolves from isolated experimentation into a recurring and process-integrated operational model.

Heinola is examined as a case of a small-municipality living lab–type arrangement in which student projects function simultaneously as learning environments, development resources, and knowledge-creation mechanisms.

The study addresses the following research questions:

Q1: Under what conditions does collaboration between a small municipality and higher education institutions become institutionalized beyond isolated experimentation?

Q2: Through what mechanisms does such collaboration support strategic objectives, knowledge creation, and competence management within the municipality?

The analysis focuses on operational and institutional mechanisms rather than on financial partnership value or long-term strategic investment relationships. Institutionalization refers here to the stabilization of collaboration within governance processes, coordination structures, and strategic steering practices.

Methodologically, the study follows a theory-driven single case study design. The analytical framework integrates the learning organization concept, the SECI model of knowledge creation, helix thinking, and maturity theory. Empirical material consists of documented student projects (2021–2025), personnel and student survey data, and strategic and financial documents. The data are analyzed through triangulation and deductive coding based on the theoretical framework.

The article contributes by (1) presenting a four-level maturity framework adapted to the municipal context, (2) identifying operational mechanisms that enable institutionalization, and (3) formulating transferable design principles for similar collaboration models in other municipalities.

THEORETICAL APPROACH

Integrated Theoretical Framework

The application of the learning organization concept, the SECI knowledge-creation model, and helix approaches has been widely studied in private-sector and metropolitan contexts (Nonaka & Takeuchi, 1995; Senge, 1990; Etzkowitz & Leydesdorff, 2000). However, less attention has been given to how small municipalities construct structured learning and knowledge-creation mechanisms through recurring collaboration with higher education institutions.

Research on university–public sector collaboration has largely emphasized university-centered innovation ecosystems and large-city governance arrangements. In contrast, the institutional architecture of learning in small municipalities—particularly under resource constraints—has not been systematically analyzed through an integrated framework combining organizational learning, knowledge conversion, and multi-actor governance perspectives.

In this study, these theoretical traditions are treated as complementary analytical lenses. The learning organization concept clarifies organizational preconditions for learning, the SECI model explicates knowledge conversion mechanisms, helix thinking situates collaboration within multi-actor governance, and maturity theory provides a developmental structure for assessing institutional stabilization.

Learning Organization and SECI in Municipal Contexts

The learning organization framework emphasizes shared vision, team learning, and systems thinking as key dimensions of organizational development (Senge, 1990). In municipal settings, these dimensions manifest in cross-departmental collaboration, service process renewal, and competence development. Although the concept has been criticized for normative tendencies and limited operational precision (Hughes, 2011; Örtenblad,

2002), it remains analytically useful for examining structural conditions that enable learning in public organizations.

The SECI model conceptualizes knowledge creation as a dynamic process of socialization, externalization, combination, and internalization (Nonaka & Takeuchi, 1995). In public administration, this cycle becomes visible when experiential knowledge is articulated into documented outputs and subsequently embedded into formal practices. However, small municipalities may face limitations in absorptive capacity due to fragmented knowledge bases and resource constraints (Cohen & Levinthal, 1990; Zahra & George, 2002), which can hinder systematic institutionalization of externally generated knowledge.

The Heinola case allows examination of whether recurring student projects can strengthen absorptive capacity and support structured knowledge conversion despite limited organizational resources.

Higher Education Collaboration and Helix Perspectives

Helix models and living lab approaches conceptualize innovation as multi-actor collaboration in real-life environments (Etzkowitz & Leydesdorff, 2000; Schuurman et al., 2016). The Triple Helix highlights interaction among universities, industry, and government, while extended helix models incorporate civil society. These perspectives emphasize boundary-spanning interaction and knowledge co-creation.

However, helix frameworks often assume sufficient institutional capacity and formalized coordination structures—conditions not necessarily present in small municipalities. Research suggests that innovation processes in smaller cities frequently rely on informal networks and lightweight coordination mechanisms rather than dedicated innovation agencies (Haukkala & Steen, 2020).

In the present case, students function as boundary spanners who transfer knowledge across organizational boundaries (Benneworth & Jongbloed, 2010; Fleming & Grace, 2017). Collaboration is embedded in operational routines rather than organized through a separate innovation unit, forming a practice-oriented and lightweight helix-type structure.

Maturity Thinking and Developmental Perspective

Maturity models conceptualize organizational development as a progression from isolated experimentation toward coordinated and systematized structures (Becker et al., 2009). In this study, maturity thinking is used as a heuristic and analytical device rather than as a deterministic growth model. Public-sector development trajectories are often non-linear and politically conditioned (Pollitt & Bouckaert, 2017).

Higher education collaboration is conceptualized as a four-level continuum:

1. Isolated experiments
2. Repeated experimentation with emerging coordination
3. Partnership and systematization
4. Continuous renewal

The levels are anchored in criteria derived from the learning organization framework, the SECI model, and helix thinking. At higher maturity levels, collaboration demonstrates clearer strategic linkage, established coordination structures, systematic embedding of outputs, and portfolio-level learning mechanisms.

Together, these theoretical perspectives form an integrated analytical framework for examining how recurring student-project-based micro-interventions may accumulate into a municipal learning infrastructure.

RESEARCH DESIGN AND DATA

Research Context

Heinola is a Finnish regional town of approximately 18,000 inhabitants. The City Strategy 2022–2030 defines wellbeing, renewing work and housing, strong community, and sustainable economy as strategic priorities (City of Heinola, 2022). Higher education collaboration is anchored within competence-based development and integrated into municipal governance, including financial and HR steering.

The operational model includes a designated coordination function, structured topic portfolio management, standardized contractual and data protection practices, and established supervision routines. Between 2021 and 2025, approximately 120 student projects ($n \approx 400$ students) were implemented, addressing themes such as climate and resource wisdom, service process renewal, and participation. The collaboration functions as an embedded living lab–type arrangement rather than a separate innovation unit.

Data and Scope

The study follows a theory-driven single case study design and applies triangulation to enhance analytical credibility.

Empirical material consists of:

- approximately 120 documented student projects (2021–2025),
- a personnel survey (2021, $n = 18$),
- a student feedback survey (2024, $n = 17$),
- strategic and financial documents (strategy, budgets, interim reports, audit evaluation), and
- a structured self-assessment comparing the operational model against the four-level maturity framework.

Project documentation provides evidence of development activities and knowledge outputs. Survey data captures experiential perspectives, while governance documents indicate institutional anchoring.

The analysis focuses on operational and institutional mechanisms of collaboration. Financial partnership value and long-term strategic investment depth are outside the scope due to data constraints.

Analytical Procedure and Maturity Assessment

The analysis was conducted as a theory-driven qualitative case study. Data were coded deductively using categories derived from the learning organization framework, the SECI model, helix thinking, absorptive capacity, and maturity theory.

The analytical process involved:

1. Categorizing projects according to strategic priorities.
2. Identifying manifestations of SECI phases, learning conditions, multi-actor collaboration, and competence development mechanisms.

Coding was conducted by one evaluator and systematically documented to enhance transparency.

The maturity assessment applied a four-level scale (isolated experiments → continuous renewal). The assessment reflects organizational capacity rather than measurable impact and functions as an interpretative framework rather than an external audit instrument. Based on the evaluation, Heinola was positioned primarily at maturity level 3, approaching level 4.

Ethical Considerations and Researcher Position

The material was processed in accordance with GDPR and reported anonymously. Student outputs remain the intellectual property of their authors, and written agreements defined assignment conditions and data protection provisions.

The first author serves as coordinator of higher education collaboration in the municipality. This insider position provided extensive access and contextual understanding but introduces potential interpretive bias. The risk was mitigated through explicit theoretical anchoring, structured maturity criteria, and triangulation of multiple data sources. Findings should therefore be interpreted as analytically grounded yet partly emerging from an internal organizational perspective.

RESULTS: HEINOLA'S OPERATING MODEL AND MATURITY LEVEL

The empirical analysis identifies five interrelated mechanisms through which higher education collaboration has become institutionalized in Heinola: (1) a designated coordination function, (2) a strategically structured topic portfolio, (3) established contractual and data protection practices, (4) incentive structures supporting theses and student engagement, and (5) embedding practices defining responsibilities for implementation. Together, these mechanisms enable recurring knowledge conversion processes and explain Heinola's positioning primarily at maturity level 3.

Core Mechanisms of Institutionalization

First, a designated coordination function ensures continuity and alignment between municipal development needs and higher education institutions. It reduces fragmentation and enables portfolio-level visibility.

Second, a strategically managed topic portfolio links student projects to the city's strategic priorities, making collaboration systematic rather than ad hoc.

Third, standardized contractual and data protection practices stabilize cooperation and clarify responsibilities.

Fourth, a thesis-support instrument incentivizes in-depth engagement and strengthens output quality.

Fifth, embedding practices define departmental responsibility for implementing project results, aiming to prevent outputs from remaining isolated reports.

Between 2021 and 2025, approximately 120 student projects addressed climate and resource wisdom, service renewal, and social sustainability. Public documents and governance reports indicate that collaboration is recurring and strategically anchored rather than experimental. Collectively, these mechanisms form a lightweight municipal learning infrastructure embedded within operational routines.

Manifestations of Organizational Learning and Knowledge Conversion

The analysis indicates that the phases of the SECI cycle—socialization, externalization, and combination—are consistently present in student project processes, whereas internalization varies.

Socialization occurs through students' participation in everyday municipal work and experiential knowledge gathering. Externalization materializes in documented reports and theses. Combination becomes visible when outputs are integrated into broader development initiatives, planning documents, or funding applications. Internalization occurs when results lead to procedural changes, guidelines, or investment decisions.

While the first three phases recur structurally, systematic embedding remains uneven. Some projects generate concrete operational changes, whereas others serve as exploratory analyses or inputs for subsequent initiatives. This asymmetry suggests institutional stabilization of knowledge production but incomplete consolidation of portfolio-level embedding mechanisms.

From a learning organization perspective, collaboration supports shared strategic orientation and cross-departmental learning. Staff participation as supervisors strengthens workplace learning and enhances absorptive capacity. However, embedding depends on departmental resources and follow-up practices.

Maturity Level: Evidence and Development Boundaries

The structured self-assessment positions Heinola primarily at maturity level 3 ("partnership and systematization").

This interpretation is supported by three forms of evidence:

1. Documented and stabilized coordination and portfolio structures.
2. Clear strategic linkage, with projects aligned to strategic priorities and referenced in planning and reporting.
3. Recurring collaboration with multiple higher education institutions, indicating institutional continuity.

Institutional anchoring is further reflected in governance documents, where higher education collaboration is framed as a competence-strengthening and knowledge-based management mechanism.

However, transition toward level 4 ("continuous renewal") is constrained by:

- fragmented monitoring of embedding outcomes,
- absence of portfolio-level impact indicators,
- partly case-specific involvement of companies and citizens, and
- still-developing use of data analytics in portfolio governance.

Thus, Heinola has moved beyond isolated experimentation toward structural stabilization, but systematic impact measurement and coordinated embedding practices remain under development.

Perspectives from Staff and Students

The personnel survey (2021) evaluated collaboration positively (mean 8.3/10), highlighting competence development, networking, and employer branding as key benefits. Challenges concerned supervisory workload and variation in student preparedness.

Student feedback (2024) rated supervision quality, topic relevance, and usefulness between 4.0 and 4.3 on a five-point scale. Success factors included expert guidance and flexible communication; development needs concerned clearer initial scoping and more consistent supervision practices.

Overall, the findings indicate strengthened absorptive capacity and work-integrated learning pathways. At the same time, they reveal a structural tension: agile project-based experimentation produces knowledge efficiently, yet without systematic follow-up mechanisms, some outputs remain at the combination stage rather than becoming fully institutionalized practices.

DISCUSSIONS

This study examined higher education collaboration in a small municipality as an operational and institutional learning structure. Rather than assessing strategic partnership value, the focus was on mechanisms through which recurring student projects accumulate into a stabilized municipal learning infrastructure.

The findings indicate that a small municipality can institutionalize knowledge creation without a dedicated innovation organization. Coordination structures, topic portfolio management, documented outputs, and embedding practices collectively form a lightweight governance arrangement through which student projects function as structured micro-interventions rather than isolated experiments.

Theoretical Implications

The study integrates the learning organization framework, the SECI model, helix thinking, and maturity theory within a small-municipality context.

From a learning organization perspective, the findings demonstrate that shared strategic orientation and cross-departmental learning can be reinforced through recurring project-based collaboration. The SECI cycle is empirically observable, particularly in the stabilization of socialization, externalization, and combination phases. However, variation in internalization highlights a structural gap between knowledge articulation and systematic embedding.

Helix thinking is operationalized as a lightweight and practice-oriented structure rather than as a formal ecosystem. Collaboration is embedded in everyday routines, and students act as boundary spanners facilitating knowledge flows across organizational boundaries.

Maturity theory functions as a heuristic device for assessing institutional stabilization. Heinola's positioning at level 3 indicates structural coordination and strategic anchoring, while incomplete portfolio-level impact monitoring constrains transition toward level 4. Thus, institutionalization does not automatically imply continuous renewal.

Collectively, the findings extend existing literature by demonstrating that structured municipal learning can emerge through recurring micro-interventions rather than through heavy institutional infrastructures.

AI Readiness, Agile Development, and Continuous Learning

Although the Heinola model does not include large-scale AI applications, it strengthens institutional preconditions for data-driven governance. Structured documentation, coordination mechanisms, and portfolio oversight create conditions necessary for more advanced analytical capabilities.

The findings suggest that AI-enabled governance requires prior institutional stabilization of knowledge processes. Without coordinated documentation and embedding mechanisms, digital tools alone are unlikely to produce sustained organizational learning.

From the perspective of agile development, recurring student projects operate as just-in-time learning mechanisms. They enable rapid experimentation while supporting work-integrated learning and talent pathways. The model thus bridges traditional municipal development practices and more adaptive governance approaches.

Transferability

The case allows identification of transferable and context-dependent elements.

Standardizable components include:

- a designated coordination function,
- structured topic portfolio management,
- formalized contractual practices,
- explicit embedding responsibilities, and
- alignment with strategic and financial steering.

Context-dependent factors include organizational culture, hierarchy, and network density. Heinola's relatively low hierarchy supports agility; larger municipalities may require more formalized coordination, increasing complexity.

The core design principles can be summarized as: strategic anchoring, clear coordination and embedding responsibilities, lightweight but documented processes, systematic knowledge documentation, and integration with regional development. Together, these elements form municipal micro-learning cycles through which recurring projects accumulate into a structured learning system.

Limitations and Future Research

The study is limited by its single-case design and partial reliance on self-assessment and survey data. The maturity evaluation was conducted by one evaluator, and findings should be interpreted as analytically grounded yet context-specific rather than generalizable metrics.

Future research should employ comparative and longitudinal designs to examine embedding durability and portfolio-level impact. Potential directions include:

- comparative analysis with municipalities lacking centralized coordination,
- before–after or quasi-experimental designs assessing embedding outcomes,
- longitudinal tracking of implemented outputs, and
- multi-stakeholder analysis including companies and citizens.

Further inquiry is needed into how project portfolio analytics and data-driven governance tools can support systematic embedding and evaluate emerging AI readiness.

CONCLUSION

Answers to the Research Questions

This study examined the conditions under which collaboration between a small municipality and higher education institutions becomes institutionalized within municipal learning and development structures (Q1), and the mechanisms through which such collaboration supports strategic objectives, knowledge creation, and competence management (Q2).

Q1: Institutionalization requires a clearly designated coordination function, a strategically aligned topic portfolio, stabilized contractual and data protection practices, and integration with strategic and financial steering mechanisms. Through these elements, student projects evolve from isolated experiments into a recurring and process-integrated operational model.

Q2: Student projects support strategic objectives by generating cumulative and documented knowledge that strengthens competence development,

service process renewal, and sustainability-related initiatives. From a SECI perspective, recurring micro-interventions systematically enable socialization, externalization, and combination of knowledge, while internalization remains uneven. Thus, knowledge production can be institutionalized without guaranteeing full embedding.

Based on the maturity assessment, Heinola is positioned primarily at level 3, approaching level 4. Structural coordination and strategic anchoring are established, yet portfolio-level impact monitoring and systematic embedding practices require further development.

Theoretical Contribution

The study makes three principal contributions.

First, it demonstrates that learning organization and SECI frameworks can be meaningfully integrated in a small-municipality context.

Second, it conceptualizes student-project portfolios as a lightweight municipal learning infrastructure embedded in everyday governance processes.

Third, it operationalizes maturity thinking as a heuristic tool for assessing the institutionalization of collaborative learning structures.

The findings challenge the assumption that systematic knowledge creation requires heavy innovation infrastructures. Instead, recurring micro-interventions, supported by coordination and documentation, can generate a structured and institutionally anchored learning system.

Limitations and Future Research

The study is limited to operational and institutional collaboration and does not evaluate long-term strategic partnership depth or financial impact. The single-case design and interpretative maturity assessment limit generalizability.

Future research should employ comparative and longitudinal designs to assess embedding durability, portfolio-level impact indicators, and the evolution of collaborative models toward deeper institutional partnerships. Further investigation into portfolio analytics and digital governance readiness would strengthen understanding of how such learning infrastructures support data-driven public management.

Overall, the study shows that in small municipalities, structured coordination of recurring student projects can function as a municipal learning infrastructure. Institutionalization does not automatically imply continuous renewal, but it establishes the structural preconditions upon which more advanced knowledge-based governance can develop.

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